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Utilization of health and medical services: factors influencing health care seeking behaviour and unmet health needs in rural areas of Kenya

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UTILIZATION OF HEALTH AND MEDICAL SERVICES: FACTORS INFLUENCING HEALTH CARE SEEKING BEHAVIOUR AND UNMET HEALTH NEEDS IN RURAL AREAS OF KENYA

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ABSTRACT

There are many factors that influence health and health care seeking. Although many of these factors are similar across populations, exactly how they interact and influence the actions of people is often unique to a population in the context of the environment they live in. The current study, a population-based cross sectional survey, identifies three specific geographically diverse populations in rural areas of Kenya, to gain information regarding overall influences on health care seeking, and also information specific to each geographical area to directly target the health needs of the individual population living there. Participants of the survey were interviewed for personal information and details regarding their activities in response to their health and ill-health. The subsequent data was then analysed to determine which factors affected the use of health and medical services within the study areas and whether the study participants believed their health needs were being met.

Just over half the population surveyed had been sick and sought treatment, of these between 70% and 80% used formal health care services over informal services with more preferring formal if they had the choice. There were some differences according to gender, education and literacy levels of respondents, while other factors such as the costs associated with seeking treatment, distance and time taken to travel also affected health care service use. Barriers to respondents receiving treatment included financial and physical access issues however, despite this more than half the population that sought treatment believed their health needs were being met.

Some limitations of the study and areas for further investigation include better clarification of the difference between private health care services that involve self-medication and those that involve private providers such as mission hospitals. The current study did not assess perceptions of the quality of service, disease severity or the number of disease episodes.

Overall the study highlighted the pragmatic nature of the quest for health care, but more particularly the differences between each of the districts of the study, and the importance of acknowledging these differences in determining the best strategies to progress health practices in these districts.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

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This dissertation is dedicated to my parents, to my husband Rod, my son Kyle and the littlest one to come.

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CHAPTER 1
INTRODUCTION

This study investigates factors which influence the use of health and medical services, specifically health care seeking behaviour. The study was conducted in three geographically diverse communities in Kenya: one coastal, one semi-arid, and one within the Lake Victoria basin. This was done using a questionnaire designed to gain demographic and socioeconomic data, as well as information relating to the activities of people that reported being ill in the past three months. The subsequent data was then analysed to determine which factors affected the use of health and medical services within the study areas and whether the study participants believed their health needs were being met.

The current study discussed here was part of a larger research project involving the Kenya Institute of Medical Research (KEMRI) and US Army Medical Research Unit – Kenya (USAMRU-K). The larger project was aimed at identifying surrogate measures to facilitate the detection of infectious diseases, more specifically arboviruses. Arboviruses are diseases spread by arthropods or blood-ingesting parasites such as mosquitoes and ticks. Common arboviruses include malaria, dengue and yellow fever, spread by infected mosquitoes, and the rickettsias as spread by ticks, such as Lyme's disease. The surrogate markers investigated included physical and environmental characteristics such as types of housing and sanitation, and socio-demographic aspects such as age, marital status, family breakdown and religion. The investigative team consisted of an entomologist, a medical epidemiologist, a medical anthropologist, a public health psychologist, and a senior microbiology technician.

The changing concepts of health and patterns in the use of health care in developing countries are discussed in the next sections. The specific areas of focus for this study are outlined and health care seeking and unmet health need are defined in the context of this investigation. A brief background of the Republic of Kenya is presented, including an overview of the current status of health care, and a description of each of the settings chosen for this study.

1.1 BACKGROUND

The current literature acknowledges there are multiple determinants of health, which recognize the role of biology, behaviour, culture, economics, psychological, environmental and social factors and the interconnectedness of these (Ansari, Carson, Ackland, Vaughan, & Serraglio, 2003; Celik & Hotchkiss, 2000; Hunt, 1994; Thisted, 2003). In developing countries, these factors are newer considerations as countries with limited resources struggle to cope with mortality and morbidity as a result of communicable disease, injury, poverty, sexual and reproductive health issues, and more recent concerns such as hypertension, heart disease (Naicker, 2003) and diabetes that are more lifestyle-oriented results of development (Correa-Rotter et al., 2004). However, more recent studies are beginning to discover that unless health and ill-health in less developed countries is considered in this broader context, inequalities will only become more evident (Gwatkin, 2000). Therefore, knowledge of the patterns that influence the use of health and medical services in developing countries are needed to address this.

1.2 SIGNIFICANCE

The significance of this study is twofold. First, at the community level, information regarding service utilization and preferences can be used to improve the appropriateness of the medical and health care services offered. Where resources are limited, the value of targeting and prioritizing services cannot be understated. Second, this study seeks to improve the body of knowledge that exists regarding health care seeking in developing countries. There is some criticism that information is limited regarding the broader context of biological, cultural and social determinants of ill health and its consequences outside the reproductive health agenda in developing countries (AbouZahr, Vlassoff, & Kumar, 1996). Under the guise of international development, health care utilisation in developing countries is receiving more attention but still tends to be focused on under five mortality rates, reproductive health and communicable diseases such HIV/AIDS and malaria (Gender and Development Group, 2003; United Nations General Assembly, 2000; United Nations Statistics Division, 2000).

This study investigates some of the broader contextual issues that may influence health care seeking and asks participants if they believe their health needs are being met. This particular investigation is an integral part of a broader study that proposes to develop a predictive model of disease patterns using multiple surrogate measures

(Coldren, Prosser, Ogolla, Ofula, & Adungo, 2005b). The overall intention is to better target health and medical, preventive and curative, services for populations.

1.3 RESEARCH QUESTIONS

In order to investigate factors which influence the use of health and medical services in Kenya, this study explores health care seeking behaviour in the study population, their characteristics and ability to access services, preferences and whether their health needs are being met.

Specific questions addressed are:

What health and medical services are being used?

What health and medical services are preferred?

What characteristics affect access to these services?

Are study participants able to access the services they need?

1.4 CONCEPT DEFINITIONS

Utilization of health and medical services is defined as the ways in which individuals respond to ill health and disease. Many factors may influence this response, including characteristics of the individual and their ability to access the type of resources they may need in their quest to deal with their ill health. There is a clear distinction in the literature between health care seeking which emphasizes the 'end point' use of services and health-seeking which emphasizes the wider 'process' (Mackian, Bedri, & Lovel, 2004, p. 137). While it is of interest to view health seeking as a wider process, it is beyond the scope of this study to infer causation regarding many of the non-visible processes that affect health and health seeking behaviour. In this study, health care seeking is the primary objective and is defined in its broadest terms as relating to health care access, service use, and the way in which people respond to their perceived ill health (Ahmed, Adams, Chowdhury, & Bhuiya, 2000). The study is also concerned with the kinds of socio-demographic characteristics that may influence health care seeking such as gender, literacy, education, regular income and age, as well as access-related concerns. The current study focuses on ill-health and disease as the literature shows there is little impetus to act in developing countries unless an individual is ill (Atkinson et al., 1999; Hjortsberg, 2003) for reasons including poverty, distance

and perceived benefits (Atkinson et al., 1999a; Buor, 2003; Ensor & Cooper, 2004; Hjortsberg, 2003; Nash Ojanuga & Gilbert, 1992).

Msiska et al (1997) identify several determinants of health care seeking behaviour in developing and developed countries, such as the

> …type and severity of symptoms, the course of illness, sick role, perception regarding cause of illness, age, sex, education and economic status, social cost, social networking and lay referral mechanisms, availability of the service and…opinion of the efficacy of therapeutic options (p. 248)

As will be discussed in the literature review, there are many factors which may influence health care seeking and many conceptual frameworks from which proposed explanations of health and health care seeking are made. With consideration for the literature, the data collected from the study and efforts to provide meaningful information back to the communities involved in the study, a number of socio-demographic characteristics and issues relating to access were singled out and are presented in the analysis. The socio-demographic characteristics that will be focused on are gender, literacy, education, regular income and age. These characteristics are common to the literature on health care seeking behaviour and unmet health needs and were areas of interest for the study investigators. Accessibility issues include communications, mode of transport, closest facility, time to travel to nearest facility and district.

Accessibility in this context

> addresses location of population and services, transportation, and opportunity costs. For example, this has long been recognized as a problem for rural populations because of the distances they must often travel to get services if they are in remote areas…Moreover, cultural practices…[may]…limit access. (Hartigan, 2001, p. 8)

Unmet health needs in the study are derived from those participants reporting an inability to access all the services or all the treatment they need. A health need is viewed as the drive to seek and receive primary care services (Mathers, Vos, & Stevenson, 1999). This is a perceived need as voiced by the respondent and therefore as a

> subjective report of unmet need likely reflects a complex interplay of factors that influence the perception of need as well as the receipt of needed care conditional on the belief that a need exists. (Mayer, Slifkin, & Skinner, 2005, p. 618)

Unmet health needs in this study are not individually investigated as this falls outside the scope of this dissertation.

Following the example of a number of studies in developing countries, the options respondents chose from in terms of their use of health or medical services were divided into formal and informal, and public and private. The provision and division of health and medical services into formal and informal services is a common one (Mackian et al., 2004) as is the distinction made between public or private health providers (Zwi & Yach, 2002; Ha, Berman, & Larsen, 2002). The use of one type of service over the other is the result of multiple factors, while many studies report a combination of services and treatments in developing countries (Munguti, 1998; Nyamongo, 2002; Taffa, Chepngeno, & Amuyunzu-Nyamongo, 2005).

Public providers are described as government or other public hospitals or primary health care facilities (Pokhrel & Sauerborn, 2004) including health centres, clinics and dispensaries. Private services are typically non-government organisations, which may include clinics and facilities run by missionaries (Pokhrel & Sauerborn, 2004) and/or other health and medical personnel working for private income and profit (Ha, Berman, & Larsen, 2002). Formal health services have been defined as those which are licensed to practice, registered private clinics or pharmacies (Birungi, Mugisha, Nsabagasani, Okuonzi, & Jeppsson, 2001), and dispensaries, and those that employ medical officers, clinical officers, nurses and public health technicians. Informal health services include “drugs shops, market vendors, itinerant vendors, home providers and traditional healers” (Birungi et al., 2001, p. 82) as well as “self-medication…medicines sold in the markets and streets [and] injections…in the compounds “ (Msiska et al., 1997, p. 250).

1.5 BACKGROUND IN KENYA

There is little specific information regarding the utilization of medical and health services in Kenya. The Demographic and Health Surveys conducted every five years since 1988 concentrate on fertility and reproductive health issues, safe motherhood, nutrition (Kenya National Council for Population and Development & Ministry of Home Affairs and National Heritage, 1991) and in 2003 have added knowledge about

HIV/AIDS and domestic violence (Central Bureau of Statistics (CBS), Ministry of Health, Kenya Medical Research Institute, Centers for Disease Control and Prevention, & MEASURE DHS+, 2003). Health information systems are inadequate, mostly counting patient consultations and monitoring finances, and fail to take into account local socio-cultural issues (Nyamwaya, Nordberg, & Oduol, 1998). Decentralization of healthcare planning and management (Nordberg & Oranga, 1996), private interests and lack of infrastructure mean that even when statistics are collected, they are not reliably, nationally or even regionally, collated. It is difficult to obtain an accurate and coherent picture of the state of health in Kenya. Questions regarding patterns of usage, preferences, and availability are left mostly unanswered. Standard drug re-supply is made available to government clinics and hospitals on an irregular basis and with no consideration of the specific, seasonal or ecological needs of the populations involved (Agwanda, Kwamanga, & Kiugu, 1996). Home and self-treatment is common as in most of East Africa (Atkinson et al., 1999b; Geissler et al., 2000; McCombie, 2002) and also the use of traditional remedies (Good & Kimani, 1980), as well as a combination of both (Geissler et al., 2000; Nyamwaya, 1987). Limited attention has been paid to health education efforts outside specific disease eradication efforts, such as measles (World Health Organization, 2004), hygiene related illness, such as parasite control (Basu, 2002; Tumwine et al., 2003; Wendo, 2003), HIV/AIDS (Buve, Carael, & Hayes, 2001; National AIDS Control Council, 2002) and family planning (Family Planning Association of Kenya, n.d.; Population Action International, n.d.). These efforts are also geared toward a more urban population (AbouZahr et al., 1996; Atkinson et al., 1999b) where access to media and health information is consistently higher (Kekovole, Kiragu, Muruli, & Josiah, 1997).

Kenya is ranked 123 out of 162 in the list of countries on the United Nations Development Programme's Human Development Index [1](United Nations Development Programme, 2001). It has a diverse population of approximately 31.5 million people (Central Bureau of Statistics Kenya, 2002), that includes most major language groups of Africa and consists of traditional pastoralists, rural farmers and urban residents (Wikipedia, n.d.). There are seven major ethnic groups in Kenya and there is on-going tribal conflict in some areas, mainly due to disputes over cattle and land (U.S. Central Intelligence Agency, n.d.).

[1] The Human Development Index is an aggregate ranking of countries as they perform with regard to overall measures of life expectancy, literacy, education, economic performance and other gross indicators

Kenya is the regional hub for trade in East Africa, although its dependence upon only a few primary goods whose prices have declined, have led to a downturn in the economy. In 1997, the International Monetary Fund (IMF) suspended programmes in Kenya, due to the government's failure to put reforms in place and curb corruption. A severe drought in 1999 and 2000 led to water and energy rationing and the reduction of agricultural output. In 2000, an estimated 50% of the population was living in poverty (U.S. Central Intelligence Agency, n.d.). The change of government in 2002 had led to the hope that the situation would improve as corruption decreased and money was spent on infrastructural development. However, as of 2005, the new government is still factionalized, and is presently conflicted with regard to the development of the new constitution and power sharing arrangements (British Broadcasting Commission, 2005)

Kenya is divided into 8 administrative provinces, each headed by a Provincial Commissioner. Each province is divided into several districts, headed by District Commissioners. There are currently 40 administrative districts, which are further divided into locations and sub-locations. The urban population is expanding rapidly in Kenya. In 1999, approximately 37% of people lived in urban areas and 55% of these lived in informal settlements with insufficient water supply and sanitation (Thumbi, n.d.). Despite this, Kenya is still predominantly a rural society. Seventy-five percent of women report being involved in agriculture or urban small businesses. However, the average monthly income of women is about two-thirds that of men, and women hold only about 5 percent of land titles (Central Bureau of Statistics (CBS) et al., 2003).

Women's literacy in Kenya is recorded as one of the highest overall in Africa (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000). Despite this, levels of education and literacy for men and women differ widely. In 2003, women in Kenya were almost twice as likely as men (13.2% to 6.8%) not to have attended any formal education, and although the number of boys and girls in school is roughly equal at the primary level, men substantially outnumber women in higher education (Central Bureau of Statistics (CBS) et al., 2003). Seventy percent of illiterate persons in the country are female (Central Bureau of Statistics Kenya, 2002).

The difference between urban and rural populations is apparent. The 1998 Kenya Demographic and Health Survey showed that while 60% of men and almost half of women in urban areas had attended secondary school, 41% of women and 36.5% of men in rural areas had not even completed primary school. Women in rural areas were

more likely to report they had left school due to pregnancy or marriage (Central Bureau of Statistics (CBS) et al., 2003). Polygamy is still widely practiced in Kenya under traditional African law and Islamist law. In 2003, women were reported to be more than twice as likely as men to be widowed, divorced or separated (Central Bureau of Statistics (CBS) et al., 2003). In a culture where women are often valued through their relationships with husbands and children, this is likely to leave them in a more vulnerable position.

Health services in Kenya are provided by the Ministry of Health in the form of provincial hospitals, district hospitals, sub-district hospitals, health centres, sub-district health centres, clinics, and dispensaries. Medical and health care is also provided by private interests, profit and not for profit, such as some private employers, private doctors, specialists, clinics and hospitals, and missionary and faith-based groups, non-government and humanitarian organizations. There is a thriving non-formal health sector in the form of traditional healers and *mgangas*. Traditional healers typically use herbs while *mgangas* deal with spiritual forces. Medicines can also be bought at hospitals and health centres, *duka la dawas* (pharmacist), shops and local street traders. Payment is required for the majority of health services, even the 'free' government health services, medications and sometimes *kitu kidogo* ('something small', which can be anything from a small token to a larger bribe for special treatment) (Mwabu, 1986).

HIV/AIDS is a major health problem, which according to the Kenyan Ministry of Health (Central Bureau of Statistics (CBS) et al., 2003) is on the decline with an estimated prevalence rate of 10.2% in 2002, down from 15% in 2001. Despite the decrease, life expectancy of Kenyans has dropped from 60 years in 1990 to 45.5 years in 2002 (USAID: Bureau for Global Health, 2003). The WHO multi-centre study in four cities in sub-Saharan Africa, including Kisumu in Kenya, determined there was a higher risk of HIV infection in women than in men (Buve et al., 2001). According to USAID, approximately half of the Kenyan population carries a latent tuberculosis infection (USAID: Bureau for Global Health, 2003). Malaria remains one of the most significant infectious disease threats in Kenya, with approximately 26,000 deaths annually of children under 5 years of age (National Malaria Control Programme & Ministry of Health, n.d.). These demographic trends have led to a youthful population, where people under 15 years of age constitute 44% of the population (Thumbi, n.d.).

1.6 SETTINGS IN KENYA

This study was conducted in three diverse geographical areas in Kenya: semi-arid, Lake Victoria basin, and coastal. These districts are representative of the vast range of ecologies in Kenya. They also constitute very different socio-cultural populations bound to ethnicity, tribe and tradition. The economy of these regions is affected by socio-cultural tradition and these ecologies.

The Busia district is located on the Western Border of Kenya in the Lake Victoria basin and home to the largest fresh water lake in Africa and the second largest in the world (Wikipedia, n.d.). The major tribe occupying the basin is the Luo people that travelled down to the area from the Sudan around the 15th century. The Luo people are now the third largest ethnic group in Kenya (Go 2 Africa, 2006). This region is the most densely populated in Kenya and arguably the most productive, and the Lua tribe are the other major tribe sharing the area. The Busia district is a largely agrarian community, and includes fish farming. The main source of business for the townships in the district stems from the flow of cross-border traffic into and from Uganda.

The Luo and Lua tribes practice both polygamy and wife inheritance, which have been blamed for the high rate of HIV/AIDS in the district. Within the towns of the district the infection rate runs at about 30 percent, while the rate in the villages is around 14 to 16 percent (Buckley, 1997; Mosota & Ayodo, 2007). Widows that are affected by HIV will say they are suffering from malaria, while their inheritors will often refuse to believe the widows' husband died of AIDS. Many will insist "witchcraft" was the cause for the husbands' death. This cycle of denial has left many empty houses and huts scattered across the district.

As Kenya's western outpost and part of the trans-African highway, the Busia township has a thriving commercial sex trade, particularly for truck drivers who stop in the town waiting to cross the border into Uganda, and also the fishermen from Lake Victoria that contribute to this scenario. Prostitutes that are infected with HIV, infect their clients who in turn infect their wives and girlfriends (Buckley, 1997).

With the demand for Nile perch on the global market, the fishing industry centred around Lake Victoria and the Busia district has seen an explosion in trade opportunities. However, with this explosion has come the rise of fish factories, mostly owned by non-indigenous Kenyans. A survey of the area between December 1996 and

June 1997 showed the disturbing trend of fishermen selling their catch at a better rate to fish factories for fishmeal. The results of this being that the local consumer market can not afford to pay the higher costs of fish for consumption and the sale to fish factories is subsequently pushing out traditional markets, creating unemployment and food security issues. It is estimated that a loss of around 10,000 jobs, mainly women filling the traditional processing role, has affected the local economies, not to mention conservation and fisheries resources issues with industrialization of the fishing trade (Abila & Jansen, n.d.). The formation by the government of Kenya of the Lake Basin Development Authority seeks to find strategies to curb this disturbing trend (Achieng, 1995).

The Malindi district is located in the Coast Province of Kenya. The population is predominantly Swahili and Giriama that rely largely upon fishing, agriculture (cotton and sisal) and tourism. The tourism industry tends to be seasonal, as Malindi has a typical monsoonal climate, but even seasonal tourism has suffered due to the recent acts and further threats of terrorism along the coast of Kenya.

The Malindi town, as the capital of the district with the same name, is a low lying coastal town. By the 14th century the Malindi township had become an important Swahili settlement and welcomed Portuguese traders (Go 2 Africa, 2006). A stone cross erected by Vasco de Gama in 1499 is a significant landmark for the town.

The Malindi district houses some of the most diverse and richest natural habitats in Kenya. The Arabuko-Sokoke Forest is the largest remaining area of dry coastal forest in East Africa and has a number of animals and birds, which are unique and the efforts of international conservation groups. There are also large areas of wetlands and mangrove ecosystems considered to be essential to the preservation of bird populations (ARK: A Rocha Kenya, 2006). Despite this, with an increasing population and paralleling levels of poverty, a huge strain is being put on these ecosystems as human beings encroach upon the land.

The Malindi district hospital acts as the referral hospital for 67 health facilities within the district. There are three government health centres and the rest of the health facilities are private hospitals, government and privately owned clinics or dispensaries (Kambi, 2005). According to District Health Information Systems, malaria is the number one cause of morbidity in the Malindi district, followed by respiratory diseases and diarrhoeal illnesses (Kambi, 2005).

The Maralal area as part of the Samburu district is located in the Eastern Province of Kenya. It is largely populated by the Samburu or Loikop ethnic group that are related to the Maasai people. The Samburu people are predominantly nomadic herdsmen, living in 'manyattas' which consist of three to twelve families with an average of fifteen individuals per family. About fifteen per cent of the population live in urban areas (Macintyre, Lochigan, & Letipila, 2003), while the majority remain scattered across the arid district in small, permanent and semi-permanent, settlements. Despite developments in other parts of Kenya, the region remains poorly resourced and less progressive in economic terms. Often the traditional nomadic lifestyle follows the migratory patterns of animals through the seasons, however this is beginning to change as people begin to settle around more permanent water sources, schools or health dispensaries.

The Samburu people have some unique cultural practices. As pastoralists, constant interaction with livestock and wild animals leads to greater exposure to certain health problems and injuries. The role of tending livestock is considered to be the most important task in Samburu communities, as livestock correlates with wealth, social status and marriage prospects.

Violent clashes between agro-pastoral communities and cattle rustlers often result in death, injury and insecurity for the local populations (United States Agency for International Development, 2006). Clashes between rival cattle herding tribes, the Pokot and the Samburu, are a yearly occurrence (South African Press Association, 2006). While other cattle rustlers, frequently from Somalia, habitually cross the border, attacking manyattas and plundering the cattle herds before fleeing back across the border and out of reach, driving the stolen cattle with them. These events regularly happen at the beginning of the rainy season in an effort to restock cattle herds, which is also the same time that crops need to be sown. With the resulting displacement and disruption of populations, this may not happen, compromising food security for the coming season and harvest.

The Ministry of Health funds and operates the Maralal District Hospital, which is the major referral hospital for the area. The Ministry also runs a few primary care clinics and dispensaries around some of the larger towns. The Samburu District prison also runs a dispensary which is well-utilised by the local community. Other health and

medical services are provided by non-government and missionary organizations, shops and traders, or traditional healers.

A brief overview of the research and its significance to health care seeking in the Kenyan context has been presented. The following section provides a review of the literature for health care seeking and the specific determinants that are to be investigated for this study.

CHAPTER 2
LITERATURE REVIEW

The current literature acknowledges there are multiple determinants of health from which we discern there are many factors that influence health care seeking and the use of health and medical services. This review provides an outline of the literature on health seeking and health care seeking and details the concept of a determinant. As there are many determinants that could be discussed a number have been singled out from the literature. Each is presented in a discussion of its significance to the study and why it was chosen as a determinant. These factors reflect two different aspects of health care seeking: the socio-demographic characteristics of the individual, and their ability to access health care services. This study investigates the characteristics that may affect health care seeking behaviour, these are gender, literacy, education, regular income and age. The other part of this study investigates issues of access as they affect health care seeking and are communications, mode of transport, closest health or medical facility type, travel time to nearest health or medical facility and if people were able to access these health care facilities. The district respondents resided in is also important. Although the three districts are all rural areas, they are still diverse in composition.

As this study is specifically concerned with the use of health and medical services, the types of services and treatment that are available to the participants of the study will be reviewed. Most commonly these are divided into: formal and informal services, and private and public services. As the intention of the study is to use the information to improve the health situation of the surveyed populations, the objective of this research is to determine if the need for health care service use is being met. This will be a subjective measure according to the perceptions of the study participants. The literature involving unmet health needs discusses the importance of the attitudes and perceptions of individuals.

2.1 WHAT IS MEANT BY HEALTH?

Current literature recognizes the importance of the processes which may determine our health and “the interconnected nature of people’s complex lives and contextualizes biological health in its social, economic, cultural and psychological dimensions” (1994, p. 340). The ‘life span’ approach acknowledges human health and

illness as an accumulation of conditions that begin early in life and sometimes even before birth, and recognizes these as dynamic and on a continuum of risk over the entire course of a lifetime (Institute of Medicine, 1996). Health, as such, is the sum of genetic determinism and a combination of physiological, psychological and environmental factors. And it is a statistical fact that people in less affluent countries experience higher rates of death and disease than those in richer countries (World Bank, 93).

> Factors which are known to influence population health in lower income countries include education levels, access to safe water and sanitation, environmental, social and cultural factors, as well as access to effective health services. (Remer, 1991, cited in Moore, Castillo, Richardson, & Reid, 2003, p.280)

With the increasing emphasis on globalization, demographic and epidemiologic change and more accessible technologies, developing countries are experiencing new dimensions of health and ill-health (Andrews, 2001; Correa-Rotter et al., 2004; Heiberg, 1996; Institute of Medicine, 1996). These dimensions are reflected in social, cultural and environmental change and the experience of the kinds of chronic health problems that come as a result of this change (Andrews, 2001; Bicknell & Parks, 1989).

Already overburdened health systems in developing countries need better information to prioritize and target their limited resources (Ensor & Cooper, 2004; Nyamwaya, Nordberg, & Oduol, 1998; The Working Group on Priority Setting, 2000).

> [M]easuring access to and the quality of health care services in the developing world is difficult [as] health care is often assumed to be responsible for improvements not accounted for by other factors...(Bahr and Wehrhahn, 1993, cited in Moore et al., 2003, p. 281)

This study investigates factors influencing the actions and choices of people as they seek health care and aims to ascertain if respondents believe their health needs are being met.

2.2 CONCEPTUAL FRAMEWORKS

There has been criticism that the term health seeking behaviour has been overused and “undertheorized” (Mackian, Bedri, & Lovel, 2004).

> Health or care seeking behaviour has been defined as any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the

purpose of finding appropriate…[treatment]. (Ward, Mertens, and Thomas, cited in Olenja, 2003 p. 61)

There has long been interest in what influences people's behaviour in relation to their health (Suchman, 1965, cited in Mackian et al., 2004) and what prompts people to use health services. There exists therefore, a substantial body of literature examining multiple aspects of health or health care seeking. Many existing models seek to explain the steps taken by people to act in the interest of their health and the determinants or factors that affect these pathways and lead to actual service use. A brief overview of these models is presented.

Psychosocial models, including *pathways* models (Suchman, 1965, cited in Mackian et al., 2004), and *health belief* models (Hochbaum, 1958, as cited in Pokhrel & Sauerborn, 2004) consider motivating forces and discuss the idea of decision-making through perceptions and evaluating the cost-benefit of actions in relation to illness (Mackian et al., 2004). *Explanatory models* (Kroeger, 1983; Pillai et al., 2003) are centred on the labeling of particular signs and symptoms of an illness, and the interpretation of these in a decision-making process based upon experience, "community norms and expectations" (Olenja, 2003, p. 61), and household behaviours to a resolution of the problem through recommended and accepted remedies and treatment (Oberlander & Elverdan, 2000; Olenja, 2003). Interpretation and decision-making are the more cognitive elements which are far from predictable in themselves. Therefore we also rely upon the non-cognitive factors which could effect health-seeking and put this process into a contextual situation, such as the context of socio-cultural and economic fundamentals, often referred to as *determinants* which leads us to the *behavioural* model of utilization (Phillips, Morrison, Andersen, & Aday, 1998). According to Phillips et al (1998) the use of this model for examining the context in which utilization occurs has been somewhat neglected.

Behavioural models (Anderson, 1968, Pokhrel & Sauerborn, 2004) consist of predisposing factors such as sex, age, occupation, education; enabling factors such as income, household materials; and need factors, that is, perception of illness and service indicators (Pokhrel & Sauerborn, 2004). These models are based on *determinants* that affect decision-making and take into account economic circumstance, distances to travel, level of education, previous consumer satisfaction and perceived quality of services, for example. While other cultural, social, organizational, environmental, geographic and economic aspects that appear to affect peoples' health or are the

prerogative of the investigators. Consideration is given to individual level, household level and health systems level characteristics (Pokhrel & Sauerborn, 2004). Cues for health seeking and health service use are determined by social, cultural, political and economic factors as seen by the individual and as defined by the community (Solomon, 2005). This kind of analysis of health care use leads to a recognition of the importance of the social determinants of health, where the concept of social capital becomes increasingly important (Baum, 1999; Baum & Ziersch, 2003; Harpham & Grant, 2002) and has become a body of research in it's own right. Although there is no set definition for social capital the concept refers to "the degree of connectedness and the quality and quantity of social relations in a given population" (Harpham & Grant, 2002, p.1).

With the growing body of research regarding social capital, particularly in response to the United Nations Millennium Development Goals (United Nations General Assembly, 2000), and the expanding globalization of health, there has been a substantial increase in research concerning health inequalities (Gwatkin, 2000; Joshi, Paci, & Wagstaff, 2001; Low & Ithindi, 2003; Sainsbury & Harris, 2002) and barriers to achieving good health (Ensor & Cooper, 2004; Sowell et al., 1996). This is viewed as a consequence of unequal access to society's resources such as education, employment, quality air and water, inferior housing, inadequate diet, basic services, and health care (Cachelin, Rebeck, Veisel, & Striegel-Moore, 2001; Ensor & Cooper, 2004; EQUINET Steering Committee, 1998; Gott & Hinchliff, 2003; Graham, 2004; Joshi et al., 2001; Mattes, Bratton, & Davids, 2002; Matthews, Manor, & Power, 1999; Moss, 2002; Needham, Bowman, Foster, & Godfrey-Faussett, 2004; Needham, Godfrey-Faussett, & Foster, 1998; Sowell et al., 1996; Zwi & Yach, 2002). There are many terms to classify the different areas of concern related to health, inequalities in health and the maintenance of the health of populations: health equity (Low & Ithindi, 2003), health literacy (Kickbusch, 2001; Lee, Arozullah, & Cho, 2004; St. Leger, 2001), health knowledge (Currie & Wiesenberg, 2003), health promotion (Dean & Kickbusch, 1995; Labonte, 1997), health education (Kengeya-Kayondo et al., 1994; Khan & Baillie, 2003), health communication (Health Communication Network, 2002; Kekovole, Kiragu, Muruli, & Josiah, 1997), and social responsibility (Green & Collins, 2003; World Health Organization, 1997). There would seem to be as many variations on terms as there are studies.

The purpose of presenting the conceptual frameworks above is to present a synopsis of the development of the literature on health and to highlight the amount of

research that has gone into theorizing health in its many aspects. This proliferation of literature is often confusing and contradictory. Health, as a field of study, is dynamic and influenced by the interaction of many factors. In the current study these factors are to be investigated in the context of a rural African setting with a view to improve the provision of health care services for this population.

2.3 FACTORS INFLUENCING HEALTH

Before reviewing some of the factors or determinants that influence health and health care use, two points are worthy of consideration. The first is the difficulty of separating these factors into discrete categories, which reinforces the point that it would not be accurate to view these determinants in isolation, but rather in terms of the larger context and as part of a process. The second point is that while the "concept of a determinant is tied to the idea of a mechanism for action" (Thisted, 2003, p. 65) it is not clear what we speak of when we speak of a determinant of health. The question to ponder is whether an association is enough to make a determination or infer causation as so many of the processes involved in the determination of health or health care seeking are not visible (Thisted, 2003). A comprehensive review of the literature about inferring causation is beyond the scope of this dissertation.

The determinants of health that are reviewed here have been investigated in previous studies for their influence on health care seeking. The variables in this study have often been investigated in combination with one another and globally labeled socio-economic or access variables. In this study they will be investigated separately and a brief literature review for each variable and its role in terms of health will be presented. For clarity, these variables will be grouped into socio-demographic characteristics and factors related to accessibility.

2.4 SOCIO-DEMOGRAPHIC CHARACTERISTICS

2.4.1 Gender

'Gender' has often been used interchangeably with 'sex'. 'Gender' is a social construct that refers not only to the biological 'sex' differences between men and women, but to the different roles and expectations, behaviours and constraints that are placed upon an individual by culture and society, by virtue of their sex. Until the last two to three decades, little attention had been paid to women's health as it was assumed that the male biological model could simply be adapted (Vlassoff, 1994). Where

women's biology was so obviously different, it was treated from a reproductive health perspective, as almost a separate entity from the woman (Broom, 1991), with little to no consideration of the other factors which may influence health.

> Many health indicators for adults exhibit considerable gender differences according to an individual's social position and role (Berhane, Hogberg, Byass, & Wall, 2002, p. 714)

As these issues are being addressed in industrialized countries, there is recognition of the specific health needs of women and the complex nature of the determinants of health for both women and men. It is believed that

> researchers, clinicians and policy makers would understand and address both sex-specific and non-sex-specific health problems differently if the social as well as biological sources of differences in men's and women's health were better understood. (Bird & Rieker, 1999, p. 745)

In developing countries this process still has some way to go, where women's often lower status persists and can be reflected in the socioeconomic disparities that frequently cause women to suffer poorer health (Nash Ojanuga & Gilbert, 1992; Puentes-Markides, 1992; Vlassoff, 1994). It was not until 1985 at the Third World Conference on Women in Nairobi that a solution to these problems was posed in the commitment to improve

> the access of women to health and social services, to education, to credit facilities and to other resources that might enhance their own well-being, while at the same time maximizing their contribution to the wider community. (World Health Organization, 1998, n.p.)

The main criticism inherent in these 'solutions' however is the overriding assumption that women are somehow passive recipients of whatever it is felt should be good for them.

Certainly, 'gender' has become a fashionable word for government and non-government, international and national organizations. The fact remains that in developing countries there is still inadequate understanding of how gender influences health itself (AbouZahr, Vlassoff, & Kumar, 1996; Goding & Howie, 1990; Nash Ojanuga & Gilbert, 1992), access to health information (AbouZahr et al., 1996) and

services (EQUINET Steering Committee, 1998; Nash Ojanuga & Gilbert, 1992; Vlassoff, 1994) health-seeking behaviour (Ahmed, Adams, Chowdhury, & Bhuiya, 2000; Puentes-Markides, 1992; Tanner & Vlassoff, 1998; Vlassoff & Garcia Moreno, 2002) and the use of services (Buor, 2003; Hjortsberg, 2003), treatment and attitudes of providers (Hartigan, 2001; Nare, Katz, & Tolley, 1997; Oliveira-Cruz, Hanson, & Mills, 2003; Puentes-Markides, 1992), and health outcomes (AbouZahr et al., 1996; Ahmed et al., 2000; Hjortsberg, 2003). This is important because if we believe that health is genetically, biologically, ecologically, culturally and socially determined, then gender must be recognized as being one of these determinants as it is interconnected with biology and the socio-cultural factors that affect health (Vlassoff & Garcia Moreno, 2002). Once it is established that gender does play a role in health, the focus can be taken away from 'gender' per se and turned toward the social divisions of the sexes, so called 'gender relations' (World Health Organization, 1998). This evolution of thought and theory is reflected in some of the literature from countries where issues such as literacy and education do not present the wide gap they do in developing countries (No author listed, 1997).

The findings of published material related to gender and health are both large in scope and contrasting in results. There is no doubt that ethnicity, culture and social roles have an affect. It is also of interest that in some studies no gender difference was evident at all for some health conditions, more particularly in developed countries. For example, using data from the 1994 Canadian National Population Health Survey, Walters, McDonough, and Strohschien (2002) challenged the "widespread assumption that women experience considerably more ill health than men" (p. 677). Despite the expectations of their study they were unable to find significant differences in the health of females and males as associated with household structure and social, personal and material resources. Patterns of health were more likely to vary with age and condition, rather than gender. The authors are cautious to state there are no differences between the genders and in fact mention specifically that they do not want to underplay gender differences, but that the patterns of health between women and men in their study were more similar for the conditions they investigated than expected. This is a change from a range of findings up until the late 1980's which focused on the inequalities in men's mortality and morbidity due to disadvantages in occupational and social class, and material disadvantage (Arber & Khlat, 2002), with little attention payed to similar constructs for women's health. More recent results on the morbidity of men and women

in the United Kingdom found little difference between the two when paid employment was controlled for (Emslie, Hunt, & Macintyre, 1999).

Some gender differences in health care seeking may be greater during a woman's reproductive years (Cashin, Borowitz, & Zuess, 2002) and some of the results from earlier studies that concluded women were more frequent service-users may be attributable to this. In Central Asia for example, it was found that women of reproductive age use health services one and a half times more than the average, while for men of a similar age it is half the average (Cashin et al., 2002). Although for some issues this does not seem to be the case, it has been found that women are more likely to delay health-seeking and treatment, particularly for health conditions that are more prone to carry social stigma, such as tuberculosis (Bashour & Mamaree, 2003; Yamasaki-Nakagawa et al., 2001), sexually transmitted infections (Fonck, Mwai, Ndinya-Achola, Bwayo, & Temmerman, 2002) and leprosy (Kumar et al., 2004). Falling under a similar social pall, reproductive health services in some countries have a similar reputation and it is only with some creative management that certain issues have been resolved, such as in rural Bangladesh where attendance was increased in women's reproductive health services by integrating men's reproductive health care into the previously female-focused facilities (Ubaidur, Hossain, Khan, Al-Sabir, & Alam, 2004).

Building upon the experience that it is certain conditions that may affect health care seeking and gender differences, a growing body of literature in the United States suggests that men are less likely than women to seek help from health professionals for conditions such as stress, depression, substance abuse and physical disabilities (Galdas, Cheater, & Marshall, 2005). While earlier research in the United Kingdom shows men are more likely to feel reluctant to seek any type of health services and therefore delay longer (Galdas et al., 2005). This reluctance on the part of males is little understood and the authors concluded that 'traditional masculine behaviour' (p. 616) was the cause. Or as Courtenay has discussed

> how cultural norms that are used to maintain men's social power and sense of masculinity undermine their efforts to adopt healthier habits and beliefs, thus putting them at a higher risk of poor health than women. (cited in Berhane et al., 2002, p. 714)

Gender is reported to affect the utilization of health and medical services in some developing countries (Pillai et al., 2003). A wealth of literature has been produced from studies in various regions of India and Bangladesh which has its unique cultural, caste, and religious norms. In researching the literature it is often difficult to separate gender from other interrelated factors such as literacy, education and socio-economic status (Ahmed, Tomson, Petzold, & Kabir, 2005). These studies generally show an association with gender and health seeking (Ahmed, 2001; Ahmed et al., 2000), including differences in seeking treatment for other family members, such as female and male children (Bhan, Bhandari, Taneja, Mazumder, & Bahl, 2005). Although other studies again show that for certain conditions, gender, income and literacy determinants do not affect any delay in health care seeking (Dhingra, Rajpal, Taneja, Kalra, & Malhotra, 2002).

In terms of access however, it has been noted that

> lack of available time may also impede women from seeking care. Responsibilities for childcare and household tasks often make it difficult for them to leave home, particularly if they also have wage-earning activities. Moreover, cultural practices that do not allow women to be seen in public during the day, as in many Muslim communities, limit access (Hartigan, 2001, p. 8).

In Nepal, for general health issues gender has been shown not only to affect illness reporting, but also the decision to choose a health care provider and how much to spend on a sick child (Pokhrel et al., 2005). In terms of specific conditions such as tuberculosis, women were more likely to delay in seeking treatment than men (Yamasaki-Nakagawa et al., 2001), while perceptions of illness were found to be different between men and women (Pokhrel & Sauerborn, 2004).

In Syria, Bashour and Mamaree (2003) found that gender did not affect the knowledge and attitudes of tuberculosis patients, although women did report more barriers to seeking care. Interestingly, women proved to be more compliant with treatment and being male was a significant predictor of a negative treatment outcome, after controlling for other significant socio-demographic and health care related variables (Bashour & Mamaree, 2003).

Women's health in Africa has traditionally focused upon reproductive health, family planning and safe motherhood (Hartigan, 2001; The Center for Reproductive Law and Policy & International Federation of Women Lawyers(Kenya Chapter), 1997).

More recently harmful traditional practices (Amnesty International, 1998; Chege, Askew, & Liku, 2001; PATH, 1997; World Health Organization, 2000), violence against women (Heise, 1994; Heise, Ellsberg, & Gottmoeller, 2002; Kapoor, 2000; Ward, 2002) and HIV/AIDS (Gordan & Crehan, n.d.; UNAIDS, 2001, 2002; Welbourn, 1999) have become health and political issues. It is a positive step, that more emphasis is now being put on the role that men play, particularly in developing countries, in the health of women, families and communities (Cohen & Burger, 2000).

Studies in Africa show mixed patterns of health seeking. In Ghana, women are more likely to seek health care than men (Danso-Appiah, De Vlas, Bosompem, & Habbema, 2004) while in another study in Zambia, women were more likely to delay in seeking treatment, particularly if their education level was low (Needham, Foster, Tomlinson, & Godfrey-Faussett, 2001). There are other issues as to how the introduction of user fees affects the use of health services by women (Nanda, 2002; Soucat et al., 1997), where one of the main issues for women is consideration of household income (Foreit & Foreit, 2003).

2.4.2 Literacy

Inequities in a country can often be gauged by the health of populations, particularly the most vulnerable groups. As a determinant of health care seeking behaviour, literacy is intimately tied to gender, education level, and regular income and is considered an indicator of socio-economic status (Bharmal, 2000; Sudha et al., 2003). Male literacy levels are consistently higher than female, particularly in developing countries (Institute for Statistics Literacy and Non Formal Education Sector, 2002). It is currently estimated that female literacy has increased from 54% of the male rate to 74% (World Health Organization, 1998). Literacy is used as an indicator for dimensions of poverty (Mattes et al., 2002) and female literacy and education levels are often used by the World Bank and United Nations organizations (United Nations Population Fund, n.d.) among others to assess the mortality rates of children under five years of age (Moore et al., 2003; Shimouchi, Ozasa, & Hayashi, 1994).

Some of the direct effects of low literacy levels are for instance, the inability to access health information presented in print form, to read labels and instructions for medications, or even safety advice. Low levels of literacy are not just a phenomenon of developing countries. A Canadian study found low literacy skills correlated with low quality housing, living in unsafe areas with higher rates of pollution and environmental

hazards, and that those with low levels of literacy were less likely to request care early on in their illness (Perrin, 1998).

Literacy levels remain low for women in India (Ahmed et al., 2000), especially in rural areas, where literacy has been found to be the most significant factor correlating to survival (Berhane et al., 2002). Low levels of literacy have been shown to be an indicator of higher hospitalization rates (Arozullah et al., 2005), greater rates of malnutrition (Bharmal, 2000), and skin disease (Gibbs, 1996), for instance. In Senegal, Ndaye et al (2005) concluded that illiteracy had a significant link to poorer outcomes in maternal and child health, unexpected pregnancies and refusal to be examined by a male health worker.

In recognition of the effect of low literacy levels on health, the term health literacy has become a way of describing the particular influence literacy has on the health status of individuals and families. Newer fields of study about health literacy seek to define the causal pathways and social constructs which affect the utilization of health services and overall health status (Lee et al., 2004). While even at the macro level, improvements in the level of literacy are seen to increase media participation and improve economic and political developments (Sonaike, 1988).

2.4.3 Education

A key socio-cultural determinant of health is education (Kickbusch, 2001). Again it is difficult to separate education from literacy and other indicators that are regularly used as convenient markers of socio-economic status. Available data in all countries points to the relationship between the risk of disease and lower levels of education (Mackenbach & Howden-Chapman, 2003; Marmot, 1999). Occurrence of illness is significantly lower in groups with higher education, especially among men, but there was no difference between occupational and economic groups in Vietnam (Giang & Allebeck, 2003). Buor (2003) finds that in Ghana "…higher education resulted in higher utilization…" of health facilities (p. 308). While in Africa generally,

> poverty, low levels of education, poor leadership, and man-made as well as natural disasters have been recognized as factors in health development (Nyamwaya, 2003, p. 86).

While there has been an increase in formal education levels in sub-Saharan Africa in recent years (Adamchak & Ntseane, 1992), levels of education are generally lower for

women than men in developing countries (United Nations Development Programme, 2001), as they are also for minority groups in developed countries (Cooper, 2002), immediately creating health equity issues.

> Women in developing countries are frequently confronted with a myriad of socio-cultural factors which negatively impinge upon physical well-being and accessibility to appropriate health care services. Institutional, economic, and educational barriers effect and lowers their standard of living when compared to their male counterparts (Nash Ojanuga & Gilbert, 1992, p. 613)

Education is tied to gender, culture, social status, occupation and economic well-being. It is difficult to make any definitive statements about education without including socio-economic status. The World Bank views the two as interlinked and regard the "economic and social benefits of education for girls and women as a form of human capital investment" (cited in Moss, 2002, p. 650) as well as poverty reduction, specifically in Africa (Nduru, 1999). Secondary or higher education consistently correlates with modern family planning practices and contraceptive use (Magadi & Curtis, 2003; Nash Ojanuga & Gilbert, 1992; National Council for Population and Development (NCPD), Central Bureau of Statistics (CBS), Office of the Vice President and Ministry of Planning and National Development (Kenya), & Macro International Inc., 1999; No author, 1994; Sarkar, 1995; Tuoane, Diamond, & Madise, n.d.), and negotiation of these with a partner (Greig & Koopman, 2003; Lagarde et al., 2001).

Education may be the single most important factor to influence women's health (Heiberg, 1996). According to the National Council for Population and Development in Kenya "one of the most important determinants of a woman's social and economic status is her education level" (1999, p.20). It is evident that education level and socio-economic status are related, as is gender, when examining health inequalities in minority groups that live in developed countries with access to a national health service (Cooper, 2002). Therefore it is not surprising to find that education and socio-economic status directly affect women's access to healthcare, specifically in developing countries (Nash Ojanuga & Gilbert, 1992; Soucat et al., 1997) and that education and economic status of the household are positively related with choosing to act and seek health care when ill in Zambia (Hjortsberg, 2003), even a women's perception of her social status and increased self-esteem is positively related to her education level (Fallon, 1999). Level of education is viewed as important in the creation and maintenance of health inequalities through socio-economic differences in the labour market (Cooper, 2002)

Organizations such as the World Bank, UNICEF and UNFPA routinely use maternal education as an indicator for the health of children and families (UNFPA, 2003; United Nations Population Fund, n.d.; World Bank, 1994), as do other studies (Moore et al., 2003; Shandra, Nobles, London, & Williamson, 2004), while multiple studies around the world have also used female and maternal education levels as health indicators for everything from social problems in dealing with types of illnesses (Kumar et al., 2004) to utilization of hospitals, immunization levels (Shimouchi et al., 1994) and other health services (Bhan et al., 2005; Smith, 2004). Education increases the possibility of health education and health literacy, but is not a guarantee (Tomlinson, 2003). Some studies have found those with higher levels of education are just as likely to succumb to misconceptions, misinformation and misinterpretation (Tomlinson, 2003), particularly when it involves cultural and religious beliefs, societal norms, peer and institutional pressures, and general lack of access to information.

As Buor (2003, p. 294) speculates that

> a patient with a high income who does not see the need for health care would not access it even if they had to travel 1 kilometre; whilst the one who appreciates the need for it due to a good level of education would risk raising a loan if the distance and service cost are such that he has to pay so much for them.

2.4.4 Regular Income

Income is used in this study as a determinant for health care seeking behaviour, and has been used in previous studies to determine not just health seeking behaviour, but risk factors associated with health outcomes (Colin, Adair, & Popkin, 2004; Mackenbach & Howden-Chapman, 2003), barriers to seeking health care (Taffa & Chepngeno, 2005), types of treatment (Nyamongo, 2002) and delays in service use (Johansson, Long, Diwan, & Winkvist, 2000) for example.

Income is one of the factors used as a measure of socio-economic status (Dressler, Balieiro, & dos Santos, 1998) (Pavlova, Groot, & van Merode, 2003) (Rosenberg & Hanlon, 1996) (Matthews & Power, 2002) (Mehrotra & Jarrett, 2002; Zwi & Yach, 2002) and it is socio-economic status that is often used as an indicator of health. There is a large body of literature regarding health status and health outcomes as a result of socio-economic status. These studies are measured in many ways often using indicators that are convenient such as education achieved, literacy level, employment

and other lifestyle measures or a combination of these factors. Literature regarding income, separate to the category which is socio-economic status is more sparse.

> How low income affects health, and what the relative importance of different pathways related to low income is…far from clear (Mackenbach & Howden-Chapman, 2003, p. 431)

Many studies identify economic status as the most significant predictor of service use (Pillai et al., 2003) and how income affects the level to which health care facilities are sought and used (Buor, 2003, p. 296). While often the decision to seek health care is based upon the cost as compared to the perceived benefit (Hjortsberg, 2003).

According to Buor (2003) the ability to pay determines the use of health services. A lack of finances seriously affects health care seeking (Taffa & Chepngeno, 2005), so although the willingness to pay for services may be there (Foreit & Foreit, 2003), the means to do so, may not. Not surprisingly low income has been found to be a barrier to health seeking and can create an overwhelming financial burden for some (Gotsadze, Bennet, Ranson, & Gzirishvili, 2005).

Income, as a limiting factor to seeking health care (Atkinson et al., 1999; Onwujekwe & Uzochukwu, 2005; Peterson et al., 2004; Soucat et al., 1997), is not just relative to the cost of the actual treatment (Nyamongo, 2002). It is also the cost of physically accessing treatment (Buor, 2003), or the trade off between loss of income as a result of being ill versus seeking treatment (Nyamongo, 2002). The major reason given for self-treatment in a study in Zambia was that people did not have enough money to seek health care and this included not only the cost of the treatment from hospital outpatient departments, but the fact that people had to travel there one time to make the appointment and return for the actual appointment at another time (Atkinson et al., 1999) hence incurring the costs of transport and loss of income.

In terms of the actual costs of health care services, one of the reasons there is such controversy over the introduction of cost-sharing and cost-recovery programs in developing countries is the affect these programs have on the lower income groups. A bibliographic review by Oliveira-Cruz (2003) showed that this method merely brought further disadvantage to the more vulnerable groups. Other arguments regarding cost-recovery by charging for services state it only negatively impacts on the more vulnerable groups (Sepehri & Chernomas, 2001) and assumes people know enough

about their needs to assess if a medical or health condition is serious. Proponents of cost recovery schemes use the argument that the cost to more vulnerable groups would be offset by the quality of the service provided (Soucat et al., 1997). However, in Bulgaria, Pavlov, Groot and van Merode (2003) found that although clinical quality was the most important consideration for use of health care facilities, the importance of size of payment was inversely related to those with progressively lower education and lower income. This finding is not unexpected and similar pragmatism is found in multiple studies, particularly in Africa of shopping around for health care services (de-Graft Aikins, 2005) and balancing cost with quality and severity of illness (Taffa & Chepngeno, 2005) .Nyamongo 2005

An interesting phenomenon from a number of studies again returns to the idea of perception of quality of health services. In Guinea and Benin, it was found that although expense was an obstruction to people seeking preventive care, even the lowest income groups would use curative services significantly more and even pay more, if a product was not otherwise available, if access became easier or if the perceived quality of service improved. These findings were also replicated in Mali, Ghana, Cameroon, Rwanda, Guinea-Bissau and Liberia (Soucat et al., 1997). Even those in the lowest income bracket in Sri Lanka were likely to bypass the free option and attend a low cost private facility (Akin & Hutchinson, 1999) with the belief that the quality of service would be better (Taffa, Chepngeno, & Amuyunzu-Nyamongo, 2005).

In general, those of a lower income bracket were more likely to experience ill-health and to battle health inequalities. Correlations exist in the data between low levels of education and income and levels of health, where individuals are more exposed over a lifetime to factors that may promote ill-health (Mackenbach & Howden-Chapman, 2003), for example geographic challenges or losing more person-ill days (Onwujekwe & Uzochukwu, 2005). There is a range of literature that confirms women being in inferior jobs with lower wages in developed and under-developed countries and how this greater material deprivation stresses health inequalities between men and women (Cooper, 2002) although if the

> health effects of income inequality and individual income can be analysed simultaneously, individual income seems a far more important determinant of health (Mackenbach, 2002, cited in Mackenbach & Howden-Chapman, 2003, p. 428).

This need not be assumed a negative, for instance women's paid work in Iran is associated with better health (Ahmad-Nia, 2002) as women's employment is also in Canada (McDonough, Walters, & Strohschein, 2002) and Spain (Artazcoz, Borrell, Benach, Cortes, & Rohlfs, 2004).

In this study, we follow the example of Hjortsberg (2003) in Zambia and use income as a determinant of health care seeking behaviour. For Hjortsberg, financial resources in terms of income were found to be better correlated with health, particularly in rural populations. One consideration for those that are self-employed in farming or small business from the tourist trade for example, is that income can be unpredictable in terms of amount and regularity and this can be problematic in using health care. Onwujekwe and Uzochukwu (Onwujekwe & Uzochukwu, 2005)in a study in Southeast Nigeria, found that rural populations were less likely to pay the cost of health care treatment upfront and more likely to pay in instalments. The assumption in the current study therefore is that regularity of income may be a more appropriate predictor, for these particular survey populations, of not just willingness to pay for health care services, but ability to do so.

2.4.5 Age

Age is a factor associated with health (for example Kaplan, Newsom, McFarland, & Lu, 2001; Mishra, Ball, Dobson, Byles, & Warner-Smith, 2002). It can be a determinant on its own or in conjunction with other factors. Age can be considered a factor of greater vulnerability, as with children under five years or the elderly, or greater robustness, or because the age group 18 to 25 years is more likely to be engaging in higher risk behaviours such as sexual activity, and alcohol, tobacco and other drug use. It is a useful demographic indicator.

Worldwide, there is an increase in the aged..

> For many developing countries, rapid population aging and the phenomenon of a "double burden" of both infectious disease and emerging chronic diseases represent a major challenge. Many of those who will contribute to these extraordinary transitions will live in rural areas. Many countries, especially the poorest, still have a huge burden of infectious diseases, including increasing rates of HIV/AIDS along with a growing problem of chronic diseases… (Andrews, 2001, p. 323)

Chronic diseases may include diabetes (Naicker, 2003), heart disease (Correa-Rotter et al., 2004) or osteoporosis for example (Woolf & Pfleger, 2005), and the possibility of longer term burden to caregivers (Wiet, 2005).

The effects of age can be due to differences in socio-economic status as defined by employment, education and income (Mishra et al., 2002), as well as greater economic dependency, poor housing, loneliness and lowered self-esteem (Waweru, Kabiru, Mbithi, & Some, 2003). The elderly are often unable to access adequate health care which can contribute to their poor health status (Waweru et al., 2003). This can be a concern in developed countries (Wiet, 2005) and those less developed (Waweru et al., 2003).

While women are likely to live longer than men

> older women are substantially more likely to experience functional impairment in mobility and personal self-care than men of the same age. These findings persist after controlling for the differential social position of men and women according to their marital status, social class, income and housing tenure. (Arber & Cooper, 1999)

> Examination of incomes, health status, social support of the elderly shows… there have been persistent inequalities related to age, gender and social class in terms of resources, access to informal and formal care and value accorded to later life. These inequalities are due to differences in status and resources…[and] raises the questions of health status of the oldest generations, income distribution among generations and genders, of access to informal and formal care and adequacy of the latter for the frail elderly. (Henrard, 1996, p. 667)

The elderly may be more likely to use informal health care, home and folk remedies, traditional healers and medicine (Eisenberg et al., 1998), and even faith healers (de-Graft Aikins, 2005) not just because of economic reasons (although often traditional medicine can be more expensive (Good & Kimani, 1980)), but as likely out of habit (Kuo, Hawley, Weiss, Balkrishnan, & Volk, 2004), tradition (Good & Kimani, 1980; Sandhu & Heinrich, 2005), or personal beliefs and attitudes (Astin, 1998).

Those in lower social positions are more likely to make health-related decisions out of habit, association between habits and preferences, more likely to rely on their habits and less likely to change behaviour (Lindbladh et al., 1996).

In this study, the age construct is for adults only and their self-reported health status. Growing older should not be assumed to be a disadvantage, however it does

bring with it special concerns, higher rates of morbidity, greater difficulties in accessing health care facilities and possibly socio-economic disadvantage. Also to be considered are the changing attitudes and perceptions of the aged, as well as the ecological and environmental changes which have occurred in their lifetimes, changes in technology, medicines and methods of care and treatment.

2.5 FACTORS RELATED TO ACCESSIBILITY

2.5.1 Communications

Ownership and access to a radio, television or telephone is often considered as an asset calculation for the measurement of socio-economic status (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000). However, with more focus on technology and what can be done with this technology from a public health perspective, especially in developing countries, this would be a narrow view of the information that can be gained from the ownership or access to such items.

There are two ways to look at communication: what comes *in* and what goes *out*. Therefore different methods of communication can be used to bring information to people such as public health and educational messages, while others can be used to access resources and send messages out – like when someone is ill or educational health information.

Mobile phones, for example, can be very useful especially when other forms of communication – roads, postal systems or fixed-line phones- may be limited (The Economist, 2005). The impact of mobile phones in the developing world has been significant and is the fastest growing means of telecommunications in Africa today (Sarin et al., 2005). The possibilities opened up by the more reliable mobile technology include better access to employment opportunities, health and emergency services and even saving time and money on a bus trip only to discover the goods were not available, for instance. A mobile phone provides an individual with a point of contact (Sarin et al., 2005), including within a neighbourhood or community. There is a different attitude to mobile phones which can become a community resource as messages are passed along and individuals pay to use the service, while someone can supplement their income by being the owner of that mobile phone.

Communication is tied to the notion of accessibility to a great many things. Communication is considered to have an impact on the health of populations (World

Health Organization, 2003). Safe Motherhood programs for example which depend upon health information (Nordberg & Oranga, 1996) and the referral process which relies upon formalized communication and transport arrangements (Murray & Pearson, 2005). Even the financial status that is assumed to come with the ownership or lack of ownership of certain items such as radio, television or telephone can have an affect on access to health services.

There has been criticism of the mass media in Africa, as some believe it has introduced different ethical principles and disrupted traditional values, increasing the gap between rich and poor by endorsing capitalist ideals (Sonaike, 1988) and encouraging loose morals which have led to the scourge of HIV/AIDS (Wolffers, 1997) among other issues. The mass media was supposed to "complement formal education" and "promote basic adult literacy" (Sonaike, 1988, p. 85) to affect social change and improve the economic and political well being of populations. To aspire to a time when communication can " teach and promote the skills that will help people solve their problems…"(Sonaike, 1988, p. 85). In line with this ideal come theories in behaviour change communication (Panford, Nyaney, Amoah, & Aidoo, 2001; Sood, Singh, & Sarwal, 2004)and their impact on the knowledge and attitudes of populations and their health (Sonaike, 1988; World Health Organization, 2003.) In summary, mass communication has been heavily criticised and it has also been used as a tool to positively promote the health of populations.

Arguably the radio as a form of mass media has the greatest capacity to reach the most people. It is viewed in developing countries as "powerful and credible" source of information (Panford et al., 2001, p. 3). The percentage of households which owned a radio in Kenya according to the 1998 Kenya Demographic and Health Survey (National Council for Population and Development (NCPD) et al., 1999) was 78.2% in urban areas and 58.4% in rural areas. The percentage of men reporting listening to the radio every day was 81% as compared to the percentage of women which was 58%. Access to newspapers is a question of literacy. Approximately 61% of men and 37% of women in Kenya read a newspaper or magazine weekly (National Council for Population and Development (NCPD) et al., 1999). As literacy rates for males are higher than for females, we can assume that men have greater access to news from newspapers and understand print material better. This makes radio a powerful mass media tool.

In Kenya, there is only one nationwide radio station, the Kenya Broadcasting Corporation (KBC) (which has been heavily monitored by the ruling political party). In 2005, there are now a number of commercial FM stations and smaller channels using vernacular languages, operating out of KBC. For those with shortwave radios however, the choice is far greater with the BBC World Service, Deutsche Welle, Radio France International, Voice of America, Channel Africa, Radio Uganda, and numerous other stations (Kekovole et al., 1997).

2.5.2 Motorized Transport

There are few studies specific to types of transport and their relationship to health care utilization. In the majority of discussions regarding access to health care facilities, types of transport, the time taken to travel to the nearest health facility, transport cost and the condition of roads are assessed as a single variable (Buor, 2003; Noorali, Luby, & Rahbar, 1999) such as physical or geographic access or socio-physical environment (Odhiambo-Mbai, 1992). This is also the case in studies from more developed countries (Wellstood, Wilson, & Eyles, 2006).

A discussion of mean distances for health care utilization in Kenya is offered by Noor (2005). Peterson et al (2004) talk about the failure of health care referrals and follow up due to lack of finances, time and mode of transport. McCray (2001) and Odhiambo-Mbai (1992)also use mode of transport as one of the factors to be included in the overall discussion of health care utilization and barriers to health care for populations in South Africa and Kenya.

Hjortsberg (2003) asserts individuals that were sick and given the option of seeking health care or self-medicating would make a decision based on the cost of accessing health care and the perceived benefit of receiving health care. Individuals were “influenced by income, insurance, type of illness and access variables such as distance and owning a vehicle “(p. 755). It has also been noted by Vlassoff and Garcia Moreno (2002) that specifically “…women’s use of services is affected by cost, time, mobility, and distance in different ways than men’s” (p. 1715) especially when consideration is given to culturally or traditionally driven tasks such as collecting water which give women other constraints on their time (McCray, 2001).

A 1994 World Bank Report confirms that, in developing countries, lack of transport in remote areas, coupled with poor road conditions, make it difficult

> for women to reach relatively nearby health facilities… The same problem holds for ageing men. (Buor, 2003, p. 295)

It would seem reasonable to suggest that those with access to transport, particularly more efficient transport, would use it, especially to access a health or medical facility if they, or a member of their household, were ill. This, however, becomes more complicated in reality for the reasons discussed in the literature such as availability, cost and condition of the roads. It may also be reliant upon the time that can be spared for this, which equally may rely upon the severity of the illness (Kapiriri & Norheim, 2004; Sudha et al., 2003), the person who is ill, a child versus an older person (Pokhrel & Sauerborn, 2004)and a boy versus a girl (Bhan et al., 2005; Pillai et al., 2003; Pokhrel et al., 2005). If the person is a single parent or widowed for example, time and cost are going to be crucial (Johansson et al., 2000), as well as the issue of possible productivity and income lost to person-ill time (Nyamongo, 2002). Other issues may be the perception of the quality of the treatment available once the facility is reached (Anokbonggo, Ogwal-Okeng, Obua, Aupont, & Ross-Degnan, 2004; Pavlova et al., 2003), or again the decision to bypass the closest facility for another further away, that may be a free service or not (Akin & Hutchinson, 1999). These are just some of the many factors that may determine health care seeking actions and the individual cost-benefit analysis of using motorized transport.

2.5.3 Closest Facility Type

This determinant is concerned with which type of health facility is more available to prospective users. This would include the level of expertise and treatment that could be assumed from the type of facility, that is a hospital versus a dispensary, or if public facilities are limited and not accessible, so private facilities have filled the gap, as is the case in Vietnam (Ha et al., 2002; Tuan, Dung, Neu, & Dibley, 2005), or Uganda (Birungi, Mugisha, Nsabagasani, Okuonzi, & Jeppsson, 2001; Witter & Osiga, 2004) , or India (Rajeswari et al., 2002; Sudha et al., 2003).

Accessibility issues for those living in rural areas are well documented, whether it be in developed countries (Andrews, 2001), or developing countries (Mehrotra & Jarrett, 2002). This is not the only issue facing those in rural areas, where there may be questions about the quality of the service, capacity or the facilities of the nearest service. Perhaps there are few options for residents of that area, and with limited choices they are bound to use any health facility, over taking no action at all. Or perhaps instead

they turn to alternative therapies (Eisenberg et al., 1998), traditional methods (Good & Kimani, 1980) and/or self-medications (McCombie, 2002; Schulpen & Swinkels, 1980).

A number of factors influence the choice of a health service

> physical access to health care, including distance from the health facility, availability of transportation, and the condition of the roads. The distance separating potential patients from the nearest health facility is an important barrier to it's use, particularly in rural areas . (Noorali et al., 1999, p. 191)

Again this means difficulties with separating out variables directly responsible for health seeking and service choice. There are also other factors which may be the primary determinants for the use of some health facilities over others, particularly for treating an ill child for example (Noorali et al., 1999). Physical accessibility, along with cost and perception of the health service provider are reasons for use (Ager & Pepper, 2005) as are waiting times (Atkinson et al., 1999), and work and family responsibilities (Wellstood et al., 2006).

The largest assumption made to accommodate this determinant of health care seeking is that people have a choice. These choices may be greatly limited due to geographical region, personal material resources (such as payment) and the resources of the medical or health facility. These choices may also be greatly limited due to the economic and political climate of the country in focus.

> In countries with universal health care coverage, services are generally free at the point of delivery which is intended to provide equitable access to care for all residents regardless of their individual situations. (Wellstood et al., 2006)

However, what happens when it is not the case that services are free, or close by, there are limited medications for treatment and/or the service providers are corrupt, inexperienced or have otherwise compromised their ethics (Birungi et al., 2001). In many countries, developed and developing, health systems have faced crises due to poor economic performance and political upheaval (Birungi et al., 2001) and have responded to it in different ways, with differing degrees of success. There have been adjustments and cost-sharing or cost-recovery such as with the Bamako Initiative (Soucat et al., 1997), or liberalizing and de-regulation as in Malawi and Tanzania (Bonu, Rani, & Bishai, 2003; Wyss, Whiting, & Kilima, 1996), and in Uganda, decentralization (Anokbonggo et al., 2004; Kyaddondo & Whyte, 2003) which has led to an overwhelming abundance of private practitioners. In Kenya, there is a lack of essential

drugs supplied to the public facilities (Agwanda, Kwamanga, & Kiugu, 1996), a growth in the informal retail drug sector (Amin, Marsh, Noor, Ochola, & Snow, 2003) and subsequent proliferation of self-treatment (Geissler et al., 2000; Schulpen & Swinkels, 1980) even for childhood malaria (Mwenesi, Harpham, & Snow, 1995; Nyamongo, 1999) and the continuation of traditional medicine, which still remains the most widely available form of health treatment in the country (Good & Kimani, 1980), although perhaps not the most sought after (Munguti, 1998) for some treatments.

The question asked here is whether the public health care system is able to cope with health services or is private industry taking over, and with what type of health facilities and with what expertise are each able to respond? Medical pluralism and 'shopping' for health care are areas of research in their own right (Good & Kimani, 1980; Kroeger, 1983; Nyamongo, 2002; Smith, 2004; Whitaker, 2003) as are self-medication and self-treatment (Geissler et al., 2000; Schulpen & Swinkels, 1980; Swinkels & Schulpen, 1980).

2.5.4 Travel Time

As with type of transport and closest health facility, time taken to travel to a health facility is often discussed in terms of geographic or physical access. This makes comparison with other study results difficult "as most of the available literature has focused on the influence of physical accessibility on the use of health services in general" (Noorali et al., 1999, p. 194). The determinant 'travel time' seeks to include a number of issues addressing access to health and medical services. Actual distance in kilometres or miles is an easier measure, but does not seem an accurate representation of what logistical barriers may be involved. That is, the distance to travel to a health or medical facility may be 50 kilometres, but on a surfaced road using motorized transport this may take 30 minutes and be far more achievable than 5 kilometres on a donkey over rough terrain. Not to mention what that journey might do for the ill person.

'Travel time' in this context is used as part of a combination of determinants to better understand the patterns influencing health care seeking. The assumption is that the longer the travel time to a health care facility, the least likely individuals are to use it. Therefore one would expect that "improved geographic access could increase the overall use of PHC [primary health care] centres" (Onwujekwe, 2005, p. 455) page number. In some cases this may hold true. For instance, in the United Kingdom where Haynes, Bentham, Lovett and Gale (1999) showed that the distance to facilities had a

bearing upon visits, that is, the further the distance the less likely people were to go there. But as previously discussed many considerations go into the decision to access health care.

> …[J]udgements of efficacy, cost, distance, and the availability of time and transport may affect decisions made by the patient and their family (Macintyre, Lochigan, & Letipila, 2003, p. 24)

While Buor (2003) found income, service cost, education, waiting time and transport cost seemed to be the main variables in order of importance, for his research in Ghana. He also found that of transport cost and travel time, it was travel time that showed the greatest correlation with distance and utilization. In Uganda, distance, cost, quality of service and health workers attitudes influenced peoples choices of a health service (Witter & Osiga, 2004). In Bangladesh, travel time was important to couples seeking family planning as it was demonstrated they were less likely to use contraception or choose methods [of contraception] if the travel time to fixed clinics was greater than 30 minutes (Levin, Caldwell, & Khuda, 1999)

There are few studies regarding travel time in terms of health care seeking and access to health and medical facilities. Certainly in Africa,

> the composite effects of distance and interrelated factors of travel time and transport cost have been analysed least. Second, little attention has been given to research to identify the impact of distance on vulnerable groups such as the illiterate, poor, aged, females and sickly in the utilization of health services. (Buor, 2003, p. 293-4)

2.5.5 District

District or region of residence effects health in developed and developing countries. Initially, there is consideration of the physical environment, ecologies and climate. Demographic information gained from a population can vary dramatically from one district, region or area to the next. Districts and regions often affect ethnicity, language, religion, socio-economic status, education, occupation, and political affiliations. It further may affect access to services, attitudes and perceptions, and community norms. Some districts have greater access to a multitude of services, not just health-related, others do not. The majority of articles in the literature neatly specify the exact location of the study. Obviously it is important to know that a maternal health study took place in the Mkuranga District, Coast Region, Tanzania, because the point of

the article is to comment on the remoteness of the area and the subsequent dearth of obstetric health services for women and strategies to overcome this (Hussein & Mpembeni, 2005). Studies define their geographical district, region, or area as part of the parameters of their research for it's influence on the outcomes. This study was conducted in three geographically and ethnographically different districts of Kenya. While similarities between the groups exist, striking differences are also observed and are likely to affect health care seeking, not only in terms of what types of illnesses may be endemic (Coldren, Ofula et al., 2005), but also in terms of resulting cultural definitions and interpretations of illness (Evans & Lambert, 1997; Kengeya-Kayondo et al., 1994) or even women's restricted mobility for religious reasons (Shaikh & Rabbani, 2004).

One of the well noted differences in all countries in the literature is the urban-rural dichotomy (Smith, 2004). This affects access to facilities, availability, environmental exposures and may determine the perceptions and attitudes of individuals. It has been noted that many rural communities have a "culture of self-reliance" as compared to their urban counterparts (Mayer, Slifkin, & Skinner, 2005).

People in rural areas often have greater distances to travel to reach health care services (Noor, Zurovac, Hay, Ochola, & Snow, 2003) where the availability of transport is limited and costs higher (Buor, 2003). There are noted differences between urban and rural areas and proximity to services (Sudha et al., 2003) and lack of conventional medicine (Thapa, 1997). Rural people are also disadvantaged in terms of emergency care (Bulatao & Ross, 2002).

2.6 WHAT DOES THE CURRENT LITERATURE SAY ABOUT USE OF HEALTH CARE SERVICES?

> The pattern of care-seeking indicates that public providers are most commonly consulted in any illness episode, followed by private providers, but informal care still exists in a visible proportion,even after controlling for income and rural/urban status…. (Pokhrel & Sauerborn, 2004, pp., p. 223)

The use of one type of service over the other is the result of multiple factors including payment or service cost (Ensor & Cooper, 2004; Ha et al., 2002), geographical access (Buor, 2003), dissatisfaction (Green, 2000), perceptions of quality of care (Munguti, 1998), and type of illness to be treated (Rani & Bonu, 2003) among

others. Many studies also report a combination of services and treatments in developing countries (Munguti, 1998; Nyamongo, 2002; Taffa et al., 2005).

2.6.1 Formal/Informal

Research has shown that for every

> person who visits a health facility for medication, there are nine others that had the same condition but sought health care from other sources including self-medication and five others [that] never sought health" care. (Nzioka, 2005, n.p.)

Formal health care and treatment is defined in terms of what is considered conventional medicine in official or registered settings such as government or private hospitals, health centres, authorized clinics and dispensaries (Birungi et al., 2001). Informal health care relates to self-treatment, self-medication, traditional healers and remedies, and other non-sanctioned heath services (Msiska et al., 1997). Although self-treatment, self-medication and home remedies are not the domain of developing countries only (Astin, 1998), the formal/informal dichotomy will be discussed mainly in terms of developing countries. It may also be said that perceptions of treatments are important in all contexts, just as acupuncture for example might seem an illegitimate source of health care for some, for others it may be considered perfectly legitimate.

In many arenas the use of formal and informal health care is related to socio-economic status (Ahmed et al., 2005). The theory is the lower the level of education and/or income, the more likely individuals are to use informal services. This may be true in some circumstances. Thapa (1997) found that the rural poor in Nepal often relied solely upon informal or traditional systems of medicine, or in the slums of Nairobi where healthcare seeking for single female-headed households heavily relied on informal private clinics (Taffa et al., 2005). However, those with certain illnesses were also more likely to visit traditional healers, for example women with tuberculosis in Nepal (Yamasaki-Nakagawa et al., 2001). Another study revealed that for sexually transmitted infections, there was a large diversity of care options practiced in communities in an almost hierarchical fashion that included self-care, traditional healers, medicine sold in the markets and streets, injections administered in household settings, private clinics, health centres and hospitals as a last resort (Msiska et al., 1997). Women in Uganda seeking treatment for malaria were more likely to use herbs as the first course of treatment, followed by purchasing tablets from shops, and finally the formal health sector if none of the previous interventions had worked (Kengeya-

Kayondo et al., 1994). Other reasons people chose to use the informal sector were perceptions of low quality and inadequate treatment in the formal sector (Witter & Osiga, 2004). In Uganda, 55% of women delivered their babies outside the formal health care system, some of the reasons for this were cost and transport, but also because of poor perceptions of the formal service due to understaffing and irregular essential drug supply (Ndyomugyenyi, Neema, & Magnussen, 1998). Self-treatment and self-medicating is extremely common (Atkinson et al., 1999; Giang & Allebeck, 2003) and unfortunately not always appropriate (Radyowijati & Haak, 2003). However, the informal retail sector has no transport costs and frequently charges less for drugs (Amin et al., 2003).

As described earlier however, most people have a pragmatic, pluralistic view of health care and treatment and there is substantial mixing of treatments and 'switching' of services (Geissler et al., 2000; Nyamongo, 2002; Olenja, 2003; Smith, 2004; Williams & Jones, 2004) often due to failure of first line treatments (Nyamongo, 1999)and disease severity (Muller, Traore, Becher, & Kouyate, 2003; Pillai et al., 2003).

2.6.2 Private/Public

The definition of private and public is not so simple as to say one is not-for-profit and one is for-profit. The public sector is generally viewed as health care under the auspices of the state or government (Birungi et al., 2001), while it seems that everything outside that category can be viewed as private. The private health care sector includes

> Accredited outlets and hospitals, but also many unregulated hospitals, edical general practitioners, homeopaths, … traditional/spiritual healers …herbalists, bonesetters and quacks.(Shaikh & Rabbani, 2004 p. 50)

Also in this study "self-medication with pharmaceuticals bought over-the-counter on the open market" (Nyamongo, 2002p. 377) is included as well as "medicines sold in the markets and streets" (Msiska et al., 1997p. 250) and '*mganga'/'wagangas'*, which is the Kiswahili name for traditional healers. Private health care in this study also includes hospitals, health centres, clinics and dispensaries that are run by non-government organizations such as mission hospitals or those institutions run by private companies for their workers, such as the sugar industry.

There is an ongoing debate in developed countries about how one may deal with the health care of populations and the economics of maintaining public health care services in their present form (Hoyt, 2005). The general consensus seems to be, this is not possible, particularly with treatment becoming more expensive (Pauly, 2003) and that there need to be new strategies to mix public and private. However, according to Birungi (2001) among others, there has generally been a pragmatic blend in developing countries such as in Uganda where it has always existed.

Treatment cost has a significant impact. In Pakistan, Noorali (1999) found cost was significant for " use of a government facility; the less the cost, the greater the use of a government facility " (p. 194). A similar finding in Sri Lanka determined those with more money would prefer to use a private facility (Akin & Hutchinson, 1999). In sub-Saharan Africa, Filmer (2005) writes that incidence of fever and

> …treatment patterns are strongly related to poverty as wealthier households are more likely to seek care or advice. While it is perhaps unsurprising that treatment from private sources increases with household wealth, government services – despite their public nature – are typically also used more by wealthier households. (p. 337)

Having made this statement though, Filmer (2005) is cautious and while the general results overall follow this trend, encourages country-specific data to account for variations.

There is no doubt that private practitioners (qualified and unqualified) are a major source of service provision (Ager & Pepper, 2005), however there are mixed reports as to the quality of services to be found in the private sector. In rural Tanzania, Green (2000) found dissatisfaction with state medical provision which forced a reliance onto an emerging informal sector of private medical provision, which actually delivered poorer quality services. Treatment in private services in Vietnam was found to be worse than public, as public had better infrastructure, but satisfaction ranking is about the same (Tuan et al., 2005). Better treatment by private practitioners was observed in India for female outpatients (Jagdish & Cleland, 2004) and therefore it is not surprising to learn that private providers are used by a large proportion of women (Rani & Bonu, 2003) and overall, a more popular choice (Sudha et al., 2003). Administrators in the government health sector in developing countries are often perplexed by the practice of bypassing a nearby public clinic to go to a public or private hospital or private provider that is further away based on perceptions of the quality of service (Akin & Hutchinson,

1999). It is also interesting that for example, in Tanzania respondents were more dissatisfied with waiting times at private dispensaries, than at public ones (Ahmed, Urassa, Gherardi, & Game, 1996). Public dispensaries are free, although they do suffer from some essential drug shortages, while moderate payment is required at the private dispensaries, and therefore it seems patients expect more from the service.

2.6.3 Unmet Health Needs

Extensive research has been carried out on the unmet needs of populations in relation to family planning and contraceptives (Ketting, 1994; Nare et al., 1997), antenatal care (Ndyomugyenyi et al., 1998), malaria (Amin et al., 2003; Nyamongo, 2002), tuberculosis (Needham et al., 1998), HIV/AIDS (UNAIDS, 2001), sexually transmitted infections (Rani & Lule, 2004), schistosomiasis (Danso-Appiah et al., 2004) , and leprosy (Kumar et al., 2004), to name some health concerns. While it is true that many of these health conditions can be life-threatening, debilitating and/or may reflect a desire for a better condition in life, it should be noted that perceptions are important on the part of the individual participants in these studies, and also from the side of the researcher.

To operationalize unmet health need is difficult as it is likely based upon the perception of need by the individual and not just the evaluation of a medical professional about what this need may be. If it is accepted that unmet health needs are tied into peoples' perceptions about what they need, then unmet needs are likely to reflect the influence of a multitude of factors. A criticism of using subjective reports to detect unmet health needs, is that this is likely to be a "biased measure of access because socially vulnerable individuals will be less likely to perceive a need" (Mayer et al., 2005, p. 4). For example, it may appear that those living in rural areas have fewer unmet health needs, but due to education level, poverty, less contact with the health care system and a culture of self-reliance, it may be more simply that this is the way they perceive themselves (Mayer et al., 2005). In Uganda, perceptions which may appear irrational to some, but include traditional beliefs about poisoning and bewitching and even the colour of the drugs provided (Osiga, 2002, cited in Witter & Osiga, 2004), may influence how people would respond if asked 'were their health needs met?'

In terms of the discourse here, these perceptions lend themselves to the discussion of barriers to accessing health care. The literature seeks to describe and explain barriers to treatment seeking which can be physical, logistical and socio-cultural

(AbouZahr et al., 1996) among others. There we could find a multitude of examples in all countries, for people saying they did not get the treatment they needed because they did not have enough money to seek health care and perhaps chose self-medication instead (Atkinson et al., 1999). Or go into the multiple other reasons such as age, caste, religion, education, household wealth, and women's autonomy which suggest multiple cultural, economic, and demand-side barriers to health seeking (Rani & Bonu, 2003; Shaikh & Rabbani, 2004).

This study relies on participants' perceptions about receiving treatment. In lieu of a medical report for each respondent, the study must rely on participant responses and as health seeking is also influenced by perceptions of efficacy and quality of service, the investigator feels this is reasonable. People's perceptions of need may also balance the uneasiness of solely relying upon person-oriented perceptions, as many studies found often people would not seek treatment as they did not perceive the illness to be serious enough (Brown & Segal, 1996; Danso-Appiah et al., 2004; Kapiriri & Norheim, 2004; Oranga & Nordberg, 1995). Some further concrete reasons why people are unable to access health services are payment issues, which have been commonly cited as reasons for self-medicating (Atkinson et al., 1999; Nyamongo, 2002), delays in treatment (Needham et al., 1998) or going without any treatment (Danso-Appiah et al., 2004).

Mattes, Bratton and Davids (2002) took a number of indicators said to reflect the 'dimensionality of well-being' and reviewed a number of factors they believe to be related to 'lived poverty' which include cash income, food, water, home security and medical treatment. The responses were widely varied regarding people's ability to acquire medicine and medical treatment.

> The average Namibian, Zambian and Zimbabwean had "sometimes" "gone without medicine or medical treatment that you needed." The median response in Malawi, Lesotho and South Africa is to "rarely" do without necessary treatment. Again, the average Batswana feel they "never" do without. But aside from the average response, it should be emphasised that almost one third of Zambians (32 percent) and Basotho (30 percent) say they "often" go without needed medicine or treatment. (Mattes et al., 2002, p. 4)

This type of information is relevant to the improvement of health and medical services. Consumer opinion and satisfaction are after all the original premise of a 'service'.

In conclusion, overall there may be some criticism that the use of unmet health needs as a measure of access is too subjective as unmet health needs are influenced by perceptions, beliefs, poverty, education and other factors. However, for the purposes of this study in Kenya, the perception of the consumer regarding health needs and unmet needs is the objective.

2.7 SUMMARY

This review has provided an outline of the development of the literature on health seeking and health care seeking. As there are many determinants that could be discussed a number have been singled out from the literature. Each has been presented in a discussion of its significance to this study and why it was chosen as a determinant. These factors reflect two different aspects of health care seeking: the socio-demographic characteristics of the individual; and their ability to access health care services.

As this study is specifically concerned with the use of health and medical services, the types of services and treatment that are available to the participants of the study have been reviewed. These were divided into formal and informal services, and private and public services. As the intention of the study is to use the information to improve the health situation of the surveyed populations, the study objective is to determine if the need for health care service use is being met. This will be a subjective measure according to the perceptions of the study participants. The literature involving unmet health needs discusses the importance of the attitudes and perceptions of individuals.

The following sections will present the methodology used to obtain the required information to determine which factors influence the use of health care services and unmet health needs in this rural African population.

CHAPTER 3
METHOD AND MATERIALS

Each study site in this cross-sectional population-based survey was unique. Planning and logistics were significant issues as was data management. The methods used will be presented in the following sections.

3.1 STUDY DESIGN

This study uses a population-based, cross-sectional survey design to investigate the demographic and socioeconomic factors which influence the utilization of health and medical services in three geographically diverse regions in the Republic of Kenya. Self-reported information was gathered about gender, literacy, education level achieved, measures of income, age, access to communications and transport, type and time taken to reach the nearest health facility, whether participants report receiving all the health care they needed, the use of formal or informal and public or private health services, and preferences for seeking health care. A cross-sectional study design was chosen (Abramson, 1985) because the data collected relates to a single specified time and also includes some historical information. The study was not expected to measure changes in status or at different points in time. Other study designs were considered (Detels & Breslow, 1991; Greenberg, Daniels, Flanders, Eley, & Boring, 2001; Silman, 1995; Szklo & Nieto, 2000) but economic and time constraints posed limitations on their use. Self-reported rather than observational data was chosen for logistical reasons such as the costs for materials, time and personnel (McColl, Jacoby, Thomas, Soutter, & al, 2002).

3.2 THE QUESTIONNAIRE

As the design for this study is a population-based, cross-sectional survey using self-reported information it was more efficacious to use a questionnaire (McColl et al., 2002, p. 618). The questionnaire utilized was developed specifically for this study to obtain the demographic data and self-reported health information that was needed to carry out the research. The questionnaire is presented in Appendix A. The information used to answer the research questions specific to this study was gathered from a questionnaire tool designed to collect a larger data set from the population identified.

Considerations for the use of questionnaires and stepwise methods of construction are well documented (Foddy, 1993; Maher & Kur, 1983; McColl et al., 2002). Literature acknowledges that the aims of a particular study influence whether a standardized questionnaire can be used or an original questionnaire needs to be developed (McColl et al., 2002). In this case, some standardized questionnaires considered were, the Demographic and Health Surveys (Macro International Inc., n.d.), the SF-36 Health Surveys (Bullinger et al., 1998; Gandek & Ware, 1998; Keller et al., 1997; Wagner et al., 1998), and some quality of life measures (Austin, 2002; Bullinger et al., 1998). For the specific needs of this study and the population to be sampled, it was determined that a standardized questionnaire would not obtain the information required. Standardized questionnaires did not address the time that people had spent in the village of interest, or questions about which village, sub-location and location which were part of the inclusion criteria of this study. Cultural particulars such as various forms of relationship status, type of housing, treatment alternatives, payment and transport options as well as the specific signs of illness for fever, diarrhea, malaria and malaria medications were not addressed in any questionnaire the investigator could find. There were also specific issues that needed to be raised for the larger arboviral study that could not be found in a standardized questionnaire (Coldren, Ofula et al., 2005; Coldren, Prosser, Ogolla, Ofula, & Adungo, 2005, 2006). However, research into these questionnaires became useful to guide construction of the current questionnaire tool.

The questionnaire tool was designed by the researcher and a medical anthropologist as two of the principal investigators on the larger study. Some components of the questionnaire were modeled upon the Kenya Demographic and Health surveys – 1988-1989 (Kenya National Council for Population and Development & Ministry of Home Affairs and National Heritage, 1991), 1998 (National Council for Population and Development (NCPD) et al., 1999), and 2002 (Central Bureau of Statistics (CBS), Ministry of Health, Kenya Medical Research Institute, Centers for Disease Control and Prevention, & MEASURE DHS+, 2003). Other components of the questionnaire were based upon the needs of the study (McColl et al., 2002) and the experiences of the researcher and the medical anthropologist as appropriate (Synodinos, 2003).

The questionnaire was designed to be completed during a person-to-person interview by a trained field worker in the appropriate language, that is, English, Kiswahili, a vernacular or a mix. The person-to-person interview with questionnaire

was determined to be the most expedient, reliable and consistent way of collecting information in these circumstances. The prospective participants level of literacy was considered, particularly with regard to women in rural areas who are less likely to have attended any kind of formal education (National Council for Population and Development (NCPD) et al., 1999). The level of understanding of the information needed to complete the survey precluded the use of a self-administered tool. Consideration was also given to compliance, financial constraints and the efficacy of replicating the study questionnaire in multiple settings.

Problems of potential information bias with regard to cultural applicability and translation of the survey instrument were controlled for by keeping questions as unambiguous and salient as possible (McColl et al., 2002). While also in the development stage of the questionnaire, drafts of the questions were prepared and circulated to Kenyan national staff members of different tribal backgrounds who worked at KEMRI. This was to assist the researcher and the medical anthropologist in identifying issues with content or understanding and was repeated multiple times. The issue of misattribution was taken very seriously, although few studies seem to have researched or recognized this (Bowden, Fox-Rushby, Nyandieka, & Wanjau, 2002) (Oberlander & Elverdan, 2000).

Recall bias was also considered during the creation of the questionnaire, therefore, there is only one question that asks for memory recall of up to one year. Most questions were limited to three months up to the time of the interview, which was engineered on a seasonal basis. That is, while many individuals have excellent memories, they are often bound in the happenings of the seasons, therefore this time frame was chosen to obtain the most accurate response possible (Kurbat, Shevell, & Rips, 1998; Tourangeau, Rips, & Rasinski, 2000).

A final draft of the questionnaire was prepared and 25 copies were piloted in each of the three districts by local collaborators using a convenience sample. The content of the questionnaires was not explained to the local collaborators, only the overall aim of the study and reasons behind the pilot questionnaires. This strategy was used to gauge where immediate problems in comprehension may lie from the interviewers perspective, even before conducting the interviews. The time taken to complete the questionnaire was noted, as the length and time taken to complete it may have impacted upon the quality of the information, how many interviews could be

completed in a day and how many field workers to employ. Individual meetings between the researcher, in a supervisory capacity, and each local collaborator provided valuable knowledge and suggestions for improvement of the wording of some questions and were used to assist in developing training modules for the field workers.

The, often overlooked, importance of adequately developing, translating and pre-testing survey questionnaires is discussed in some detail by Bowden, Fox-Rusby, Nyandieka and Wanjau (2002). One of the main matters for discussion, also encountered in this study, is the time and attention paid to ensuring that survey questions are interpreted by the respondents as they were intended by the investigators and therefore "[e]stablishing the intended referential and connotative meaning of each question" (Bowden et al., 2002, p. 323). For instance, even the translation for 'health' or 'illness' was an issue in Kiswahili and many of the vernaculars. The meanings of each are usually expressed in phrases which also may include very specific terms that actually cover a constellation of symptoms implying something more specific such as malaria. There is also the issue of perception of 'health' or 'illness' which is both individual and cultural, and may mean simply the "inability to carry out normal role functions " (Mayer et al., 2005, p. 618) or it may mean that someone's health is not good because they have diarrhea and intestinal worms, but this still has not kept them from their regular activities. There are also a number of cultural taboos regarding the disclosure of certain health issues or illnesses, not just limited to HIV/AIDS, and the overall issue of essentially discussing personal information with a stranger, and in a number of cases a stranger who is younger.

3.3 SAMPLE

The populations under study were drawn from three districts indicative of the diverse geography of Kenya: semi-arid, Lake Victoria basin, and coastal. These districts are representative of the vast range of ecologies and also constitute very different socio-cultural populations bound to ethnicity, tribe and tradition. Subjects were selected from each of these districts using a multiple cluster sampling technique (Levy & Lemeshow, 1999). This was determined to be the most economical and feasible sampling method. Levy and Lemeshow (1999) discuss the relative advantages of cluster sampling in surveys of human populations over large geographical areas, without losing the representational characteristics of that population. It was not practical to sample every member of the chosen districts, nor was a simple random sample possible because no list existed of households at the district level. A

representative sample of the adult population was therefore selected using a two-stage cluster sampling technique.

Health and administrative services in Kenya are divided into provinces, districts, sub-districts, divisions, locations, sub-locations and villages. Each district is made up of approximately 5-10 divisions, 25-30 locations, 90-110 sub-locations, and 500-1000 villages. Within each village there are approximately 1000 residents, of whom it was anticipated at least 500 would be adults[2]. Three sampling frames were created with the primary sampling units being all of the sub-locations within the three districts. A list of sub-locations and their populations was obtained from the various district offices. From each of these sampling frames, two sub-locations were randomly selected using probability proportional to population size sampling without replacement (Levy & Lemeshow, 1999). So each sub-location was assigned a value based upon the size of its population and if it was randomly selected would be removed from any future calculations. The second stage sampling frame was then created for each of these six sub-locations. The enumeration units of these sampling frames were the villages within each sub-location. A list of the villages and populations was obtained from the sub-location chief. Again using probability proportion to population size sampling without replacement, one village from each sub-location was selected. Therefore six villages were identified that should be representative of the three districts chosen. It is important to stress that villages and not households or individuals are the enumeration units in this study. All eligible and consenting adults from each village were enrolled.

As per the approved protocol (SSC Protocol No 831, 2003), the overall population sourced was persons aged 18 years and above living within the geographic boundaries of any of the six villages in the three selected districts in Kenya who have been residing in the area for a minimum of five years. Adults were selected because the relevant health, demographic and socio-economic information obtained was more applicable. The decision to exclude children was made partly due to issues of consent and the assumption that children are also less likely to be making their own health decisions so information from them may be more reflective of the adult decision-maker, rather than the child. Some surrogate measures are included in the survey in terms of

[2] Given that the estimated population in Kenya for 2004 when the study was carried out was 32, 021, 856(Embassy of Kenya) and the average population breakdown has 54.7% of the population to be 15 years and above, with a median age of 18.3 years (Central Bureau of Intelligence, 2006)

'members of the household' and these may take into account other information regarding minors.

3.4 SAMPLE SIZE DETERMINATION

Sample size calculations were performed using Stata version 7.0 sampsi and sampclus commands (Stata Corporation, n.d.), to determine the minimum sample size. This minimum sample size was determined for the needs of the additional study and was calculated to be 204 respondents per district with a minimum of two clusters being required.[3] An upper limit was set at 1000 per district based on cost parameters. Based upon this sample size and other assumptions, power calculations were performed to indicate a range of findings from conservative to most favourable.

For power calculations the alpha value is set at 0.05 (Rea & Parker, 1997) and a difference of 20% in self-reported health care seeking behaviour between examined groups is considered significant. The most conservative power calculation is based on a total sample size of 200 per district with a 3:1 ratio in the number of consenting participants, that is, 150 coming from one group of participants with *x* trait and 50 coming from the other group of participants with *x* trait. This was done to account for, as an example, if women respondents greatly outnumbered male respondents, or if one age category was overrepresented. As we consider a difference of 20% significant, the most conservative proportions of behaviours examined would be 0.40 and 0.60. The estimated power based on these assumptions is 0.63 at the district level, but is 0.99 for the overall study. Using the most favourable conditions in which 1000 people are enrolled per district, are equally divided among the two groups, and the proportions of the behaviours are 0.00 and 0.20, the power estimate is 1.00 even at the district level. Based on these power calculations it was determined that the sample size was adequate.

3.5 SITE LOCATIONS

The three districts were chosen for their geographical diversity and the possibility of being able to identify local collaborators and utilize existing human resources and logistical networks. Figure 3-1 indicates the districts and their proximity to the capital of Kenya, Nairobi, from which the study was supported.

[3] The minimum sample size was based upon the needs of the larger study, more specifically to find a 5% prevalence of arboviruses in the community (Coldren, Ofula et al., 2005).

The Busia district, in the Western Province, is also part of the trans-Africa highway on the border with Uganda and approximately an eight hour drive from Nairobi on a newly improved road. The district includes part of Lake Victoria and has a relatively fluid border with Uganda so has previously had a reputation for illicit activity until the Ugandan and Kenyan police were given the right of pursuit across the border. The population here is predominantly Luo and Lua tribes who practice polygamy, wife inheritance and sexual intercourse to mark occasions such as harvests, marriages, and funerals. The Busia district is a largely agrarian community with some fishing, and business which arises from the flow of cross-border traffic into and from Uganda.

The Malindi district is in the Coast Province of Kenya, approximately a twelve hour drive from Nairobi, over a mostly sealed but badly potholed road that leads to the frequent vehicle accidents and car-jackings which occur. It is also the main transport route from the coastal city of Mombasa, through Nairobi and either into Uganda or Tanzania, so it is busy and used by many semi-trailers which are too large for certain sections of the road. The Malindi district is predominantly Swahili-Muslim and Giriama with an economy that relies on tourism, agriculture and fishing. Many superstitions and traditional practices are still observed, as evidenced by a series of witch burnings in the 90's (Kahakani, 1996, August 19 August 19).

The Samburu district, is located in the Eastern Province of Kenya. The country is semi-arid and predominantly populated by nomadic pastoralist tribes, including the Samburu, and the scene of sporadic tribal conflict, usually involving cattle raids. It is approximately an eight hour drive from Nairobi, most of it on unsealed road that floods during the rainy season and becomes impassable. The Samburu mostly live in '*manyattas'* which consist of three to twelve families with an average of 15 individuals per family. Interaction between humans and animals, both domestic and wild, migratory patterns and traditionalist nomadic lifestyle make it difficult to ensure the continuation of education and consistency of health services.

Figure 3-1
Map of Kenya and study sites – Busia (Alupe), Samburu and Malindi

3.6 SITE PREPARATION

The various provincial and district administrative levels of the Kenyan Ministry of Health were approached in each of the areas, where it was intended the study be conducted, to provide them with information and gain permission. Approved protocols from the Kenyan Scientific Review Committee and Ethical Review Board were handed over (SSC Protocol No 831, 2003), reviewed and explained. This was done predominantly by the principal investigators.

Local collaborators were identified in each of the three districts to assist with community entry. All of the collaborators were from these districts, spoke local tribal languages and were respected within these communities. Their role was to maintain

contact with the various community administrative levels, to explain the study and obtain assent and support. Approaching the local administration was an important step in the survey process as it is necessary to be aware of and sensitive to the various community levels – district officer, chiefs, sub-chiefs and village elders – to have a chance at success. The local collaborators made contact with the location and sub-location chiefs and set up meetings to acquire these lists that were used in the sampling frame. Accurate lists of villages in the sub-locations were difficult to find. In fact, one sub-location that was randomly selected was in fact zoned to be in another district, according to the sub-location chief, despite the list obtained from the district administration office. Therefore, another sub-location was randomly selected. It was generally the local collaborators who made initial contact with the chiefs and the communities and organized the schedule for meetings with the principal investigators of the study.

Acquiring the lists of villages and populations required permission from the district-level administration before traveling to each sub-location with the local collaborators to meet the chief to explain the study and the reasons for needing the lists. It should not be assumed that because a group of researchers desires to undertake a study, especially about health related issues, that this is necessarily going to be well received. There is often some suspicion about where the researchers are coming from, which organization they are representing and what they will do with the information they obtain. This is not totally unwarranted as there were anecdotes of similar situations where study results were used for other purposes than originally explained, or the groups of researchers were never heard from again. Also, HIV/AIDS has changed the dynamic of many communities that regard outsiders with great mistrust and are understandably wary about what some information is intended for and where it may end up. This scenario reinforces the need to enter communities carefully, act transparently and was mostly the reason for making villages, rather than households or individuals the enumeration units in this study, to make the best effort possible to promote voluntary enrollment.

Selection bias was considered when requesting the assistance of volunteers for the study. However, the sensitizing of communities with cooperation from chiefs and local collaborators was a positive factor and the participants were mostly representative of the adult population with a breakdown of 55% of the known female population

participating and 50% of the known male population participating. A detailed breakdown of the population and sample is described in Chapter 4.

'*Barazas*', or community meetings, were the main source of sensitizing the members of the communities to the survey. Community members were given an opportunity to ask questions regarding participation in the study to try to allay any misinformation and superstition. Despite the teams' best attempts, this did not always work. Some opposition and skepticism were encountered due to misinformation that had spread among some communities about the activities of the study. At one site misinformation led community members to believe the study was a malaria study for children and that the purpose of the study was to test for malaria and provide curative medication. Once these misperceptions were corrected, many community members became angry and refused to participate. Other communities believed the study team was a 'medical camp' and that the purpose was to diagnose and treat disease and illness. A number of community members were also displeased that the study was not paying participants or giving out free medication, which of course is unethical and was not part of the approved study protocol. Sometimes an individual would arrive stating they were a chief or elder and demand a gratuity. This problem was easily solved once the interloper discovered the involvement of the real chief or other community leaders, again highlighting the importance of community entry. At more than one site, and usually to the great amusement of the volunteers who had already arrived, the team was also cursed or threatened by a 'local character'.

Areas were designated by local leaders including the assistant chief and village elders to set up the study. These areas were usually school buildings or some other kind of sheltered area with a large communal area outside in the vicinity of the village that was due to be surveyed. Often classrooms were emptied and the desks could be taken outside and put under trees for interviewing purposes.

3.7 TRAINING OF FIELD WORKERS

Taking into account the time taken to complete the questionnaire during the pilot, it was decided to employ ten field workers to administer the questionnaires at each site. Field workers were chosen by the chiefs and assistant chiefs from each of the six villages and then interviewed by the researcher. All field workers were required to have completed secondary school, be able to speak, read and write English, speak, read and write Kiswahili, and speak the local vernaculars required. The training of the field

workers was done in English and Kiswahili, and local vernacular as required, to ensure concepts and questions were understood. Field workers were selected not only for their level of education and familiarity with languages, but also for their ability to explain the aims of the study and gain rapport with prospective volunteers, their maturity and confidence with a view to dealing with the occasional aggressive or mistrustful person, their willingness to work long, intense hours and general interpersonal skills.

Training of the field workers took a minimum of one day for each new group of workers at every new village. This training was done by the researcher, a medical anthropologist and with the assistance of one of the local collaborators who was able to speak the language of the area and advise on some cultural matters. The overall aims and objectives of the study were explained to the field workers in great detail, stressing the point that the study was in no way involved with HIV/AIDS, and that all respondents were to participate voluntarily.

The explanation of the consenting process and confidentiality was laborious as this is a culturally foreign concept, but great care was taken particularly in terms of field workers not coercing prospective participants. All questions and options were explained to the field workers and then a group consensus about the meaning and how this could be translated was arrived at. The process was very time consuming but extremely important. The field workers were further coached in other general points of the interviewing process, such as: introducing the study and building rapport, how to deal with interruptions and other similarly difficult situations, how to probe for more information without introducing bias, and how to record the responses.

One of the most common complaints from the field workers was that respondents would tell long stories relating to their family or illness and other topics, so they were instructed in how best to deal with these situations and how to use the information to answer the survey questions. Other specific instructions included: the purpose of specific demographic information, when to skip questions, and what to do with the participants to end the interview and what to do with the survey questionnaire.

Field workers were required to administer the questionnaire to one another so they could be supervised and ask for clarification of some of the questions or how to record some of the answers. Numerous role plays were then performed demonstrating how to deal with difficult participants or what to do when some responses were not

adequate. Once this had been completed the group reviewed the difficulties and issues and looked for ways to resolve these.

3.8 DATA COLLECTION AND SUPERVISION OF FIELD WORKERS

Data was collected during a person-to-person interview administered questionnaire between a study field worker and member of the designated village. Only those from the designated village were able to be included in the study and only those were 18 years or over, had lived in the village for a minimum of five years and consented. The field work was conducted over a period of 6 weeks with between 3 to 5 days spent at each village site.

Each participant had the study explained to them, the risks and benefits, and was then given the opportunity to consent to participate. If participants were literate they were required to sign and date an English and, a separate, Kiswahili version of the consent forms, as found in Appendix B. If subjects were illiterate they were required to be consented in front of a third person, or witness, who would sign the 'Witness to Consent Form' to acknowledge that an accurate explanation was given to the participant who had consented and was not coerced, see Appendix C. The witness was required to be able to understand the language used for this, that is both English and Kiswahili or the vernacular. Illiterate subjects who were unable to make a mark were required to use a stamp pad to make an imprint of a finger on the consent forms.

Generally, the study group was set up around a building of some type where the forms and other equipment could be kept and participants would wait outside in a larger communal area. When it was their turn they were walked off with one of the field workers and sat down under a tree or in the shade of a building. Once subjects had consented and had completed the questionnaire interview, the field worker brought the participant to a central area to hand over the questionnaire to a study member where it was numbered for the master list and stored. At this point the questionnaire was reviewed by one of the study team for inaccuracies, questions missed or other problems that could be resolved immediately. One hundred percent of the questionnaires were reviewed.

Interviews between field workers and participants were observed on an impromptu basis and random post-interview discussions took place to point out issues, or review issues with the questionnaires and also to motivate the field workers. Each

morning and afternoon during a group meeting, the day's activities were planned or reviewed and any difficulties discussed.

3.9 VARIABLES

This section outlines the variables used in this study. All of the independent and outcome variables are defined and described in terms of their use in this study and the consideration that went into their selection. As explained earlier analysis of the data was descriptive using numbers and percentages, and analytical, using univariate and multivariate techniques including multiple logistic regression. Multiple logistic regression was performed as the study data was prevalence data and the investigation involves calculating the strength of the relationship between many independent variables and their effect on a number of outcomes. Logistic regression is also expedient and its regression estimates can readily be transformed into odds ratios estimates.

As they appear in the questionnaire tool, the outcome variables are based upon questions of the need for treatment, access to treatment, treatment preferences and whether treatment was available. The subsequent data was then restructured to answer more specific questions to facilitate analysis. The restructuring was designed to simplify the analysis without loosing the meaning of the data collated and therefore effect the conclusions drawn from the information.

Many of the independent variables were categorical, but were converted into dichotomous variables to better facilitate their use for univariate and multivariate analyses. The two exceptions to this were the variables age and district. Age was divided into four categories and district into three, one for each district. Other categorical variables were tabulated and then divided according to the needs of the study, and by interpreting associations based upon univariate analysis and exploiting natural divisions in the data. The aim of this was to allow sufficient numbers to maintain the power of the study. In this way, it is feasible to be able to make more definitive statements about the possible strengths of the associations between the study variables and better facilitate explanation of the factors overall.

3.9.1 Outcome Variables

Health care seeking behaviour and unmet health need were broken down into a number of outcome variables to be specifically investigated during the analysis. These

variables corresponded directly to questions asked during the survey, as did the possible answers of respondents which were a mix of dichotomous and categorical. These are displayed in Table 3.1.

The first dependent variable involved asking respondents if they were sick and sought treatment. This variable provides a dichotomous result in that respondents may answer either *yes* or *no*.

> Have you been ill in the past three months and did you seek treatment?
>
> Has a member of the household been ill in the past three months and did they seek treatment?

If respondents answered *yes* to being ill and seeking treatment, they were asked where they had sought treatment.

> Where did you seek treatment?
>
> Where did members of the household seek treatment?

The treatment options available for respondents were: self-treatment, shop, duka la dawa, government hospital or health centre, private hospital or health centre, government clinic or dispensary, private clinic or dispensary, traditional healer or other. To increase the power of the information gathered these options were divided into dichotomous variables for further analysis. These were broken down into formal and informal, where formal was a government or private hospital, health centre, clinic or dispensary, and informal was treated by self, shop, duka la dawa or traditional healer. And public and private, where public includes government hospital, health centre, clinic or dispensary and private is private hospital, health centre, clinic or dispensary as well as self, shop, duka la dawa, or traditional healer.

The breakdown of these options, into formal and informal health and medical services (Amin et al., 2003; Green, 2000; Ha et al., 2002; Henrard, 1996; Ndyomugyenyi et al., 1998; Ramachandran & Shastri, 1983), and public and private health and medical services (Birungi et al., 2001; Giang & Allebeck, 2003; Ha et al., 2002) is a well used and accepted one in the literature.

Respondents were further asked about their preferences for treatment if they were ill. The aim of this question was to gauge if people had access to the treatment service or facility of choice. Respondents were asked:

> If you had a choice where would you seek treatment?
>
> If you had a choice where would you seek treatment for another member of the household?

Again, the possibilities and therefore outcomes were: shop, duka la dawa, government hospital or health centre, private hospital or health centre, government clinic or dispensary, private clinic or dispensary, traditional healer or other. These were once more ascribed to formal and informal, public and private, to increase the power of the variable.

One other important question is whether the health needs of respondents are being met. This outcome variable is based upon whether participants report receiving all the treatment they needed for themselves and for the members of their household. If a participant reported being sick and seeking treatment, they were asked if they received all the treatment they needed and the same if it was reported that a member of the household was sick and sought treatment. The response is recorded as either *yes* or *no.* These two dichotomous variables were also condensed into an overall dichotomous variable for *all* those who were sick and sought treatment and whether they reported receiving all the treatment they needed. As with the other variables generated this is a subjective response by participants who were asked:

> If you have been ill in the past three months and sought treatment, were you able to get all the treatment you needed?
>
> If a member of the household has been ill in the past three months and sought treatment, were they able to get all the treatment they needed?

Table 3.1
Outcome Variables Investigated in This Study and Their Levels for Statistical Analysis

Dependent variables as corresponding to questions in the questionnaire tool	Possible responses as corresponding to the questionnaire tool	Variable levels as used in statistical analysis	Dichotomous or categorical variables used in statistical analysis
Individual/member of the household that reported being sick and seeking treatment in the past three months.	No Yes	No Yes	No Yes
Individual/member of the household that reported being sick and sought treatment in the past three months in the formal sector.	Treated self Shop Duka la dawa Government hospital/health centre Private hospital/health centre Government clinic/dispensary Private clinic/dispensary Traditional healer Other	Government/private hospital Government/private health centre Government/private clinic Government/private dispensary Treated self Shop Duka la dawa Traditional healer	Formal Informal
Individual/member of the household who reported being sick and sought treatment in the past three months in the public sector.	Treated self Shop Duka la dawa Government hospital/health centre Private hospital/health centre Government clinic/dispensary Private clinic/dispensary Traditional healer Other	Government hospital/health centre Government clinic/dispensary Private hospital/health centre Private clinic/ dispensary Treated self Shop Duka la dawa Traditional healer	Public Private
Individual/member of the household that reported they would choose to seek healthcare in the formal sector if they were sick.	Treated self Shop Duka la dawa Government hospital/health centre Private hospital/health centre Government clinic/dispensary Private clinic/dispensary Traditional healer Other	Government/private hospital Government/private health centre Government/private clinic Government/private dispensary Treated self Shop Duka la dawa Traditional healer	Formal Informal
Individual/member of the household that reported they would choose to seek healthcare in the public sector if they were sick.	Treated self Shop Duka la dawa Government hospital/health centre Private hospital/health centre Government clinic/dispensary Private clinic/dispensary Traditional healer Other	Government hospital Government health centre, clinic, dispensary Private hospital Private health centre, clinic or dispensary Self Shop, duka la dawa Traditional healer	Public Private
Individuals/member of the household that reported they received all the treatment needed.	No Yes	No Yes	No Yes

3.9.2 Independent variables

This study researches factors that impact upon the use of health and medical services, health seeking activities and possible unmet health needs in rural areas of Kenya. A review of the literature concerning health seeking behaviour from various settings finds the recurrence of a number of factors which appear to have some influence on this behaviour. Some of these factors were chosen to initiate the investigation. Gender, literacy, education level, and income have been shown to be consistent features of health seeking behaviour usually in terms of socio-economic status, so these were investigated in this study within our source population. Each of these variables is presented as a dichotomous variable and how this was achieved is explained in detail. Table 3.2 displays the independent variables used in this data analysis. Column one names the variable and the corresponding question from the questionnaire tool. Column two displays all of the answer options for the respondent as presented in the questionnaire. Column three shows the division of possible responses and how they reflect column four which presents the dichotomous or categorical variable used in the data analysis.

For the purposes of this analysis, gender is already a dichotomous variable, that is, either female or male.

Literacy is the next independent variable and is also taken directly from the questionnaire tool. Questions asked are 'Can you read or write a simple line?' and 'How easily can you read a newspaper?' Response to the first question is a dichotomous 'yes' or 'no', while the second question is a categorical variable with possible responses being 'easily', 'with difficulty', or 'not at all'. A further dichotomous variable was created with information from both of these questions and required the individual to answer both *'no'* they could not read or write a simple line and could *'not at all'* read a newspaper.

Education level has been divided into a dichotomous variable describing *any* type of formal education or *no* formal education at all. Taken directly from the questionnaire tool, education level is a categorical variable which has the possibility of being either: none, primary incomplete, primary complete, secondary and above, or don't know. The category 'don't know' was excluded from multivariate analysis or

modeling. The number is few (n=16 or 1%). Initially the 'don't knows' were included in the calculations, however this actually diluted the results as the 'don't knows' were diverse in their demographic qualities and characteristics were difficult to impute. Overall, inclusion or removal did not change any of the preliminary results.

Means of income was of interest during the data analysis. Means of income looked at two different elements of income, that is, *who* provided income to the household and *what* activities provided income to the household. Who provided income was again taken directly from the questionnaire tool where responses are: husband, wife, children, others in household, others outside the household, and another source. What activities provided income reflected: formal income, crops from household, livestock from household, small scale business, large scale business, assets owned and other sources. After an initial inspection of the data it was determined that regularity of income may be a better determinant of health status.

There has always been difficulty with obtaining accurate self-reported information regarding income. Some of this is done purposefully by respondents in the belief they may acquire some secondary gain for under estimating their income, or over inflating it, and some is recall bias. There were a number of options in the questionnaire for respondents to report income, as the calculations were run the more options that were included meant the less power that could be assigned to the variable. The focus of the question of income for this study was not who provided the income and not how much income there was, given reliability issues, and the different costs of living and employment alternatives available to respondents in their districts. The concern was more if consistent income affected respondents' health related activities. Therefore each of the means of income was delineated into a dichotomous variable reflecting 'regular income' as compared to 'not regular', 'infrequent' or 'no income'. The 'not regular' category was included to capture those respondents that perhaps did not get monthly income, but reliable income from agriculture or self-employment and the like.

From an extensive review of the literature and from being present at all the field sites, supervising interviews and reviewing the completed questionnaires, some other factors were included for their potential to influence the data collected and subsequent analysis of this data. These factors were incorporated in this analysis to enhance the overall strength of the investigation and to gain a more accurate picture of what was indeed shaping the behavior of individuals with regard to their health and health-related

activities. These factors were grouped together as factors related to accessibility. Of course, as stated previously, an association does not automatically infer causality, but does at least provide more information than was previously available. These factors were grouped together

Age is an important piece of demographic information especially with regard to health research. Age is a categorical variable, and for this study can be either: 18-25 years, 26-35 years, 36 – 45 years or 46+. This is consistent with most health studies including major health and demographic surveys. With age comes physiological change and the emergence of chronic illness, changes in health needs (Andrews, 2001; Bicknell & Parks, 1989) and in socio-economic status (Gwatkin, 2002; Mishra et al., 2002) which may have affected the survey respondents. Kenya is also regarded as a developing nation where health and education standards are reportedly improving (Central Bureau of Statistics (CBS) et al., 2003; Kenya National Council for Population and Development & Ministry of Home Affairs and National Heritage, 1991; National Council for Population and Development (NCPD) et al., 1999) and therefore change could be expected over a lifetime as well as the self-reports of those differing age groups with relation to their health care.

Further factors considered to be of potential interest in this investigation included accessibility to health and medical facilities by closest health facility, time taken, mode of transport, if there had been a time when participants reported they were unable to reach a health or medical facility, access to media such as radio and television, and general communication such as telephone. To facilitate analysis and increase power, these variables were collapsed into dichotomous variables as described.

Access to mass media and communication was considered as having a possible influence on health seeking behaviour. Household ownership of a radio, television, telephone or mobile phone can be assumed to reflect a certain economic standard, while access to these items may also influence exposure to public health messages or the ability to access means to attend to health problems.

Mode of transport, travel time and the type of health facility that is closest to respondents were investigated as possible indicators for measures of access and utilization of health and medical facilities. Mode of transport was divided into a dichotomous variable reflective of whether the mode of transport was motor powered or not motor powered, that is, whether participants had access to a vehicle or motorbike to

travel to health facilities, or if they traveled by foot, bicycle/*boda boda* or camel/donkey. Another independent variable included the type of health facility which was the closest. A distinction was made between hospitals and health centres versus clinics and dispensaries. Hospital and health centres are staffed with medical officers, clinical officers, nurses and public health technicians, while clinics and dispensaries will usually have a nurse. Hospitals and health centres are larger concerns and fewer in number than clinics and dispensaries. The time taken to get to these health facilities then becomes a factor and is included as another independent variable, again a dichotomous one, where travel time to the nearest health facility is divided into less than 60 minutes or more than 60 minutes.

Participants were also asked if there had been a time when they were unable to reach the closest health or medical facility. Possible responses were '*yes*' or '*no*', and again was a subjective response.

The district of origin for respondents was considered throughout calculations due to the differences in tribal culture and ethnic heritage of the populations which are the dominate group in each of the areas. These districts also receive different prioritizing with regard to support from the government and private organizations in terms of funding for schools and hospitals (Agwanda et al., 1996; Collins, Njeru, & Merne, 1996; Noor et al., 2003; Nordberg, Oganga, Kazibwe, & Onyango, 1993; Nordberg & Oranga, 1996)}. Practically, this means fewer health facilities for some regions, fewer schools, and less money spent on infrastructure. District is a categorical variable and represents one of the three districts in which the study took place, that is, Busia, Malindi and Samburu.

Table 3.2
Independent Variables Investigated in This Study and Their Levels for Statistical Analysis

Independent variables as corresponding to questions in the questionnaire tool	Possible responses as corresponding to the questionnaire tool	Variable levels as used in statistical analysis	Dichotomous or categorical variables used in statistical analysis
Gender	Female Male	Female Male	Female Male
Literacy Can you read or write a simple line? Can you read and understand a letter or newspaper easily, with difficulty or not at all?	No With difficulty Not at all Yes Easily	No With difficulty Not at all Yes Easily	No Yes
Education Have you ever attended school and which level did you achieve?	None Primary incomplete Primary complete Secondary and above Don't know	None Primary incomplete Primary complete Secondary and above	No Yes
Regular income Who provides sources of income to your household? What activities provide sources of income to your household?	Regular (each month) Not regular (some months) Infrequent (rarely) None	Infrequent None Regular Not regular	No Yes
Age How old are you?	18 – 25 years 26 – 35 years 36 – 45 years 46 + years	18 – 25 years 26 – 35 years 36 – 45 years 46 + years	18 – 25 years 26 – 35 years 36 – 45 years 46 + years
Communication Does your household have?	A radio A television A telephone or mobile	Household does not have radio, television, telephone or mobile Household has radio, television, telephone or mobile	No Yes
Motor transport Which is the way you/member of your household would normally get to the closest health facility?	Foot Bicycle/boda boda Motorbike Vehicle Camel/donkey Other	Motorbike Vehicle Foot Bicycle/boda boda Camel/donkey	Motor No Motor

Closest facility What kind of health facility is nearest to your house?	Hospital Health centre Clinic Dispensary	Hospital Health centre Clinic Dispensary	Hospital/Health centre Clinic/Dispensary
Travel time Using the way you would normally how long does it take to get to the nearest health facility?	Less than 15 minutes Between 15 and 30 minutes Between 30 minutes and 1 hour Between 1 and 2 hours More than 2 hours	Less than 15 minutes Between 15 and 30 minutes Between 30 minutes and 1 hour Between 1 and 2 hours More than 2 hours	Less than 60 minutes More than 60 minutes
Unable to reach Has there been a time when you or a member of your household needed to get to the closest health facility but was not able?	No Yes	No Yes	No Yes
District	Samburu Malindi Busia	Samburu Malindi Busia	Samburu Malindi Busia

3.10 DATA ENTRY

All questionnaires were collected in a central location and reviewed against the master list. Consent forms were paired with questionnaires. Any questionnaire that could not be paired with its consent form or where the consent form was incorrectly completed was destroyed. Using EpiInfo Version 3.2.2 (The Center for Disease Control, 2004 2004) a database was created. Data was entered manually from the completed questionnaires into EpiInfo by members of the study team. Each questionnaire was entered into two separate databases on two different computers. Both databases were then compared to determine if the information from the participant had been accurately recorded. All inaccuracies were reviewed and corrected using the original questionnaire of the participant. Data analysis was done using Stata version 8.0 (Stata Corporation, n.d.).

3.11 DESCRIPTIVE ANALYSIS

The population sourced for the study is described using raw numbers and percentages. Power calculations were also used to determine if participants could be considered representative of the population at large. The variables in this study are categorical. Where possible independent variables were split into dichotomous

variables to maintain an optimal degree of power and facilitate analysis. Dependent variables are also ascribed to a dichotomous division for the same reasons.

Calculations of numbers and percentages for each of the independent variables as per the source population are presented for their descriptive information. That is, results are presented using the actual number of respondents and the percentage this represents of the defined population.

3.12 DATA ANALYSIS

The strength of the relationship between each outcome variable and the independent variables was investigated. All outcome variables were divided into two categories: individuals and members of the household. Each outcome variable was analyzed descriptively using numbers and percentages for each of the independent variables. Each outcome variable was then investigated using univariate analysis and multiple logistic regression analysis to determine odds ratios and 95% confidence intervals. Results were considered significant at the $p <= 0.05$ level with confidence intervals that did not cross unity. Other results were taken into account however and interpreted with caution if they fell near these parameters and appeared pertinent to the overall discussion of the strength of the relationship between outcome and independent variables.[4]

All independent variables were dichotomous, except for age (18-25, 26-35, 36-45, 46+ years) and district (Busia, Malindi and Samburu). These are categorical variables. Regression models were created for each outcome variable to ascertain the strength of the relationship between the outcome variable and independent factors. As with the descriptive and univariate analysis, each model was created for each of the categories of outcome variable: individual and member of the household. Models are presented as full and final models. The full model represents the strength of the relationship between the independent variables on the outcome variable. The final model is the representation of all independent variables which are significant at $p<0.05$

4 For a discussion on statistical significance and measures of the strength of an association see Szklo and Nieto (2000, p. 416-9) The inference that there is no association when the association is not statistically significant (or when the confidence interval overlaps the null hypothesis value) fails to consider the important fact that the likelihood of the values within the confidence interval is maximum for the point estimate.(p.417)

after the stepwise removal of the independent variables that were not significant. All tables will be presented in the Results section.

3.13 SUMMARY

This chapter has outlined the sample design used for this study and the reasons for this. An overview has been given of the sampling technique, sample size determination and data collection, entry and analysis techniques defining independent variables, dependent variables and potential confounding factors. An explanation has been presented for the choice of study sites, the preparations undertaken at these sites, the training and supervision of field workers and the management of on-site collaborators. The questionnaire tool is presented as Appendix A.

Results of the descriptive analysis of the study participants will be presented in the following section. The study participants will be described by gender, literacy competence, reported education level, provision of regular income, age, access to communications, access to motorized transport, closest health facility, time taken to travel to health facilities, if respondents received all the treatment they needed and their geographical district, as factors associated with accessing health and medical facilities for those individuals that were eligible and consented to take part in the study.

CHAPTER 4
RESULTS
AGGREGATE LEVEL DATA

4.1 DESCRIPTIVE ANALYSIS: FACTORS INFLUENCING HEALTH CARE SEEKING BEHAVIOUR AND UNMET HEALTH NEEDS

Health care seeking behaviour is defined in its broadest terms (Ahmed et al., 2000) as relating to health care access, service use, health outcomes and the way in which people respond to their perceived ill health. Distinctions are made between formal and informal settings and between private and public settings for seeking treatment. Participants are asked about their preferences for seeking health care.

Unmet health needs are defined in their most conservative form, and only as resulting from a negative response to a direct question in the questionnaire, 'did you receive all the treatment you needed?'. This negates any third person opinion as to whether the respondent was answering correctly or informatively. The appropriateness of accepting this subjective response has been discussed in the literature review.

Results from the data collection and subsequent analysis of the variables considered will be presented here. Results will be presented descriptively as numbers and percentages to describe the population and variables of interest. The results of further univariate and multivariate analysis including multiple logistic regression models will be presented in successive sections.

4.1.1 Description of the Population

All eligible and consenting adults from each village involved in the study were enrolled. The number of participants per village ranged between 118 and 281 individuals. It was difficult to consent and complete the questionnaire for more than 100 people per day. The maximum number of enrollments for one day was 127 in Magarini, Malindi district. Generally, the number of participants was greater for day one and two at each of the sites and would then taper off over subsequent days. Between three to five days of data collection took place at each of the village sites. A

total of 1141 valid samples were collected. A breakdown of the three districts, the villages that were sampled and the number of eligible participants is indicated in Figure 4-1. The number of the total adult population for each village in each district is indicated and the number of those that participated in the study. The percentage this represents of the total population is also indicated.

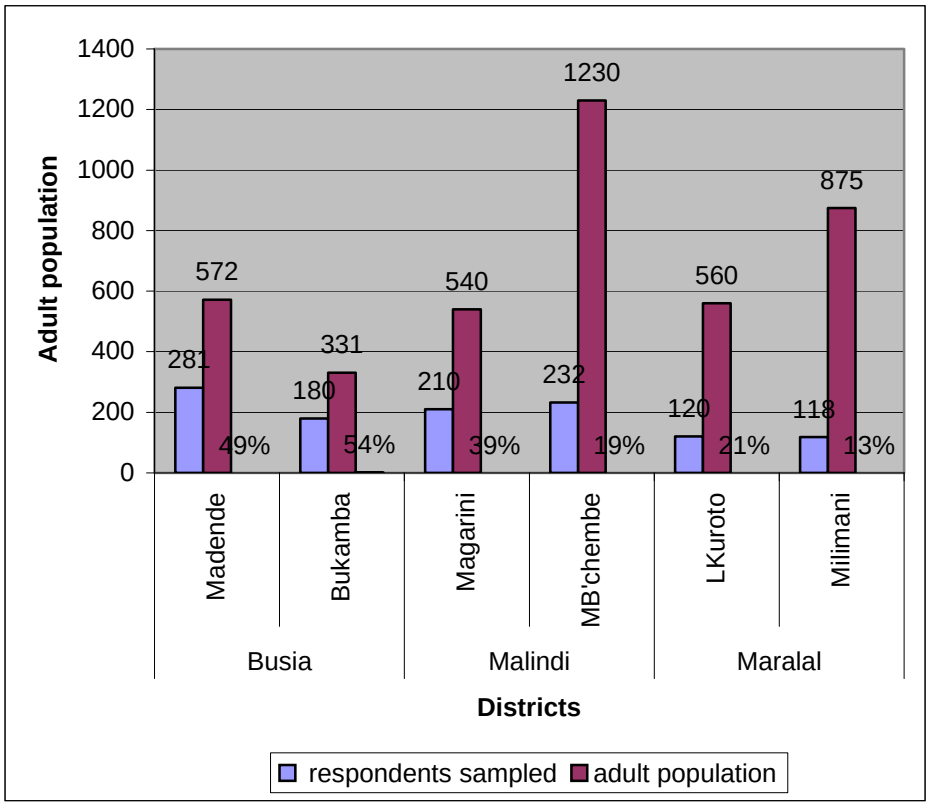

Figure 4-1
Adult population and number of participants by village and district

4.1.2 Participants

Of a possible adult population of 4108, 1141 (28%) eligible participants were recruited. Given the actual sample sizes and the number of possible participants from the adult population, power calculations were performed using a 20% difference as being significant with an alpha set at 0.05. Power was calculated to be essentially 1.00. It is therefore believed that if there was a significant difference, the study would have been able to detect it.

4.1.3 Variables Under Investigation

Gender

Of the 1141 subjects enrolled, gender was available on 1139. Of these, 731 (64%) were female and 408 (36%) were male. Some differences were noted based on village, with the percentage of males varying from 31% - 43% and females varying from 57% - 69%. These differences were statistically significant (Chi2 p=0.046). But this difference was not present when data was aggregated at the district level (p=0.909). Power calculations performed using the 20% difference calculated the power to be essentially 1.00, indicating that if there was a significant difference due to gender, the study would be able to detect it.

Literacy

Eight hundred and fourteen (814) participants answered the question regarding ability 'to read or write a simple line?' The questionnaire asked for only those who had no schooling to complete this question, however 438 of these 814 reported having no education. Of respondents, 492 (60%) report being unable to read a simple line while 322 (40%) report being able to. Of the 439 respondents who had not obtained any formal education, 424 (97%) report being unable to read a simple line. If we assume all non-respondents are able to read a simple line, then the literacy level is at most 57%, significantly lower than has been reported 5 (Institute for Statistics, 2002; Institute for Statistics Literacy and Non Formal Education Sector, 2002).

One thousand one hundred and thirty-three (1133) subjects responded to the question describing how easily they could read a newspaper, making it a more completely reported variable. Of these, 487 (43%) report not being able to read a newspaper at all, 220 (19%) report being able to read with difficulty, and 426 (38%) report being able to read a newspaper easily.

As there are some inconsistencies in the answers, a new dichotomous literacy variable was created that is positive for those who report being unable to read or write a simple line AND are unable to read a newspaper. Four hundred and sixty-three (463) or 41% of all individuals report being unable to read a simple line and being unable to read a newspaper at all, giving a literacy rate as high as 59%. This again varies by gender,

[5] [5] Youth (15-24 years) literacy for both sexes in Kenya was reported for 1980 at 79% and in 2002 at 96%. Adult literacy for 2002 was reported as 79% for females and 90% for males (UNESCO).

age, and district (p<0.001) with overall male literacy at 78% and overall female literacy only at 49%. Literacy for 18-25 years was 76%, 26-35years was 70%, 36-45 years was 53%, and >45years was 43%. At the district level 75% of participants in Busia report being able to read and write a simple line and read a newspaper easily, 59% in Malindi, and only 30% in Samburu.

Table 4.1
Percentages of the Sample Population by Gender, Age and District that Met the Criteria for Literate and Illiterate.

	Gender			**Age**				**District**		
Literacy	Female	Male	Total	18-25	26-35	36-45	45+	Busia	Malindi	Samburu
Literate	49	78	57	76	70	53	43	75	59	30
Illiterate	51	22	43	24	30	47	57	25	41	70
	100	100	100	100	100	100	100	100	100	100

Education

Overall, 439 (38%) participants reported no schooling, 357 (31%) reported primary incomplete, 167 (15%) reported completing primary school, 162 (14%) reported secondary or above education and 16 (1%) were not sure.

Table 4.2
Percentages of the Sample Populations by Gender, Age and District and their Reported Level of Education.

	Gender			**Age**				**District**		
Education level	**Female**	**Male**	**Total**	**18-25**	**26-35**	**36-45**	**45+**	**Busia**	**Malindi**	**Samburu**
None	47	23	38	24	27	44	55	21	40	69
Primary incomplete	31	32	31	42	36	21	25	41	32	12
Primary complete	12	20	15	18	18	16	9	17	17	4
Secondary and above	9	24	14	17	18	16	8	20	11	8
Don't know	1	2	1	-	1	2	2	-	-	7
	100	100	100	100	100	100	100	100	100	100

To increase the power and to allow for later multivariate analysis, a dichotomous education level variable was created and was defined as any formal education versus no formal education. This was found to be more significant in its effects than other methods of dichotomous variable creation. Of 1125 respondents who knew their education level, 686 (61%) had received at least some type of formal education, while 439 (39%) had no education at all. Once more power calculations were performed using a 20% difference and these calculated the power to be essentially 1.00, indicating that if there was a significant difference in education, the study would be able to detect it.

Regular Income

Only 637 (56%) participants of a possible 1141 reported having a regular income source. Income was divided into: regular, not regular, infrequent, and none. For the purposes of this analysis 'regular income' included income that was considered 'regular' or 'not regular'. This division was made as 'regular income' was described as income obtained on a monthly basis, while 'not regular' income could also have included seasonal income and fluctuations from farming or selling off livestock, so seasonal rather than monthly, but still considered by respondents to be regular.

Subsistence farming was stated to be the most common occupation (46%), but only 52% of respondents reported a regular income from this. Home duties was the occupation of record for 15% of respondents, unemployed (9%), small business (8%), pastoralist (7%), casual labourer (6%), formal employment (3%), civil service (3%), commercial farming (2%), transport, large business and tourism all under 1%. Income was obtained from crops (52%), or livestock (28%), or business and assets (13%), other income was obtained infrequently by some type of casual labour (making charcoal, fishing, carrying water, tapping palm wine) or from another person outside the household.

Table 4.3
Numbers and Percentages of the Sample Population by Regular Income and Sources of Income

	Regular Income							
	Crops	**Livestock**	**Casual Labour**	**Business & Assets**	**Formal Occupation**	**Busia**	**Malindi**	**Samburu**
Yes	598 (52%)	316 (28%)	63 (6%)	144 (13%)	65 (6%)	293 (64%)	425 (96%)	96 (40%)

Note: Some respondents had multiple sources of regular income.

Age

The number of participants was rather evenly divided among the various age categories with 266 (23%) being 18-25, 286 (25%) being 26-35, 219 (19%) being 36-45, and 370 (33%) being 46 or older. Again, there were some differences in age distribution among the different villages (Chi 2 $p < 0.030$) but once more this was not significant at the district level (Chi 2 $p < 0.104$). The age distribution varies significantly between the genders (Chi 2 $p < 0.001$) with a greater percentage of men than women coming from the 46 years old and above age bracket.

Table 4.4
Distribution of Females and Males per Age Category

Age	Female	Male	Total
18-25	182 (25%)	84 (21%)	266 (23%)
26-35	205 (28%)	81 (20%)	286 (25%)
36-45	140 (19%)	78 (19%)	219 (19%)
46+	204 (28%)	165 (40%)	370 (33%)
	731 (100%)	408 (100%)	1141 (100%)

Communications

Communications is defined as household ownership of a radio, television or telephone. One thousand one hundred and forty-one (1141) participants responded to the question about ownership of each of these. To facilitate analysis, the variable was

divided into a dichotomous variable of either *yes* or *no* as pertaining to ownership of any of these. Eight hundred and twelve (812 / 171%) respondents reported owning one.

Table 4.5
Numbers and Percentages of the Sample Population by Ownership of a Radio, Television or Telephone

Radio		**Television**		**Telephone**	
Yes	**No**	**Yes**	**No**	**Yes**	**No**
808 (71%)	333 (29%)	89 (8%)	1052 (92%)	87 (8%)	1054 (92%)

Motorized Transport

Motorized transport referred to the mode of transport respondents reported using to get to the closest health facility. Motorized transport was also divided into a dichotomous variable as to whether the mode of transport was motor powered or not motor powered, that is, whether participants had access to a car or motorbike to travel to health facilities, or if they traveled by foot or bicycle/*boda boda*.

Table 4.6
Numbers and Percentages of the Sample Population by Mode of Transport

Foot	**Bicycle/boda boda**	**Motorbike**	**Vehicle**	**Camel/donkey**
693 (61%)	313 (27%)	65 (6%)	68 (6%)	2

Closest Health Facility

One thousand one hundred and forty (1140) respondents answered this question. To create a dichotomous variable a distinction was made between hospitals and health centres versus clinics and dispensaries. The level of care and type of facilities are also distinctive.

Table 4.7
Numbers and Percentages of the Sample Population by Closest Health Care Facility

Hospital	**Health centre**	**Clinic**	**Dispensary**
218 (19%)	145 (13%)	286 (25%)	491 (43%)

Travel Time

Respondents were asked how long it would take for them to travel to the nearest health facility using the means of transport they would normally use. One thousand one hundred and forty-one (1141) respondents answered. These categories were divided into another dichotomous variable indicating if it took respondents more or less than 60 minutes to get to the nearest health facility.

Table 4.8
Numbers and Percentages of the Sample Population by Travel Time to the Nearest Health Facility

< 15 min	15 – 30 min	31 – 60 min	1- 2 hours	>2 hours
218 (16%)	292 (26%)	307 (27%)	263 (23%)	100 (9%)

Ever Unable to Reach the Nearest Health Facility

This question was asking for a subjective response to perceived illness and the subsequent outcome. Respondents were requested to answer *yes* or *no* for themselves and for a member of their household and if they could recall a time when either was sick and needed treatment but was not able to get to the nearest health facility.

Table 4.9
Numbers and Percentages of the Sample Population and Being Unable to Reach the Nearest Health Facility

	Has there been a time when you needed to get to this health facility but was not able to?	Has there been a time when a member of your household needed to get to this health facility but was not able to?
No	641 (56%)	675 (60%)
Yes	494 (44%)	460 (40%)
Total	1135	1136

District

District was considered as having potentially confounding results due to the differences in the tribes and cultural heritage of the populations which are dominant in the various areas. There is also more wealth and a greater proliferation of assistance in some districts as opposed to others, including health, education, and government services, and income from industries like tourism or the trans-African highway. District

is a categorical variable – Busia, Malindi, Samburu. – and each district is analysed separately.

Table 4.10
Numbers and Percentages of the Sample Population by District and Independent Variables

	Busia	Malindi	Samburu	Total
	461 (40%)	442 (39%)	238 (21%)	1141
Female	298 (41%)	281 (38%)	152 (21%)	731
Male	161 (40%)	161 (39%)	86 (21%)	408
Literacy	347 (51%)	259 (38%)	72 (11%)	678
Formal education	362 (53%)	267 (39%)	57 (8%)	686
Regular income	168 (33%)	194 (38%)	142 (28%)	637
Communications	385 (47%)	305 (38%)	122 (15%)	812
Motorized trasnport	8 (6%)	125 (94%)	-	133
Closest facility hospital/health centre	77 (21%)	82 (23%)	204 (56%)	363
Travel time <60	337 (43%)	280 (36%)	161 (21%)	778
Unable to reach	242 (46%)	180 (34%)	106 (20%)	528

4.2 DATA ANALYSIS BY OUTCOME VARIABLES

4.2.1 Outcome Variable 1: Who Was Sick and Sought Treatment?

Descriptive Analysis

As Table 4.11 shows, of 1139 respondents, 602 (53%) individuals reported being sick and seeking treatment in the past three months. A slightly higher percentage of females than males reported being sick, with 398 (55%) females and 202 (50%) males stating they had sought treatment.

There was essentially no difference in the percentage of respondents seeking health care based upon their literacy or educational level. Of those that reported being literate 354 (52%) were sick and sought treatment while 248 (54%) of those that were not literate also sought treatment. For those participants that reported having some type of formal education 366 (53%) reported being sick and seeking treatment as well as the 229 (52%) respondents that reported having no formal education. Focusing on those individuals that reported receiving regular income 351 (55%) had been sick and sought treatment in the past three months, while 251 (50%) of those that reported no regular income also sought treatment.

There appears to be higher rates of illness as participants get older, with 117 (44%) of those 18 – 25 seeking treatment, 149 (52%) of those 26 – 35 years seeking treatment, 117 (54%) of those 36 – 45 years seeking treatment, and 219 (59%) of those 46 years and above seeking treatment.

For those individuals that were sick and sought treatment, 440 (54%) reported they had access to communications, while 162 (49%) stated they did not. Seventy individuals (53%) that sought treatment reported having access to motorized transport, while 532 (53%) of those that were sick stated they did not.

Pertaining to the closest health and medical facilities more participants lived closer to a clinic or dispensary. There were 168 (47%) individuals that reported being closest to a hospital or health, while 433 (56%) of those that sought treatment report being closest to a clinic or dispensary. Of individuals that reported seeking treatment, 406 (52%) stated they had less than 60 minutes travel time to the nearest health facility while 196 (54%) reported needing to travel for more than 60 minutes.

A higher percentage of respondents were unable to reach a health facility at some time in the past. Three hundred and thirteen (60%) individuals that were sick report a time when they were unable to get to the nearest health facility, while 289 (47%) stated they had not experienced this difficulty. In the Busia district, 284 (62%) participants reported seeking treatment, in the Malindi district, 226 (51%) respondents reported seeking treatment, and in the Samburu district, 92 (39%) respondents reported they were sick and sought treatment in the past three months.

In Table 4.11, from 1137 respondents, 597 (53%) reported a member of the household had been sick and sought care in the past three months. A higher percentage of males reported a member of the household had been sick and sought treatment, with 231 (57%) males and 364 (50%) females reporting a member of their household had been sick and sought treatment in the past three months.

Respondents that were literate were more likely to report a member of their household had been sick and sought treatment, with 396 (59%) of those reporting being literate likely to have a member of the household seek care, and 201 (44%) of those reporting being not literate but having a member of the household seek medical care. Examination of education level as presented in Table 4.11 shows that 402 (59%) respondents that reported a member of the household was sick and sought treatment in the past three months had some type of formal education and 189 (43%) of those that reported having no formal education reported a member of the household was sick and sought treatment. Of those participants with regular income 357 (56%) reported a member of the household was sick and sought treatment, as did 240 (48%) respondents that reported not having regular income.

The differences based on age can be seen in Table 4.11, these were: 18-25 years, 148 (56%); 26-35years, 146 (51%); 36-45 years, 112 (51%); and 46+ years, 191 (52%). Age did not appear to be a factor for respondents reporting a member of their household had been sick and sought health care treatment in the past three months.

A larger percentage of respondents that had access to communications reported a member of their household had been sick and sought treatment in the past three months, with, 467 (58%) respondents reporting access to communications and 130 (40%) reporting they did not have access to communications. Eighty-three respondents (62%) that reported they had access to motorized transport also stated a member of the

household had been sick and sought treatment, while 514 (51%) respondents did not have access to motorized transport.

Of those that reported a member of the household had been sick and sought treatment, 149 (41%) reported a hospital or health centre and 448 (58%) reported a clinic or dispensary was closest. Living closer to a clinic or dispensary appeared to mean a greater percentage of respondents sought health care. In terms of travel time, 410 (53%) respondents reported they had less than 60 minutes travel time to the nearest health facility and 187 (52%) reported more than 60 minutes.

A higher percentage of respondents that reported a member of the household had sought treatment, also reported a time when they had been unable to reach the nearest health care facility. Three hundred and twenty-eight (328 / 62%) respondents reported they had been unable to reach the nearest health facility at some time and 269 (44%) reported this had not been an issue for them.

Again district was examined. In the Busia district, respondents reported 275 (60%) members of the household had been sick and sought treatment, in the Malindi district, residents reported 254 (58%) members of the household had been sick and sought treatment, and in the Samburu district, respondents reported 68 (29%) members of the household had been sick and sought treatment in the past three months.

Table 4.11
Numbers and Percentages of Respondents that Reported Being Sick and Sought Treatment by Independent Variables.

Independent Variables		Individual		Member of the household	
		n	%	n	%
Overall		602	53	597	53
Gender					
	Female	398	55	364	50
	Male	202	50	231	57
Literacy					
	Yes	354	52	396	59
	No	248	54	201	44
Education					
	Yes	366	53	402	59
	No	229	52	189	43
Regular income					
	Yes	351	55	357	56
	No	251	50	240	48
Age					
	18 - 25	117	44	148	56
	26 - 35	149	52	146	51
	36 - 45	117	54	112	51
	46+	219	59	191	52
Communications					
	Yes	440	54	467	58
	No	162	49	130	40
Motorized transport					
	Yes	70	53	83	62
	No	532	53	514	51
Closest facility					
	Hospital/ health centre	168	47	149	41
	Clinic/ dispensary	433	56	448	58
Travel time					
	<60 mins	406	52	410	53
	>60 mins	196	54	187	52
Ever unable to reach facility					
	Yes	313	60	328	62
	No	289	47	269	44
District					
	Busia	284	62	275	60
	Malindi	226	51	254	58
	Samburu	92	39	68	29

Univariate Analysis

The results of univariate and multivariate analyses for individuals that reported being sick and seeking treatment in the past three months are presented in Table 4.12. Univariate analysis results show age was significant with individuals that were over 46 years of age (OR = 1.86; CI = 1.35 – 2.56; $p<0.001$) and individuals 36 – 45 years of age (OR = 1.48, CI = 1.03 – 2.11, $p<0.05$) being more likely to report being sick and seek treatment in the past three months. Individuals were also more likely to have been unable to reach a health care facility at some time (OR = 1.61, CI = 1.27 – 2.04,

p<0.001). The district respondents resided in was significant, with those in the Malindi district (OR = 0.65, CI = 0.50 – 0.85, p<0.010) and those in the Samburu district (OR = 0.29, CI = 0.29 – 0.55) less likely than those in the Busia district, to report being sick and seeking treatment in the past three months. Individual respondents that reported they were sick and sought treatment were less likely to live closest to a hospital or health centre (OR = 0.69, CI = 0.54 – 0.89, p<0.005).

Univariate analysis results for members of the household (see Table 4.13) show respondents reporting on behalf of members of the household were less likely to be illiterate (OR = 0.54, CI = 0.43 – 0.69, p<0.001) and to have some type of formal education (OR = 1.88, CI = 1.48 – 2.40, p<0.001). Respondents were also more likely to report having access to communications (OR = 2.06, CI = 1.59 – 2.68, p<0.001), to live closest to a clinic or dispensary (OR = 0.51, CI = 0.40 – 0.66, p<0.001) and to report a time when a member of the household had been unable to reach the nearest health facility (OR = 1.99, CI = 1.57 – 2.54, p<0.001). The district respondents resided in was also significant, with those in the Samburu district less likely than those in the Busia district to report being sick and seeking treatment in the past three months (OR = 0.27, CI = 0.19 – 0.38, p<0.001). Finally, respondents reporting for a member of the household were more likely to be male (OR = 1.35, CI = 1.05 – 1.72, p<0.05) and to have access to motorized transport (OR = 1.58, CI = 1.09 – 2.30, p<0.05).

Multivariate Analysis

The results of multivariate regression analysis are presented in Table 4.12 and Table 4.13. Regression analysis found that age was significant for individuals that were sick and sought treatment in the past three months, with those individuals 46 years of age and over more likely to report being sick and seeking treatment (OR = 1.86, CI = 1.34 – 2.59, p<0.001) once all other variables had been controlled for. Individuals were also more likely to report a time when they had been unable to reach the nearest health facility (OR = 1.52, CI = 1.19 – 1.94, p<0.001) and were more likely to have a hospital or health centre as the closest health facility (OR = 1.15, CI = 1.01 – 1.31, p<0.005).

The district respondents came from was also found to be significant, with those respondents from the Samburu district (OR = 0.42, CI = 0.30 – 0.58, p<0.001) and to a lesser extent, those from the Malindi district (OR = 0.72, CI = 0.55 – 0.94) less likely to report being sick and seeking treatment in the past three months than those from the

Busia district. Individual respondents were also less likely to be male (OR = 0.74, CI = 0.58 – 0.96, $p<0.05$).

For respondents reporting a member of the household had been sick and sought treatment, multivariate analysis results are presented in Table 4.13. Respondents were more likely to report a time when a member of the household had been unable to reach the nearest health facility previously (OR = 2.28, CI = 1.77 – 2.95, $p<0.001$). The district of respondents was also significant with those from the Samburu district less likely than those from the Busia district to report a member of the household had been sick and sought treatment (OR = 0.33, CI = 0.23 – 0.47, $p<0.001$). Respondents that reported a member of the household had been sick and sought treatment were more likely to have access to communications (OR = 1.78, CI = 1.34 – 2.47, $p<0.001$) and to motorized transport (OR = 1.70, CI = 1.15 – 2.53, $p<0.010$). They were also more likely to state they had regular income (OR = 1.70, CI = 1.11 – 2.61, $p<0.05$) and e more likely to have a clinic or dispensary as the nearest health facility (OR = 0.71, CI = 0.52 – 0.97, $p<0.05$).

Table 4.12
Individuals that Reported Being Sick and Sought Treatment

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.82	0.65 - 1.05	0.77	0.59 – 1.02	0.74*	0.58 – 0.96
Literacy						
Yes	1.00					
No	1.06	0.83 – 1.34	1.44	0.83 – 2.48	-	
Education						
No	1.00					
Yes	1.05	0.83 – 1.34	1.30	0.75 – 2.27	-	
Regular income						
No	1.00					
Yes	1.25	0.99 – 1.58	1.16	0.77 – 1.75	-	
Age						
18 - 25	1.00					
26 - 35	1.39	0.99 – 1.94	1.33	0.94 – 1.88	-	
36 - 45	1.48*	1.03 – 2.11	1.42	0.98 – 2.09	-	
46+	1.86****	1.35 – 2.56	1.82****	1.28 – 2.59	1.86****	1.34 – 2.59
Communications						
No	1.00					
Yes	1.22	0.94 – 1.57	1.09	0.81-1.45	-	
Motorized transport						
No Motor	1.00					
Motor	0.99	0.69 – 1.42	1.07	0.73 – 1.56	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.69***	0.54 – 0.89	0.90	0.66 – 1.22	1.15**	1.01 – 1.31
Travel time						
>60 mins	1.00					
<60 mins	0.93	0.73 – 1.20	1.01	0.77 – 1.33	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.61****	1.27 – 2.04	1.54****	1.20 – 1.98	1.52****	1.19 – 1.94
District						
Busia	1.00					
Malindi	0.65**	0.50 – 0.85	0.72*	0.53 – 0.98	0.72*	0.55 – 0.94
Samburu	0.39****	0.29 – 0.55	0.45****	0.28 – 0.69	0.42****	0.30 – 0.58

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.13
Members of the Household that Reported Being Sick and Sought Treatment

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.35+	1.05 – 1.72	1.22	0.92 – 1.62	-	
Literacy						
Yes	1.00					
No	0.54***	0.43 – 0.69	0.92	0.54 – 1.59	-	
Education						
No	1.00					
Yes	1.88***	1.48 – 2.40	1.10	0.63 – 1.90	-	
Regular income						
No	1.00					
Yes	1.14	0.90 – 1.44	1.69*	1.10 – 2.61	1.70*	1.11 – 2.61
Age						
18 - 25	1.00					
26 - 35	0.83	0.59 – 1.16	0.81	0.57 – 1.16	-	
36 - 45	0.82	0.57 – 1.18	0.82	0.55 – 1.21	-	
46+	0.84	0.61 – 1.15	0.88	0.61 – 1.26	-	
Communications						
No	1.00					
Yes	2.06***	1.59 – 2.68	1.50*	1.11 – 2.01	1.78****	1.34 – 2.37
Motorized transport						
No Motor	1.00					
Motor	1.58+	1.09 – 2.30	1.73**	1.16 – 2.58	1.70**	1.15 – 2.53
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.51***	0.40 – 0.66	0.72*	0.53 – 0.99	0.71*	0.52 – 0.97
Travel time						
>60 mins	1.00					
<60 mins	1.04	0.81 – 1.34	1.02	0.77 – 1.35	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.99***	1.57 – 2.54	2.25***	1.72 – 2.93	2.15****	1.67 – 2.77
District						
Busia	1.00					
Malindi	0.92	0.71 – 1.20	1.07	0.79 – 1.46	-	
Samburu	0.27****	0.19 – 0.38	0.37****	0.23 – 0.59	0.33***	0.23 – 0.47

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

4.2.2 Outcome Variable 2: Where Did Individuals and Members of the Household Seek Treatment?

There were 625 individuals that reported where they obtained their health care. The largest percentage of health care was sought by individuals from a government hospital or health centre, with 189 (30%) individuals using a government hospital or health centre in the past three months. Individuals also used other health care options. Of these, 13 (2%) treated themselves, 72 (12%) received treatment from a shop, 67 (11%) from a pharmacy, 17 (SSC Protocol No 831) from a traditional healer, 48 (SSC

Protocol No 831) from a private hospital or health centre, 132 (21%) from a government clinic or dispensary, and 87 (14%) from a private clinic or dispensary.

There were 611 participants that reported where members of their household sought health care. Of these, 9 (1%) treated themselves, 47 (8%) sought treatment in a shop, 59 (10%) at a pharmacy, 8 (1%) at a traditional healer, 193 (32%) at a government hospital or health centre, 35 at a private hospital or health centre, 163 (27%) at a government clinic or dispensary, and 96 (16%) at a private clinic or dispensary. To assist in the analysis of this data, dichotomous variables were created to reflect health care options and so were divided into: formal and informal, public and private.

Use of Formal or Informal Health Services

Descriptive Analysis

Out of the 625 individuals that reported where they sought health care in the past three months, 456 (73%) respondents utilized a formal health care facility. As can be seen in Table 4.14, of these a higher percentage of females than males sought treatment from the formal health care sector, with 314 (76%) females and 142 (67%) males.

Two hundred and fifty eight (258 / 71%) individuals that reported they had been sick and sought treatment from the formal health care sector stated they were literate as compared with 198 (76%) respondents that said they were not literate. Two hundred and sixty four (264 / 70%) respondents that sought treatment in the formal health care sector reported having some formal education, while 184 (76%) individuals using formal health services reported not having any formal education. There appeared little difference between individuals seeking health services from the formal sector and regular income, with 260 (71%) individuals that reported they received regular income, and 196 (75%) individuals that reported they did not.

No difference was noted between the percentages of the age categories of respondents seeking health care in the formal sector. Eighty eight (73%) respondents 18-25 years sought formal sector health care services, 110 (72%) of those 26-35years, 92 (74%) of those 36-45 years, and 166 (73%) of those 46 years and above.

Three hundred and thirty four (73%) individuals that used formal health care services had access to communications, while 122 (72%) individuals that reported they did not have access to communications also used formal health care services. Motorized transport was available for 51 (71%) respondents that used formal health care

services as compared to those 405 (73%) respondents that did not have access to motorized transport and used formal health services.

A larger number of respondents reported that a clinic or dispensary was the closest health care facility (318) as compared with a hospital or health centre (138). However, the percentage of respondents that sought formal health care and used a hospital or health centre (77%) was greater than those that stated they used formal health care, but lived closest to a clinic or dispensary (71%). A greater percentage of individuals that used formal health care services reported they had less than 60 minutes to travel to the nearest health facility, with 324 (76%) reporting less than 60 minutes travel time and 132 (66%) respondents reporting a travel time of more than 60 minutes to the nearest health facility. Two hundred and thirty-five (235 / 72%) individual respondents that used formal health services reported being unable to reach a health facility at one time, while 221 (74%) said this had not been a problem.

A higher percentage of individual respondents in the Samburu district reported being sick in the past three months and seeking treatment in the formal. Eighty nine (84%) individuals from the Samburu district sought treatment in the formal health care sector, as compared with 212 (74%) individuals in the Busia district that sought treatment in the formal sector, and 155 (67%) in the Malindi district that reported they were sick and sought treatment in the formal sector.

Responses for members of the household can be seen in Table 4.14 and showed that 487 (80%) had sought treatment in the formal health care sector in the past three months. Of these respondents, 293 (78%) females and 192 (82%) males reported a member of the household used the formal health care sector.

There was no real difference based upon the literacy or education level of respondents reporting for members of the household and the use of formal health services, with 320 (79%) said to be literate, and 167 (81%) illiterate. As well, 321 (78%) reported they had some type of formal education and 158 (82%) had not. Of these 291 (79%) reported receiving regular income, but 196 (80%) did not.

The ages of those reporting for members of the household and using formal health services showed little difference. Of those 18-25 years, 122 (81%) used formal health services, 115 (76%) of those 26-35years used formal health services, of those 36-45 years, 90 (80%) used formal health services and respondents 46 years and above

reported that 160 (82%) members of the household used formal health care services in the past three months.

Three hundred and seventy eight (79%) respondents that reported a member of their household used formal health care services reported having access to communications, while 109 (83%) did not have access to communications, but a member of the household was still reported as using formal health care. A slightly lower percentage of respondents reported a member of the household used formal health services and had access to motorized transport, while 63 (74%) as compared with 424 (81%) were not able to access motorized transport.

One hundred and twenty five (81%) respondents reporting a member of the household used formal health care services stated a hospital or health centre was the nearest medical facility, while 362 (79%) reported that a clinic or dispensary was the closest health facility. Three hundred and forty three (82%) had a travel time to the nearest health facility of less than 60 minutes, while 144 (74%) had to travel longer than 60 minutes. Two hundred and seventy (80%) members of the household were reportedly unable to reach a formal health facility at some time, while 217 (80%) members of the household did not have a problem reaching a health facility.

At the district level, 221 (79%) respondents from the Busia district said a member of the household had used a formal health facility in the past three months, 199 (77%) respondents from the Malindi district said a member of the household had used a formal health facility in the past three months, and 67 (93%) respondents from the Samburu district said a member of the household had used a formal health care facility in the past three months.

Table 4.14
Numbers and Percentages of Respondents that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables.

Independent Variables		Individual		Member of the household	
		n	%	n	%
Overall		456	73	487	80
Gender					
	Female	314	76	293	78
	Male	142	67	192	82
Literacy					
	Yes	258	71	320	79
	No	198	76	167	81
Education					
	Yes	264	70	321	78
	No	184	76	158	82
Regular income					
	Yes	260	71	291	79
	No	196	75	196	80
Age					
	18 - 25	88	73	122	81
	26 - 35	110	72	115	76
	36 - 45	92	74	90	80
	46+	166	73	160	82
Communications					
	Yes	334	73	378	79
	No	122	72	109	83
Motorized transport					
	Yes	51	71	63	74
	No	405	73	424	81
Closest facility					
	Hospital/ health centre	138	77	125	81
	Clinic/ dispensary	318	71	362	79
Travel time					
	<60 mins	324	76	343	82
	>60 mins	132	66	144	74
Ever unable to reach facility					
	Yes	235	72	270	80
	No	221	74	217	80
District					
	Busia	212	74	221	79
	Malindi	155	67	199	77
	Samburu	89	84	67	93

Univariate Analysis

Univariate and multivariate analyses results are presented in Table 4.15. In univariate analysis for individuals that reported they were sick in the past three months and sought treatment in the formal sector, there were few independent variables that were significant. Respondents that had a travel time of less than 60 minutes to the nearest health facility were more likely to seek health care in the formal sector (OR =

1.65, CI = 1.14 – 2.39, p<0.010) and males were less likely to report being sick and seeking health care in the formal sector (OR = 0.63, CI = 0.43 – 0.90, p<0.05).

Results for respondents reporting about members of the household and if they were sick and sought treatment in the formal sector are presented in Table 4.16. Respondents that were reporting for members of the household living in the Samburu district were more likely to seek treatment in the formal sector (OR = 3.52, CI = 1.36 – 9.13, p<0.010). Univariate analysis also shows those reporting for members of the household were more likely to live within 60 minutes travel time of the nearest health care facility (OR = 1.66, CI = 1.11 – 2.50, p<0.05).

Multivariate Analysis

Multivariate regression analysis shows those individuals seeking treatment in the formal sector were more likely to have less than 60 minutes to travel to the nearest health facility, as compared with those that had further to travel (OR = 1.67, CI = 1.15 – 2.42, p<0.005) as seen in Table 4.15. Gender was significant in the full multiple regression model and may be interpreted with caution as the association was not robust enough to remain after stepwise regression had taken place (OR = 0.64, CI 0.42 – 0.96, p<0.05).

For members of the household, Table 4.16 shows that having less than 60 minutes to travel to the nearest health facility was important to those that used formal health care (OR = 1.88, CI = 1.24 – 2.87, p<0.005). Respondents that came from the Samburu district were also more likely to report a member of their household used formal health care services (OR = 3.80, CI = 1.46 – 9.96, p<0.010). In the final regression model, those respondents that reported a member of the household sought formal health treatment was less likely to obtain the use of motorized transport and seek formal services, than those that did not have the option of motorized transport at all (OR = 0.56, CI = 0.32 – 0.97, p<0.05).

Table 4.15
Individuals that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.63*	0.43 – 0.90	0.64*	0.42 – 0.96	0.60*	0.41 – 0.88
Literacy						
Yes	1.00					
No	1.29	0.90 – 1.86	0.64	0.28 – 1.50	-	
Education						
No	1.00					
Yes	0.73	0.50 – 1.06	0.48	0.20 – 1.14	-	
Regular income						
No	1.00					
Yes	0.74	0.52 – 1.07	0.87	0.46 – 1.64	-	
Age						
18 - 25	1.00					
26 - 35	0.95	0.56 – 1.63	0.92	0.53 – 1.60	-	
36 - 45	1.01	0.57 – 1.79	0.97	0.53 – 1.77	-	
46+	0.97	0.59 – 1.60	0.04	0.54 – 1.63		
Communications						
No	1.00					
Yes	1.09	0.73 – 1.61	1.20	0.77 – 1.87	-	
Motorized transport						
No Motor	1.00					
Motor	0.89	0.52 – 1.53	0.87	0.49 – 1.53		
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.35	0.90 – 2.03	1.24	0.78 – 1.98	-	
Travel time						
>60 mins	1.00					
<60 mins	1.65**	1.14 – 2.39	1.78***	1.19 – 2.65	1.67***	1.15 – 2.42
Unable to reach nearest facility						
No	1.00					
Yes	0.82	0.58 – 1.17	0.90	0.61 – 1.32	-	
District						
Busia	1.00					
Malindi	0.73	0.50 – 1.07	0.73	0.47 – 1.15	-	
Marala	1.88*	1.05 – 3.36	1.45	0.70 – 3.01	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.16
Members of the Household** that **Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.28	0.85 – 1.94	1.32	0.83 – 2.10	-	
Literacy						
Yes	1.00					
No	1.10	0.72 – 1.67	0.51	0.19 – 1.38	-	
Education						
No	1.00					
Yes	0.79	0.52 – 1.23	0.41	0.15 – 1.13	-	
Regular income						
No	1.00					
Yes	0.99	0.67 – 1.48	1.05	0.48 – 2.29	-	
Age						
18 - 25	1.00					
26 - 35	0.76	0.44 – 1.32	0.74	0.42 – 1.30	-	
36 - 45	0.93	0.50 – 1.71	0.78	0.41 – 1.49	-	
46+	1.06	0.61 – 1.82	0.93	0.51 – 1.68	-	
Communications						
No	1.00					
Yes	0.79	0.48 – 1.30	0.84	0.49 – 1.42	-	
Motorized transport						
No Motor	1.00					
Motor	0.68	0.40 – 1.17	0.62	0.35 – 1.10	0.56*	0.32 – 0.97
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.13	0.71 – 1.80	1.15	0.69 – 1.95	-	
Travel time						
>60 mins	1.00					
<60 mins	1.66*	1.11 – 2.50	2.10**	1.32 – 3.31	1.88**	1.24 – 2.87
Unable to reach nearest facility						
No	1.00					
Yes	1.03	0.70 – 1.53	1.13	0.73 – 1.74	-	
District						
Busia	1.00					
Malindi	0.86	0.57 – 1.29	1.02	0.63 – 1.64	-	
Samburu	3.52**	1.36 – 9.13	3.00*	1.07 – 8.44	3.80**	1.46 – 9.96

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Use of Private or Public Health Services

Descriptive Analysis

From the 625 individuals that reported they were sick and where they sought health care treatment as shown in Table 4.17, 304 (49%) had sought treatment in the private sector in the past three months. Of these respondents a slightly lower percentage of females than males sought treatment in the private sector, with 189 (46%) females and 113 (53%) males using the private sector.

Of those individuals that stated they used private sector health care, a higher percentage were literate, that is 191 (52%) reported they were literate, as compared with 113 (43%) that reported they were not literate. The education level of respondents may also have played a role in using private health care with a lower percentage 173 (46%) of respondents reporting some type of formal education, while a higher percentage of respondents 140 (58%) reported having no formal education but still using the private health care sector. Having regular income did not appear to impact upon people using the private health care sector or not, with 177 (49%) respondents reporting having a regular income, and 127 (49%) reporting they did not have a regular source of income.

Again, age did not seem to influence individual respondents and their use of private health care services. The results for the individual age groups of those that sought health treatment in the private sector were: 18-25 years, 58 (48%); 26-35years, 71 (47%); 36-45 years, 61 (49%); and 46+ years, 114 (50%).

There was no real difference in individuals reporting they used private health care services and access to communications, with 224 (49%) individuals reporting they had access to communications, and 80 (47%) reporting they did not. Those that had access to motorized transport however, had a higher percentage of respondents that sought treatment in the private sector, 58%, although the number of respondents that had access to motorized transport was fewer (42). A larger number of respondents reported not having access to motorized transport but using private health services (262), but was a lower percentage (48%) overall.

A higher percentage of those that lived closest to a clinic or dispensary stated they used private health care services with 237 (53%) reporting this. There were 67 (37%) respondents that reported a hospital or health centre was the closest health facility. One hundred and ninety seven (46%) individuals reported they had less than 60 minutes to travel to their nearest health facility, while 107 (53%) reported having further than 60 minutes to travel. There was essentially no difference in respondents using private health care services and reporting being unable to reach a health care facility at some time previously. One hundred and fifty one (50%) individuals reported they had been unable to reach the nearest health facility at some time, but for 151 (48%) this had not been a problem.

Respondents from the Samburu district had the lowest percentage of individuals that stated they used private health services with 27% or 29 individuals. Of the other

individuals respondents that were sick and sought treatment in the private sector, 145 (50%) came from the Busia district and 130 (56%) came from the Malindi district.

As shown in Table 4.17 for members of the household, there were 255 (42%) responses that a member of the household had been sick and sought treatment in the private sector in the past three months. Of these respondents, females had a higher percentage of reporting a member of the household sought private health care than males, with 165 (44%) females and 90 (38%) males.

Around the same percentage of respondents that reported a member of the household had sought treatment in the private health sector were literate as were not literate, with 231 or 57% respondents reporting they were literate and 125, but 60% of respondents reporting they were not literate. The percentages of respondents that reported they had some formal education and that a member of the household had sought treatment in the private sector was also similar with 173 or 43% stating they had formal education and 82 or 40% saying they did not. One hundred and sixty one (161 / 40%) of those that reported regular income and 94 (39%) that reported they did not have regular income responded that a member of the household sought treatment in the private health sector.

Once more, the age of respondents reporting members of the household sought treatment in the private sector did not vary significantly with 67 (44%) respondents 18 – 25 years reporting a member of the household sought treatment in the private health care sector, 64 (42%) of the 26-35 years age group stating a member of the household sought private health care, 45 (40%) of those in the 36-45 years age groups stating a member of the household used private health care, and 79 (40%) of those 46 years and above also stating the same.

Two hundred and six (43%) respondents that said a member of the household used the private sector for their health care, reported having access to communications and 49 (37%) did not. Of those respondents that were able to obtain motorized transport, 38 (45%) reported a member of the household used private health care as compared with the 217 (41%) respondents that were unable to obtain access to motorized transport.

A hospital or health centre was reported as the closest health facility for 53 (34%) participants and a clinic or dispensary was closest for 202 (44%) participants that

reported a member of the household used private health care. It was reported that 167 (40%) members of the household had less than 60 minutes travel time to the nearest health facility, but still 88 (45%) had reported a time when they had been unable to reach the nearest health facility. One hundred and thirty (43%) reported having further than 60 minutes to travel, and 124 (40%) did not have a problem with reaching the nearest health facility at some time.

For each of the districts, that is, Busia, Malindi and Samburu, those that reported a member of the household sought treatment in the private sector were, 123 (44%) in the Busia district, 117 (45%) in the Malindi district and 15 (21%) in the Samburu district.

Table 4.17
Numbers and Percentages of Respondents that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables.

Independent Variables		Individual		Member of the household	
		n	%	n	%
Overall		304	49	255	42
Gender					
	Female	189	46	165	44
	Male	113	53	90	38
Literacy					
	Yes	191	52	231	57
	No	113	43	125	60
Education					
	Yes	173	46	173	43
	No	140	58	82	40
Regular income					
	Yes	177	49	161	44
	No	127	49	94	39
Age					
	18 - 25	58	48	67	44
	26 - 35	71	47	64	42
	36 - 45	61	49	45	40
	46+	114	50	79	40
Communications					
	Yes	224	49	206	43
	No	80	47	49	37
Motorized transport					
	Yes	42	58	38	45
	No	262	48	217	41
Closest facility					
	Hospital/ health centre	67	37	53	34
	Clinic/ dispensary	237	53	202	44
Travel time					
	<60 mins	197	46	167	40
	>60 mins	107	53	88	45
Ever unable to reach facility					
	Yes	151	50	130	43
	No	151	48	124	40
District					
	Busia	145	50	123	44
	Malindi	130	56	117	45
	Samburu	29	27	15	21

Univariate Analysis

Univariate and multivariate analyses results as presented in Table 4.18 and Table 4.19 show private versus public use of health care services. If individual respondents came from the Samburu district they were less likely to report using private health care services (OR = 0.37, CI = 0.23 – 0.60, p<0.001) than those from the Busia or Malindi districts. In univariate analysis, individuals that reported they were sick and sought

treatment in the private sector were less likely to have a hospital or health centre as their closest health facility (OR = 0.53, CI = 0.37 – 0.75, p<0.001). It was significant that individuals that had some type of formal education were more likely to seek treatment in the private sector (OR = 1.62, CI = 1.17 – 2.25, p<0.005). Respondents seeking treatment in the private sector were more likely to be literate (OR = 0.69, CI = 0.50 – 0.95, p<0.05).

Univariate analysis of the results for members of the household (see Table 4.19) show those respondents from the Samburu district (OR = 0.33, CI = 0.18 – 0.62, p<0.001) were less likely than those from the Busia or Malindi districts to use private health care services. Those seeking treatment in the private sector were less likely to live closest to a hospital or health centre (OR = 0.66, CI = 0.45 – 0.97, p<0.05).

Multivariate Analysis

In multiple regression analysis as seen in Table 4.18, individuals that sought treatment in the private sector were less likely to live closest to a hospital or health centre (OR = 0.57, CI = 0.39 – 0.83, p<0.005), more likely to have formal education (OR = 1.61, CI = 1.14 – 2.25, p<0.010) and less likely to travel under 60 minutes to get to the closest health facility (OR = 0.60, OR = 0.42 – 0.83, p<0.010).

Members of the household that were sick and sought treatment in the private sector were less likely to come from the Samburu district than any other district (OR = 0.33, CI = 0.18 – 0.62, p<0.001), to have a hospital or health centre as the closest health facility (OR = 0.67, CI = 0.44 – 1.02, p<0.05), and less more likely to have to travel less than 60 minutes to their nearest health facility (OR = 0.68, CI = 0.47 – 0.99, p<0.05).

Table 4.18
Individuals that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.34	0.96 -1.87	1.26	0.87 – 1.83		
Literacy						
Yes	1.00					
No	0.69+	0.50 – 0.95	2.06	0.90 – 4.72		
Education						
No	1.00					
Yes	1.62**	1.17 – 2.25	3.25*	1.40 – 7.53	1.61*	1.14 – 2.25
Regular income						
No	1.00					
Yes	1.05	0.77 – 1.44	1.00	0.72 – 1.40		
Age						
18 - 25	1.00					
26 - 35	0.94	0.58 – 1.51	0.97	0.59 – 1.60	-	
36 - 45	1.02	0.62 – 1.68	1.19	0.70 – 2.03	-	
46+	1.07	0.69 – 1.66	1.30	0.80 – 2.14	-	
Communications						
No	1.00					
Yes	1.09	0.77 – 1.55	0.90	0.60 – 1.33		
Motorized transport						
No Motor	1.00					
Motor	1.55	0.95 – 2.56	1.56	0.92 – 2.63		
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.53***	0.37 – 0.75	0.65+	0.43 – 0.99	0.57**	0.39 – 0.83
Travel time						
>60 mins	1.00					
<60 mins	0.75	0.54 – 1.05	0.63*	0.43 – 0.91	0.60*	0.42 – 0.83
Unable to reach nearest facility						
No	1.00					
Yes	1.07	0.78 – 1.47	1.06	0.75 – 1.50		
District						
Busia	1.00					
Malindi	1.27	0.90 – 1.80	1.23	0.82 – 1.87	-	
Samburu	0.37****	0.23 – 0.60	0.62	0.33 – 1.15	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.19
Members of the Household that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.80	0.57 – 1.11.	0.75	0.51 – 1.09	-	
Literacy						
Yes	1.00					
No	0.88	0.62 – 1.23	1.25	0.54 – 2.90	-	
Education						
No	1.00					
Yes	1.16	0.82 – 1.64	1.41	0.61 – 3.26	-	
Regular income						
No	1.00					
Yes	1.03	0.74 – 1.42	0.94	0.67 – 1.31	-	
Age						
18 - 25	1.00					
26 - 35	0.92	0.59 – 1.45	0.93	0.58 – 1.49	-	
36 - 45	0.83	0.51 – 1.36	0.88	0.52 – 1.48	-	
46+	0.85	0.55 – 1.30	0.94	0.58 – 1.50	-	
Communications						
No	1.00					
Yes	1.27	0.72 – 1.83	1.15	0.76 – 1.76	-	
Motorized transport						
No Motor	1.00					
Motor	1.15	0.73 – 1.83	1.21	0.74 – 1.98	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.66+	0.45 – 0.97	0.67	0.44 – 1.04	0.67+	0.44 – 1.02
Travel time						
>60 mins	1.00					
<60 mins	0.82	0.58 – 1.15	0.66	0.45 – 0.97+	0.68+	0.47 – 0.99
Unable to reach nearest facility						
No	1.00					
Yes	1.13	0.82 – 1.56	1.17	0.83 – 1.66	-	
District						
Busia	1.00					
Malindi	1.04	0.74 – 1.46	1.04	0.70 – 1.55	-	
Samburu	0.37****	0.18 – 0.62	0.48	0.24 – 0.97	0.33****	0.18 – 0.62

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

4.2.3 Outcome Variable 3: If Individuals/Members of the Household Had A Choice Where Would They Choose To Seek Health Care?

There were 1132 individuals that reported where they would obtain their health care if they had a choice. A greater percentage of respondents would choose a government hospital with 46% or 516 individuals respondents reporting they would prefer a government hospital if they had the choice. For the other options as reported by respondents 44 (4%) would prefer to go to a shop, 44 (4%) would prefer a duka la dawa

(pharmacy), 9 (1%) from a traditional healer, 125 (11%) from a private or mission hospital, 146 (13%) from a government health centre, 42 (4%) from a private or mission health centre, 124 (11%) from a government clinic or dispensary, 80 (7%) from a private clinic or dispensary, while 2 individuals chose 'other'.

Participants were also asked to report where they would take members of the household for health and medical treatment if they had the choice. Again, the majority of respondents would choose a government hospital for a member of their household with 550 or 49% of respondents choosing this option. Once more for the other options 41 (4%) would prefer a shop, 42 (4%) would prefer a duka la dawa (pharmacy), 131 (12%) from a private or mission hospital, 140 (13%) from a government health centre, 51 (5%) from a private or mission health centre, 124 (11%) from a government clinic or dispensary, 50 (4%) from a private clinic or dispensary, while 3 would chose a traditional healer.

Preference for Formal or Informal Health Services

Descriptive Analysis

There were 1033 individuals as presented in Table 4.20 that responded they would choose to seek health care services in the formal sector if given the choice. The formal health care sector was chosen by 665 (92%) of all female respondents and 367 (91%) of all male respondents.

Essentially the majority of respondents would prefer to use formal health care. Of those respondents that were literate, 615 (91%) would prefer the formal sector and 418 (92%) of those that were not literate. Six hundred and thirty two (93%) of individual respondents that had some type of formal education preferred the formal sector, although 385 (89%) individuals with no formal education stated the same. Five hundred and seventy four (90%) respondents that reported having regular income would choose the formal health care sector, as well as 459 (93%) of those without regular income.

Three hundred and twenty two (88%) individuals in the 46 years and above age group would prefer medical services in the formal sector as compared to 249 (94%) of individuals 18-24 years, 265 (93%) of 25-35 years, and 197 (91%) of those 36-45 years.

Again, of those that had access to communications, 740 (92%) preferred formal health care as did the 293 (91%) respondents that did not have access to

communications, while 118 (89%) of those that could obtain motorized transport would prefer to use formal health services and 915 (92%) of those that were unable to gain access to motorized transport. Of those that lived closest to a hospital or health centre, 321 (90%) would choose formal health care and 712 (92%) of those that lived closest to a hospital or health centre. Seven hundred (91%) individual respondents that would choose formal health care reported living within 60 minutes of the closest health facility and the 333 (93%) respondents that lived further than 60 minutes travel time would still choose formal health care. Four hundred and thirty four (88%) individuals that preferred formal health services had had problems at some time reaching the nearest health facility, but 595 (94%) had not.

Individual respondents from all districts reported their preferences for using formal or informal health care services. A large majority of individuals reported their preference for formal health facilities in each of the three districts. In the Busia district, 427 (93%) individuals would choose formal health care, in the Malindi district, 406 (93%) would choose formal health care, and in the Samburu district, 200 (86%) individuals responded they would prefer formal health care services if given the choice.

Preferences for members of the household and using formal health services were reported for 1046 (92%) participants in Table 4.20. Again for respondents stating their preferences for a member of the household, the majority would prefer a member of the household sought formal health care treatment. Of those that reported they would prefer the formal sector for a member of their household, 669 (92%) were females and 375 (92%) were males.

The level of literacy, education or regular income did not appear to have an impact on respondents preferring formal health care services for a member of their household. Six hundred and twenty one (92%) participants that preferred formal health care for a member of the household stated they were literate, while 425 (92%) were not. Six hundred and thirty nine (94%) had some type of formal education, while 391 (90%) had not. Of participants that would choose formal health care for a member of the household, 581 (92%) reported having a regular income, while 465 (93%) did not.

For other factors potentially affecting health care seeking in the formal sector, the results for each of the age groups with a preference to use formal health care as shown in Table 4.20 were: 18 – 25 years, 248 (94%); 26 – 35 years, 265 (93%); 36-45 years, 202 (93%); and 46 years and over, 248 (94%).

Respondents with access to communications preferred formal treatment for a member of their household, that is 748 (93%), while 298 (92%) of those without access to communications also preferred the formal health care sector for a member of the household. One hundred and twenty (90%) of those that had access to motorized transport and 926 (93%) of those that did not have access to motorized transport preferred formal health care for a member of the household.

The preference for formal health care services by respondents for members of their household was consistent for the 325 (94%) members of the household where the closest health facility was a hospital or health centre and for the 721 (94%) respondents with a clinic or dispensary as the closest health facility. Seven hundred and thirteen (92%) of those where the travel time was less than 60 minutes to the nearest medical facility and 333 (92%) respondents where members of the household had to travel further than 60 minutes to the nearest health facility all preferred formal health services. Of respondents that stated they would choose formal services for a member of the household, 411 (89%) reported a time when they had been unable to reach the nearest health facility and 631 (94%) did not have a problem.

Again the choice of formal health services for a member of the household was consistently high for all districts. From the districts, those preferring formal health services for members of the household were 431 (94%) in the Busia district, 408 (93%) in the Malindi district, and 207 (88%) in the Samburu district.

Table 4.20
Numbers and Percentages of Respondents that Reported They Would Choose to Seek Health Care in the Formal Sector if They Were Sick by Independent Variables.

Independent Variables		Individual		Member of the household	
		n	%	n	%
Overall		1033	91	1046	92
Gender					
	Female	665	92	669	92
	Male	367	91	375	92
Literacy					
	Yes	615	91	621	92
	No	418	92	425	92
Education					
	Yes	632	93	639	94
	No	385	89	391	90
Regular income					
	Yes	754	90	581	92
	No	459	93	465	93
Age					
	18 - 25	249	94	248	94
	26 - 35	265	93	265	93
	36 - 45	197	91	202	93
	46+	322	88	248	94
Communications					
	Yes	740	92	748	93
	No	293	91	298	92
Motorized transport					
	Yes	118	89	120	90
	No	915	92	926	93
Closest facility					
	Hospital/ health centre	321	90	325	90
	Clinic/ dispensary	712	92	721	94
Travel time					
	<60 mins	700	91	713	92
	>60 mins	333	93	333	92
Ever unable to reach facility					
	Yes	434	88	411	89
	No	595	94	631	94
District					
	Busia	427	93	431	94
	Malindi	406	93	408	93
	Samburu	200	86	207	88

Univariate Analysis

Univariate and multivariate analyses results are shown in Table 4.21 and Table 4.22. In univariate analysis individuals that reported they would prefer the formal health care sector were less likely to have regular income (OR = 0.54, CI = 0.35 – 0.82, p<0.005) and less likely to report not being able to reach the nearest health facility at some time in the past (OR = 0.52, CI = 0.34 – 0.78, p<0.005). Age and district were

both significant factors, with those in the 46 years and above age group less likely to prefer to seek formal health care services than those in the other age groups (OR = 0.44, CI = 0.24 – 0.81, p<0.010). Those from the Samburu district were also less likely than those in the Busia and Malindi districts to prefer formal health care (OR = 0.45, CI = 0.27 – 0.76, p<0.005). Individuals that would choose formal health care were more likely to have some type of formal education (OR – 1.54, CI = 1.02 – 2.34, p<0.05).

Univariate analysis results for respondents that preferred members of the household seek health care in the formal sector (see Table 4.22) show they were less likely to live closest to a hospital or health centre (OR = 0.62, CI = 0.40 – 0.98, p<0.005) and less likely to report being unable to reach the nearest health facility at some time (OR = 0.49, CI = 0.32 – 0.78, p<0.005). The district where the member of the household came from was significant, with those from the Samburu district less likely to prefer formal health care services for members of the household than those in the Busia or Malindi districts (OR = 0.43, CI = 0.25 – 0.75, p<0.05). For those reporting they would choose to seek health care in the formal sector for a member of their household, they were less likely to have a regular income (OR = 0.55, CI = 0.35 – 0.85, p<0.010) and more likely to have some formal education (OR = 1.55, CI = 1.00 – 2.42, p<0.05).

Multivariate Analysis

Table 4.21 and Table 4.22 show the multivariate regression models that were created. Those reporting being literate were more likely to report preferring formal health care services (OR = 4.50, CI = 1.93 – 10.51, p<0.001). Individuals were also more likely to have some type of formal education (OR = 3.66. CI = 1.52 – 8.82, p<0.005). It was less likely that someone choosing formal health care services had been unable to reach the nearest health facility at some time (OR = 0.51, CI = 0.33 – 0.79, p<0.005). District was significant for respondents with those that lived in the Samburu district in the full and final models (OR = 0.43, CI = 0.24 – 0.77, p<0.005) and individuals were also less likely to have regular income (OR = 0.17, CI = 0.04 – 0.70, p<0.05).

Respondents reporting they would prefer a member of the household use the formal health care sector were more likely to be illiterate than literate (OR = 5.69, CI = 2.39 – 13.51, p<0.001), but also more likely to report some formal education as compared with those that had none (OR = 5.81, CI = 2.40 – 14.07, p<0.001).

Respondents were also more likely to have a time when they were unable to reach the closest health facility (OR = 0.49, CI = 0.31 – 0.77, p<0.005). Respondents from the Samburu district were less likely than those from the Busia or the Samburu districts to state they preferred formal health care for members of the household (OR = 0.44, CI = 0.23 – 0.83, p<0.05). Respondents were also less likely to have a regular income and prefer formal health care for a member of their household, than those that had regular income (OR = 0.20, CI = 0.05 – 0.86, p<0.05).

Table 4.21
Individuals that Reported They Would Choose To Seek Health Care in the Formal Sector by Independent Variables

	Univariate		Multivariate			
Independent Variables			**Full**		**Final**	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender						
Female	1.00					
Male	0.86	0.56 – 1.31	1.21	0.74 – 1.97	-	
Literacy						
Yes	1.00					
No	1.06	0.69 – 1.62	4.59***	1.92 – 10.97	4.50***	1.93 – 10.51
Education						
No	1.00					
Yes	1.54+	1.02 – 2.34	3.51**	1.45 – 8.53	3.66**	1.52 – 8.82
Regular income						
No	1.00					
Yes	0.54**	0.35 – 0.82	0.18***	0.04 – 0.73	0.17+	0.04 – 0.70
Age						
18 - 25	1.00					
26 - 35	0.84	0.42 – 1.69	0.79	0.39 – 1.62	-	
36 - 45	0.62	0.31 – 1.26	0.56	0.27 – 1.16	-	
46+	0.44**	0.24 – 0.81	0.40**	0.20 – 0.78	-	
Communications						
No	1.00					
Yes	1.07	0.68 – 1.70	1.01	0.60 – 1.68	-	
Motorized transport						
No Motor	1.00					
Motor	0.70	0.39 – 1.26	0.67	0.36 – 1.25	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.73	0.48 – 1.12	1.02	0.58 – 1.76	-	
Travel time						
>60 mins	1.00					
<60 mins	0.81	0.51 – 1.29	0.81	0.49 – 1.32	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.52**	0.34 – 0.78	0.48***	0.30 – 0.74	0.51**	0.33 – 0.79
District						
Busia	1.00					
Malindi	0.95	0.57 – 1.58	0.95	0.52 – 1.74	-	
Samburu	0.45***	0.27 – 0.76	0.33***	0.15 – 0.68	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.22
Members of the Household that Reported They Would Choose To Seek Health Care In the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.99	0.63 – 1.57	1.36	0.81 – 2.30	-	
Literacy						
Yes	1.00					
No	1.15	0.73 – 1.82	6.63***	2.70 – 16.29	5.69***	2.39 – 13.51
Education						
No	1.00					
Yes	1.55+	1.00 – 2.42	5.02***	2.02 – 12.45	5.81***	2.40 – 14.07
Regular income						
No	1.00					
Yes	0.55*	0.35 – 0.85	0.21+	0.05 – 0.87	0.20+	0.05 – 0.86
Age						
18 - 25	1.00					
26 - 35	0.90	0.45 – 1.79	0.88	0.43 – 1.79	-	
36 - 45	0.87	0.42 – 1.80	0.79	0.37 – 1.71	-	
46+	0.59	0.32 – 1.09	0.53	0.27 – 1.06	-	
Communications						
No	1.00					
Yes	1.08	0.67 – 1.76	0.99	0.57 – 1.69	-	
Motorized transport						
No Motor	1.00					
Motor	0.73	0.39 – 1.35	0.62	0.32 – 1.23	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.62**	0.40 – 0.98	0.85	0.49 – 1.50	-	
Travel time						
>60 mins	1.00					
<60 mins	1.03	0.65 – 1.65	1.05	0.63 – 1.73	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.49**	0.32 – 0.78	0.48**	0.30 – 0.78**	0.49**	0.31 – 0.77
District						
Busia	1.00					
Malindi	0.79	0.46 – 1.36	0.78	0.42 – 1.47	-	
Samburu	0.43	0.25 – 0.75	0.40*	0.19 – 0.86	0.44*	0.23 – 0.83

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Preference for Private or Public Health Services

Descriptive Analysis

Table 4.23 shows the results for respondents that chose to seek health care in the private sector. There were 344 (30%) individuals that reported they would choose health care in the private sector, 277 (31%) were female and 117 (29%) were male.

There was little difference for individuals choosing private health care services between those that were literate or not, and those that had formal education or not. Two hundred and twenty two (33%) individuals that responded they would prefer health care in the private sector said they were literate and 122 (27%) were not literate, while 220 (32%) reported having some type of formal education and 124 (29%) did not. Individuals that reported regular income had a slightly higher preference for private health care with 214 (34%), as compared with 130 (26%) that reported not having regular income, but still choosing private health care if they had that option.

The age of respondents and those that would choose health care in the private sector did not differ greatly. Of respondents 18 – 25 years, 76 (29%) would choose private health services; of those 26 – 35 years, 86 (30%) would prefer private health care services; respondents that were 36-45 years, 62 (29%) would choose the private health care sector; and for respondents 46 years and over, 120 (33%) stated they would prefer private health care.

A higher percentage of individuals with access to communications 268 (33%) stated they would choose private health care, as compared with 76 (24%) that did not have access to communications but would still choose private sector health care. There was also a percentage difference based upon the ability to obtain motorized transport, with 28 (21%) respondents that had access to motorized transport stating they would prefer private health care, while 316 (32%) of those that were unable to obtain access to motorized transport would choose private health care if they could.

Those 93 (26%) individuals that reported they lived closest to a hospital or health centre would choose private health care, while 251 (33%) of those individual respondents that were closest to a clinic or dispensary would also use private health care if they were given the choice. Two hundred and forty eight (32%) individuals preferring private services lived within 60 minutes travel time of the nearest health facility and 96 (27%) lived further than 60 minutes. One hundred and seventy eight (36%) individuals that would choose private health care stated they had a time when they were unable to reach the nearest health facility, while 166 (26%) did not have this problem.

For each of the districts: 145 (40%) respondents from the Busia district preferred private health care, 130 (21%) respondents from the Malindi district preferred

private health care, and 29 (29%) respondents from the Samburu district preferred private over public health care services.

Preferences by respondents for members of the household and choosing to use private health care can be seen in Table 4.23. There were 318 (28%) respondents that stated they would prefer private health care for members of their household. Of these, 207 (29%) respondents were female and 111 (27%) respondents were male.

There was some difference in the percentages of respondents that would prefer private health care for a member of their household and the literacy and education level of that respondent. Again for those that were literate, 213 (32%) stated they would prefer a member of their household to use private health services, as did 109 (25%) that were not literate. Two hundred and nine (31%) respondents stated they had some formal education while 109 (25%) did not. Having regular income also seem to have some impact on the health care choices of respondents for members of their household with 200 (32%) of those with regular income preferring private sector health care services for a member of the household as compared with 118 (24%) respondents that reported they did not have regular income.

Those respondents aged 36 – 45 years had the lowest percentage for choosing that a member of the household should use private health care, with 53 (24%) responding this would be their choice. Of the other age categories, 72 (27%) of those 18 – 25 years would choose private health care for a member of their household, 83 (29%) of 26 – 35 year olds would choose private health care for a member of their household, and 110 (30%) of those aged 46 years and above would prefer private health care services for a member of their household if given the choice.

Of those with access to communications, 246 (30%) would prefer private health care for a member of the household, as would the 272 (22%) respondents that did not have access to communications. There was a difference in the percentages of those would choose private health care for a member of the household and the ability to obtain access to motorized transport. Twenty four (18%) respondents that stated they had access to motorized transport and 294 (29%) that did not would choose the private health care sector.

Of the respondents that lived closest to a hospital or health centre, 90 (25%) would prefer private sector health care for a member of their household, as would 228

(30%) respondents that lived closest to a clinic or dispensary. For those 226 (29%) respondents that had less than 60 minutes travel time to the nearest health facility and the 92 (25%) that had further than 60 minutes travel time, the preference would be for private health care for a member of the household. One hundred and sixty (35%) respondents that reported they had been unable to reach the closest health centre at some time would choose the private health care sector for a member of their household, 158 (24%) respondents did not have this problem, but would prefer private health care services for a member of the household.

In the district of Busia 123 (38%) respondents stated they would prefer private health care for a member of their household, in the Samburu district, 15 (27%) respondents stated they preferred private health care for a member of the household, however there was a difference in the Malindi district where only 18% (117) respondents stated they would prefer private health services for a member of the household.

Table 4.23

Numbers and Percentages of Respondents that Reported They Would Choose to Seek Health Care in the Private Sector if They Were Sick by Independent Variables.

Independent Variables		Individual		Member of the household	
		n	%	n	%
Overall		344	30	318	28
Gender					
	Female	277	31	207	29
	Male	117	29	111	27
Literacy					
	Yes	222	33	213	32
	No	122	27	105	23
Education					
	Yes	220	32	209	31
	No	124	29	109	25
Regular income					
	Yes	214	34	200	32
	No	130	26	118	24
Age					
	18 - 25	76	29	72	27
	26 - 35	86	30	83	29
	36 - 45	62	29	53	24
	46+	120	33	110	30
Communications					
	Yes	268	33	246	30
	No	76	24	272	22
Motorized transport					
	Yes	28	21	24	18
	No	316	32	294	29
Closest facility					
	Hospital/ health centre	93	26	90	25
	Clinic/ dispensary	251	33	228	30
Travel time					
	<60 mins	248	32	226	29
	>60 mins	96	27	92	25
Ever unable to reach facility					
	Yes	178	36	160	35
	No	166	26	158	24
District					
	Busia	145	40	123	38
	Malindi	130	21	117	18
	Samburu	29	29	15	27

Univariate Analysis

In univariate analysis as shown in Table 4.24 individuals that would choose the private health care sector were more likely to have regular income (OR = 1.57, CI = 1.22 – 2.03, p<0.001) and access to communications (OR = 1.61, CI 1.19 – 2.16). Those preferring private health care services were more likely to have had a time when

they had been unable to reach the nearest health facility (OR = 1.61, CI = 1.24 – 2.07, p<0.001) and the district of respondents also made a difference with respondents from the Malindi district (OR = 0.39, CI = 0.29 – 0.52, p<0.001) and the Samburu district (OR = 0.61, CI = 0.44 – 0.86, p<0.001) less likely than those in the Busia district to choose private health care. Individuals that stated they preferred private health care services were less likely to have access to motorized transport (OR = 0.57, CI = 0.37 – 0.89, p<0.05) and less likely to have a hospital or health centre as the closest health care facility (OR = 0.73, CI = 0.55 – 0.96, p<0.05).

Univariate analysis of the results for members of the household in Table 4.25 show those reporting regular income were more likely to prefer treatment in the private sector (OR = 1.63, CI = 1.25 – 2.11, p<0.001) for a member of the household. They were also more likely to have reported a time when they had been unable to reach the nearest health facility in the past (OR = 1.70, CI = 1.31 – 2.21, p<0.001). District was significant with those from the Malindi district (OR = 0.35, CI = 0.26 – 0.48, p<0.001) and respondents from the Samburu district (OR = 0.60, CI = 0.43 – 0.85, p<0.005) less likely than those in the Busia district to prefer seeking private health care for members of the household. Those respondents that were literate were more likely to report preferring a member of the household sought treatment in the private health care sector (OR = 0.65, CI = 0.49 – 0.85, p<0.005), while those that had access to communications were more likely to prefer private sector health care (OR = 1.53, CI = 1.13 – 2.07, p<0.010). Participants that stated they preferred the private health care sector for members of the household were less likely to have access to motorized transport (OR = 0.53, OR = 0.33 – 0.84, p<0.010).

Multivariate Analysis

In multiple regression analysis as shown in Table 4.24, individuals with regular income were more likely to prefer private health facilities than public (OR = 2.33, CI = 1.39 – 3.91, p<0.001), while those preferring private health treatment were far more likely to state there was a time when they had been unable to reach the nearest health facility (OR = 1.64, CI = 1.26 – 2.14, p<0.001). Respondents in the Malindi district were less likely to prefer private health care services (OR = 0.43, CI = 0.32 – 0.58, p<0.001). Respondents that would prefer to seek health care in the private sector were less likely to have access to motorized transport (OR = 0.60, CI = 0.38 – 0.93, p<0.05) and those that had to travel less than 60 minutes to the nearest health facility were also

more likely to prefer private sector health care treatment (OR = 1.41, CI = 1.05 – 1.89, $p<0.05$).

Respondents preferring members of the household sought treatment in the private health care sector (see Table 4.25) were more likely to have regular income (OR = 2.46, CI = 1.44 – 4.22, $p<0.001$) and least likely to come from the Malindi district (OR = 0.38, CI = 0.28 – 0.52, $p<0.001$). Respondents that preferred a member of their household sought treatment in the private health care sector were less likely to have access to motorized transport (OR = 0.56, CI = 0.35 – 0.90, $p<0.05$) and more likely to report there had been a problem in the past with traveling to the nearest health facility (OR = 1.31, CI = 1.00 – 1.71, $p<0.05$).

Table 4.24
Individuals that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.89	0.68 – 1.16	0.77	0.58 – 1.04	-	
Literacy						
Yes	1.00					
No	0.74	0.57 – 0.97	0.62	0.35 – 1.13	-	
Education						
No	1.00					
Yes	1.18	0.91 – 1.54	0.68	0.37 – 1.24	-	
Regular income						
No	1.00					
Yes	1.57***	1.22 – 2.03	2.24**	1.33 – 3.79	2.33***	1.39 – 3.91
Age						
18 - 25	1.00					
26 - 35	1.07	0.74 – 1.55	1.10	0.75 – 1.61	-	
36 - 45	1.00	0.67 – 1.48	1.02	0.67 – 1.55	-	
46+	1.21	0.86 – 1.70	1.25	0.86 – 1.83	-	
Communications						
No	1.00					
Yes	1.61***	1.19 – 2.16	1.33	0.96 – 1.84	-	
Motorized transport						
No Motor	1.00					
Motor	0.57+	0.37 – 0.89	0.55*	0.35 – 0.87	0.60+	0.38 – 0.93
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.73+	0.55 – 0.96	0.89	0.64 – 1.25	-	
Travel time						
>60 mins	1.00					
<60 mins	1.31	1.00 – 1.73	1.31	0.97 – 1.77	1.41+	1.05 – 1.89
Unable to reach nearest facility						
No	1.00					
Yes	1.61***	1.24 – 2.07	1.71***	1.31 – 2.25	1.64***	1.26 – 2.14
District						
Busia	1.00					
Malindi	0.39****	0.29 – 0.52	0.47****	0.33 – 0.66	0.43****	0.32 – 0.58
Samburu	0.61***	0.44 – 0.86	1.08	0.67 – 1.73	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.25
Members of the Household that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.94	0.72 – 1.23	0.80	0.59 – 1.08	-	
Literacy						
Yes	1.00					
No	0.65**	0.49 – 0.85	0.59	0.25 – 0.87	-	
Education						
No	1.00					
Yes	1.31	1.00 – 1.72	0.58	0.31 – 1.09	-	
Regular income						
No	1.00					
Yes	1.63***	1.25 – 2.11	2.33**	1.33 – 3.97	2.46***	1.44 – 4.22
Age						
18 - 25	1.00					
26 - 35	1.10	0.76 – 1.60	1.10	0.75 – 1.62	-	
36 - 45	0.86	0.57 – 1.30	0.86	0.55 – 1.32	-	
46+	1.14	0.80 – 1.62	1.18	0.80 – 1.74	-	
Communications						
No	1.00					
Yes	1.53*	1.13 – 2.07	1.19	0.85 – 1.66	-	
Motorized transport						
No Motor	1.00					
Motor	0.53*	0.33 – 0.84	0.54+	0.33 – 0.87	0.56+	0.35 – 0.90
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.79	0.60 – 1.05	1.05	0.74 – 1.48	-	
Travel time						
>60 mins	1.00					
<60 mins	1.21	0.91 – 1.61	1.20	0.88 – 1.63	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.70***	1.31 – 2.21	1.41	1.07 – 1.86	1.31+	1.00 – 1.71
District						
Busia	1.00					
Malindi	0.35****	0.26 – 0.48	0.43****	0.30 – 0.61	0.38****	0.28 – 0.52
Samburu	0.60***	0.43 – 0.85	0.99	0.62 – 1.60	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

4.2.4 Outcome Variable 4: Those That Reported Receiving All The Treatment They Needed?

There were 713 individuals that reported whether they had received all the treatment they needed. Of these individuals, 394 (55%) reported they had and 318 (45%) reported they had not, while one person was undecided. There were 694 responses for members of the household, where 462 (67%) reported having received all the treatment they needed.

Descriptive analysis

For individual respondents, 264 (57%) females and 129 (53%) males reported receiving all the treatment they needed as shown in Table 4.26.

There appeared to be little difference in individuals stating they received all the treatment they needed based upon literacy, education or regular income. Two hundred and thirty-one (56%) respondents that received all the treatment they needed were literate and 163 (55%) reported they were not literate. Two hundred and thirty eight (55%) respondents stated they had some formal education and 153 (56%) reported having no type of formal education, but that they received all the treatment they needed. Of those receiving a regular income 231 (55%) reported receiving all the treatment they needed, as did 163 (56%) of those not having a regular income.

Of all the age categories, respondents aged 36 – 45 years had the lowest percentage of those that reported they received all the treatment they needed. Of those aged 46 years and above, 145 (56%) felt they had received all the treatment they needed, followed by 79 (57%) of those respondents 18 – 25 years and 99 (57%) of those respondents 26 – 35 years.

Of those that had access to communications, 289 (56%) individuals reported receiving all the treatment they needed, as well as 105 (55%) that did not have access to communications. Forty seven (55%) respondents had access to motorized transport and 347 (55%) did not, but still reported receiving all the treatment they needed.

One hundred and nineteen (58%) individuals that stated they received all the treatment they needed reported having a hospital or health centre as the closest health facility, while 275 (54%) individuals reported living closest to a clinic or dispensary. For those receiving all the needed treatment, 268 (56%) stated they had less than 60 minutes travel time to the nearest health facility, while 126 (55%) had further than 60 minutes to travel. For individuals that report receiving all the treatment they needed, there were still 178 (53%) that responded they were unable to reach a health facility at some time, but 213 (57%) that said they were able.

Out of the three districts, those respondents from the Samburu district had a higher percentage of respondents that reported they received all the treatment they needed with 61% (72). For the other districts, 176 (53%) individuals from the Busia

district reported receiving all the treatment they needed and 146 (56%) individuals from the Malindi district reported receiving all the treatment they needed.

For members of the household as reported by respondents, 284 (65%) females and 177 (69%) males reported a member of the household had received all the treatment they needed.

Again, literacy and education level did not appear to impact upon respondents reporting a member of their household had received all the treatment they needed. Of these 305 (68%) respondents reported they were literate and 157 (64%) reported they were not. Three hundred and nine (309 / 67%) respondents stated they had some type of formal education and 147 (65%) reported having no type of formal education. There was a slight difference in percentages of respondents with regular income and reporting if a member of the household had received all the treatment they needed. Two hundred and sixty eight (65%) participants reported they received regular income, while 194 (69%) reported they did not.

There was little difference in the age groups and respondents reporting a member of their household had received all the treatment they needed. Those in the 46 years and above age groups were least likely by percentage to report a member of the household had received all the treatment they needed with 64% (146), followed by those in the 36 – 45 years age group with 63% (83) and then those in the 18 – 25 years age groups with 69% (113) and 26 – 35 years with 69% (120).

For those that had access to communications 362 (68%) respondents reported a member of the household had received all the treatment they needed, while 100 (63%) that did not have access to communications reported a member of the household had received all the treatment they needed. Seventy (74%) participants that were able to obtain motorized transport and 392 (65%) that stated they did not have access to motorized transport, reported members of their household received all needed treatment.

Of those respondents that reported members of the household received all the treatment they needed, 118 (69%) lived closest to a hospital or health centre and 344 (66%) lived closest to a clinic or dispensary. Travel time to the nearest health facility was less than 60 minutes for 325 (70%) and further than 60 minutes for 137 (60%). Two hundred and six (62%) respondents that reported members of the household received all the treatment they needed in the past three months, still reported a time

when they were unable to reach a health facility, although this was not a problem for 255 (70%) respondents.

By district, respondents from the Samburu district more often reported a member of the household had received all the treatment they needed with 76% (62). Of those from the Malindi district 66% (192) reported a member of the household had received all the treatment they needed, while 65% (208) from the Busia district reported a member of the household had received all the treatment they needed.

Table 4.26
Numbers and Percentages of Respondents that Reported Receiving All the Treatment They Needed by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		394	55	462	67
Gender					
	Female	264	57	284	65
	Male	129	53	177	69
Literacy					
	Yes	231	56	305	68
	No	163	55	157	64
Education					
	Yes	238	55	309	67
	No	153	56	147	65
Regular income					
	Yes	231	55	268	65
	No	163	56	194	69
Age					
	18 - 25	79	57	113	69
	26 - 35	99	57	120	69
	36 - 45	71	51	83	65
	46+	145	56	146	64
Communications					
	Yes	289	56	362	68
	No	105	55	100	63
Motorized transport					
	Yes	47	55	70	74
	No	347	55	392	65
Closest facility					
	Hospital/ health centre	119	58	118	69
	Clinic/ dispensary	275	54	344	66
Travel time					
	<60 mins	268	56	325	70
	>60 mins	126	55	137	60
Ever unable to reach facility					
	Yes	178	53	206	62
	No	213	57	255	70
District					
	Busia	176	53	208	65
	Malindi	146	56	192	66
	Samburu	72	61	62	76

Univariate Analysis

There is no significant association in univariate analysis for individuals that reported receiving all the treatment they needed (see Table 4.27).

Table 4.28 demonstrates the findings of univariate analysis for a member of the household receiving all the treatment needed. Respondents that reported having a travel time of less than 60 minutes to the nearest health facility were more likely to report receiving all the treatment they needed (OR = 1.56, CI = 1.12 – 2.17, $p<0.010$), while respondents were less likely to report a time they had been unable to reach the nearest health facility (OR = 0.72, CI = 0.52 – 0.98, $p<0.05$).

Multivariate Analysis

There is no significant association in multivariate analysis with individuals reporting they received all the treatment they needed. While it was significant for those reporting a member of the household received all the treatment needed to live within 60 minutes travel time of the nearest health facility (OR = 1.56, CI = 1.12 – 2.17, $p<0.010$).

Table 4.27
Individuals that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.86	0.63 – 1.17	0.84	0.60 – 1.19	-	
Literacy						
Yes	1.00					
No	0.96	0.72 – 1.30	0.77	0.39 – 1.53	-	
Education						
No	1.00					
Yes	0.97	0.72 – 1.32	0.89	0.44 – 1.77	-	
Regular income						
No	1.00					
Yes	0.80	0.59 – 1.07	0.83	0.61 – 1.13	-	
Age						
18 - 25	1.00					
26 - 35	0.99	0.63 – 1.55	1.01	0.64 – 1.58	-	
36 - 45	0.80	0.50 – 1.29	0.88	0.54 – 1.43	-	
46+	0.96	0.64 – 1.46	1.02	0.65 – 1.59	-	
Communications						
No	1.00					
Yes	1.04	0.75 – 1.45	1.12	0.87 – 1.16	-	
Motorized transport						
No Motor	1.00					
Motor	1.00	0.63 – 1.57	0.94	0.59 – 1.51	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.14	0.83 – 1.59	1.06	0.72 – 1.56	-	
Travel time						
>60 mins	1.00					
<60 mins	1.05	0.77 – 1.44	1.04	0.74 – 1.46	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.85	0.63 – 1.14	0.89	0.65 – 1.21	-	
District						
Busia	1.00					
Malindi	1.10	0.80 – 1.53	1.16	0.80 – 1.70	-	
Samburu	1.34	0.88 – 2.05	1.51	0.86 – 2.67	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 4.28
Members of the Household that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.20	0.86 – 1.67	1.27	0.88 – 1.84	-	
Literacy						
Yes	1.00					
No	0.86	0.62 – 1.19	0.78	0.36 – 1.69	-	
Education						
No	1.00					
Yes	1.10	0.79 – 1.54	0.77	0.35 – 1.68	-	
Regular income						
No	1.00					
Yes	0.78	0.57 – 1.08	0.80	0.57 – 1.11	-	
Age						
18 - 25	1.00					
26 - 35	1.00	0.63 – 1.59	1.00	0.62 – 1.60	-	
36 - 45	0.85	0.52 – 1.39	0.86	0.51 – 1.45	-	
46+	0.79	0.52 – 1.22	0.80	0.50 – 1.28	-	
Communications						
No	1.00					
Yes	1.26	0.87 – 1.82	1.20	0.80 – 1.79	-	
Motorized transport						
No Motor	1.00					
Motor	1.55	0.95 – 2.53	1.43	0.85 – 2.41	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.16	0.80 – 1.68	1.35	0.89 – 2.06	-	
Travel time						
>60 mins	1.00					
<60 mins	1.56*	1.12 – 2.17	1.57+	1.09 – 2.27	1.56*	1.12 – 2.17
Unable to reach nearest facility						
No	1.00					
Yes	0.72+	0.52 – 0.98	0.82	0.58 – 1.15		-
District						
Busia	1.00					
Malindi	1.01	0.73 – 1.42	0.88	0.60 – 1.30	-	
Samburu	1.65	0.95 – 2.88	1.52	0.79 – 2.92	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

CHAPTER 5
BUSIA DISTRICT

5.1.1 Outcome Variable 1: Who Was Sick And Sought Treatment?

Descriptive Analysis

As Table 5.1 shows, of the 461 participants in the Busia district, 284 (62%) individuals reported being sick and seeking treatment in the past three months. A higher percentage of females than males stated they were sick and sought treatment, with 98 (65%) females and 88 (55%) males stating they had sought treatment in the past three months.

Of those that reported being literate, 204 (59%) were sick and sought treatment while 80 (70%) of those that were not literate also sought treatment. There was a difference in the percentage of respondents seeking treatment based on their educational level, with 211 (58%) of those that reported some type of formal education and 73 (74%) of those that reported having no formal education seeking treatment. Looking at those individuals that reported regular income, 186 (63%) had sought treatment and 98 (58%) of those reported having no regular income also sought treatment.

The ages of those that sought treatment were: 18-25 years, 52 (53%); 26-35 years, 66 (61%); 36-45 years, 56 (62%); and 46 years and above, 110 (67%). Therefore a greater percentage of those 46 years and above reported being sick and seeking treatment.

For those individuals that were sick and sought treatment, 238 (62%) reported they had access to communications, while 46 (61%) stated they did not. Five individuals (63%) that sought treatment reported having access to motorized transport, while 279 (62%) of those that were sick stated they did not.

More participants that were sick and sought treatment lived closer to a clinic or dispensary, with 42 (55%) individuals reporting being closest to a hospital or health centre, and 242 (63%) of those that sought treatment reporting being closest to a clinic or dispensary. Of individuals that reported seeking treatment, 215 (64%) stated they had less than 60 minutes travel time to the nearest health facility, while 69 (56%)

reported needing to travel for more than 60 minutes. One hundred and fifty (65%) individuals that were sick report a time when they were unable to get to a health facility, as compared with 132 (58%) that stated they had not experienced this difficulty.

As presented in Table 5.1, of 461 respondents in the Busia district, 275 (60%) reported a member of the household had been sick and sought care in the past three months. One hundred and seventy one (57%) females and 102 (64%) males reported a member of the household as being sick and seeking treatment.

Of those participants that reported being literate, 209 (60%) stated a member of the household had been sick and sought treatment as compared to 66 (58%) of those respondents that reported being illiterate. Examination of education level shows that 212 (59%) of those with some type of formal education reported a member of the household was sick and sought treatment while 63 (64%) had no formal education. Of those respondents with regular income, 180 (62%) reported a member of the household sought treatment, while 95 (57%) reported not having regular income.

The differences based on age can be seen in Table 5.1. The percentages show there is little difference between the age categories with 62 (64%) respondents 18-25 years, 60 (55%) respondents 26-35years, 53 (59%) respondents 36-45 years, and 46 years and above, 100 (61%).

A greater percentage of those that reported members of the household seeking treatment also reported access to communications, with 237 (62%) reporting they did and 38 (50%) said they did not. Seven (88%) respondents reported having access to motorized transport and 268 (59%) did not, but of those with access to motorized transport a larger percentage sought treatment. Of those that reported which facility was closest, 46 (60%) reported a hospital or health centre and 229 (60%) reported a clinic or dispensary was closest. In terms of travel time, 212 (63%) participants reported members of the household had less than 60 minutes travel time to the nearest health facility and 63 (51%) reported more than 60 minutes travel time. One hundred and fifty (68%) respondents reported a member of the household was unable to reach the nearest health facility at one time, a larger percentage than the 125 (52%) that reported this had not been an issue for them.

Table 5.1
Numbers and Percentages of Respondents from the Busia District that Reported Being Sick and Sought Treatment by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		284	62	275	60
Gender					
	Female	194	65	171	57
	Male	88	55	102	64
Literacy					
	Yes	204	59	209	60
	No	80	70	66	58
Education					
	Yes	211	58	212	59
	No	73	74	63	64
Regular income					
	Yes	186	63	180	62
	No	98	58	95	57
Age					
	18 - 25	52	53	62	64
	26 - 35	66	61	60	55
	36 - 45	56	62	53	59
	46+	110	67	100	61
Communications					
	Yes	238	62	237	62
	No	46	61	38	50
Motorized transport					
	Yes	5	63	7	88
	No	279	62	268	59
Closest facility					
	Hospital/ health centre	42	55	46	60
	Clinic/ dispensary	242	63	229	60
Travel time					
	<60 mins	215	64	212	63
	>60 mins	69	56	63	51
Ever unable to reach facility					
	Yes	150	65	150	68
	No	132	58	125	52

Univariate Analysis

Univariate analysis results in Table 5.2 show that individuals that were sick and sought treatment in the past three months were more likely to report being illiterate (OR 1.65, CI = 1.05 – 2.60, $p<0.05$), while those in the 46 years and above category also more likely to report being illiterate (OR = 1.80, CI = 1.08 – 3.01, $p<0.05$).

Members of the household were more likely to report being unable to reach the nearest health facility at some time (OR = 1.95, CI = 1.34 – 2.86, $p<0.001$) as seen in

Table 5.3. Also a member of the household in the Busia district that was sick and sought treatment in the past three months was reported as more likely to live within 60 minutes travel time to the nearest health facility (OR = 1.66, CI = 1.09 – 2.51, $p<0.05$).

Multivariate Analysis

The results of multivariate analysis for those that were sick and sought treatment in the past three months in the Busia district are shown in Table 5.2. Results for the full model are shown and then the final model results that are significant at $p<0.05$. Individual males in the Busia district were less likely to report they were sick and sought treatment in the past three months (OR = 0.59, CI = 0.39 – 0.88, $p<0.010$). Individual respondents that were 46 years and above were more likely to report they were sick and sought treatment, than respondents in the 18 – 25 years category once all other variables had been controlled for (OR = 1.82, CI = 1.07 – 3.07, $p<0.05$). Individuals were also more likely to live within 60 minutes travel time to the nearest health facility (OR = 1.75, 1.12 – 2.73, $p<0.05$), as well as report they had been unable to reach the nearest health care facility at some time in the past (OR = 1.52, 1.02 – 2.27, $p<0.05$).

Respondents reporting for members of the household as shown in Table 5.3 were less likely to be illiterate and seek treatment in the past three months in both the full and final regression models (OR = 0.33, CI = 0.13 – 0.84, $p<0.05$), although respondents reporting for members of the household were less likely to have any type of formal education (OR = 0.33, 0.11 – 0.82, $p<0.05$). Members of the household were reported as more likely to live within 60 minutes travel time to the nearest health facility (OR = 1.84, CI = 1.17 – 2.86, $p<0.05$), while those participants reporting for members of the household, were also more likely to state there had been a time when they had been unable to reach the nearest health facility (OR = 1.99, CI = 1.33 – 2.98, $p<0.001$).

Table 5.2
Individuals in the Busia District that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.65	0.44 – 0.96	0.63*	0.41 – 0.96	0.59**	0.39 – 0.88
Literacy						
Yes	1.00					
No	1.65*	1.05 – 2.60	0.74	0.29 – 1.85	-	
Education						
No	1.00					
Yes	0.50	0.30 – 0.82	0.47	0.18 – 1.24	-	
Regular income						
No	1.00					
Yes	1.24	0.84 – 1.83	1.27	0.84 – 1.94	-	
Age						
18 - 25	1.00					
26 – 35	1.36	0.78 – 2.36	1.44	0.82 – 2.54	-	
36 – 45	1.46	0.81 – 2.61	1.33	0.73 – 2.43	-	
46+	1.80*	1.08 – 3.01	1.77*	1.03 – 3.04	1.82*	1.07 – 3.07
Communications						
No	1.00					
Yes	1.05	0.64 – 1.75	1.22	0.70 – 2.13	-	
Motorized transport						
No Motor	1.00					
Motor	1.04	0.25 – 4.40	0.78	0.18 – 3.48	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.70	0.43 – 1.15	0.85	0.49 – 1.50	-	
Travel time						
>60 mins	1.00					
<60 mins	1.40	0.92 – 2.13	1.54	0.95 – 2.51	1.75*	1.12 – 2.73
Unable to reach nearest facility						
No	1.00					
Yes	1.38	0.94 – 2.01	1.46	0.95 – 2.51	1.52*	1.02 – 2.27

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.3
Members of the Household in the Busia District that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.31	0.88 – 1.94	1.25	0.81 – 1.93	-	
Literacy						
Yes	1.00					
No	0.90	0.59 – 1.39	0.34*	0.13 – 0.91	0.33*	0.13 – 0.84
Education						
No	1.00					
Yes	0.81	0.51 – 1.29	0.26**	0.09 – 0.71	0.30*	0.11 – 0.82
Regular income						
No	1.00					
Yes	1.23	0.84 – 1.82	1.01	0.66 – 1.54	-	
Age						
18 – 25	1.00				-	
26 – 35	0.69	0.39 – 1.21	0.73	0.41 – 1.31	-	
36 – 45	0.81	0.45 – 1.46	0.74	0.40 – 1.36	-	
46+	0.88	0.52 – 1.48	0.86	0.49 – 1.50	-	
Communications						
No	1.00					
Yes	1.61	0.98 – 2.64	1.68	0.97 – 2.90	-	
Motorized transport						
No Motor	1.00					
Motor	4.81	0.59 – 39.39	3.85	0.84 – 2.72	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.00	0.61 – 1.64	1.52	0.84 – 2.72	-	
Travel time						
>60 mins	1.00					
<60 mins	1.66*	1.09 – 2.51	1.95**	1.19 – 3.20	1.84*	1.17 – 2.86
Unable to reach nearest facility						
No	1.00					
Yes	1.95****	1.34 – 2.86	1.91***	1.26 – 2.87	1.99****	1.33 – 2.98

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

5.1.2 Outcome Variable 2: Where Did Individuals And Members Of The Household Seek Treatment?

There were 288 individuals in the Busia district that reported where they obtained their health care. The greatest percentage of the population reported seeking treatment from a government clinic or dispensary with 94 individuals (33%) individual respondents doing so. From other individuals that responded they had been sick, 6 (2%) treated themselves, 18 received treatment from a shop, 49 (17%) sought treatment from a pharmacy, 3 from a traditional healer, 26 (9%) from a private hospital or health

centre, 94 (33%) from a government clinic or dispensary, and 43 (15%) from a private clinic or dispensary.

There were 279 participants from Malindi that reported where members of the household sought health care. Again a greater percentage of respondents reported that a member of their household had used a government clinic or dispensary (108/39%) if they had been sick and sought treatment than any other available health care service. Of the other members of the household, 2 (1%) treated themselves, 12 (4%) sought treatment in a shop, 41 (15%) at a pharmacy, 2 (1%) from a traditional healer, 48 (17%) at a government hospital or health centre, 22 (8%) at a private hospital or health centre, 43 (16%) at a private clinic or dispensary, and one respondent reported another source of treatment. Again, variables for health care options will be presented as: formal and informal, public and private.

Use of Formal or Informal Health Services

Descriptive analysis

Out of the 288 individuals from the Busia district that reported where they sought health care in the past three months, 212 (74%) of respondents utilized a formal health care facility. As can be seen in Table 5.4 of these, 155 (79%) were female and 57 (63%) were male, so a higher percentage of females used formal health services.

One hundred and forty six (70%) respondents reported being literate and 66 (83%) individuals reported they were not literate. There were 150 (70%) individuals that reported they had a least some formal education, while 62 (85%) did not report any type of formal education. One hundred and thirty four (78%) participants reported they received a regular income, and 78 (79%) did not.

The age categories for those seeking health care in the formal sector were fairly even with those in the oldest age group with a slightly higher percentage of respondents using formal health care. The age divisions can be seen in Table 5.4 and were: 18 -25 years, 38 (73%); 26-35years, 46 (70%); 36-45 years, 41 (71%); and 46 and above years, 87 (78%).

One hundred and seventy five (73%) individuals reported having access to communications, as compared to 37 (79%), that did not. Only 3 (60%) individuals reported having access to motorized transport while 209 (74%) did not.

Twenty six (80%) individuals reported that a hospital or health centre was the closest health facility, while a clinic or dispensary was the closest facility for 186 (76%) individuals. One hundred and seventy one (78%) individuals from Busia reported they had less than 60 minutes travel time to the nearest health facility, and 41 (59%) had further than 60 minutes to travel. One hundred and ten (72%) individuals reported there had been a time when they had been unable to reach the nearest health facility, while 101 (75%) stated this had not been a problem for them.

Responses for members of the household from Busia in Table 5.4 showed that 221 (79%) had sought treatment in the formal health care sector in the past three months. There was no difference based upon the sex of the respondent with 137 (79%) females and 82 (80%) males reporting a member of the household had sought treatment in a formal health facility

One hundred and seventy (80%) respondents reported they were literate, and 51 (77%) were not literate. One hundred and seventy one (79%) had some type of formal education and 50 (79%) had not. Of the respondents from the Busia district, 146 (80%) reported receiving regular income, and 75 (77%) did not receive a regular income.

The ages of respondents reporting for a member of the household appeared to have little impact with essentially the same percentages of respondents from across the age groups responding that a member of the household had sought treatment from a formal health care facility. As Table 5.4 shows these were: 18-25 years, 50 (79%); 26-35years, 47 (77%); 36-45 years, 42 (79%); and 46+ years, 82 (80%).

One hundred and ninety one (80%) respondents that stated a member of the household had used formal health care services, reported having access to communications and 30 (77%) did not. While 6 (86%) used motorized transport to reach the nearest health facility, 215 (79%) were not able to.

Thirty six (75%) respondents reported a hospital or health centre was the nearest medical facility, while 185 (80%) reported that a clinic or dispensary was the closest health facility. One hundred and seventy eight (83%) members of the household were reported to live within 60 minutes travel time to the nearest health facility, while 43 (66%) lived further than 60 minutes away. One hundred and twenty three (80%) members of the household reportedly were unable to reach a formal health facility at some time, while 98 (79%) did not have a problem reaching the nearest health facility.

Table 5.4
Numbers And Percentages Of Respondents From The Busia District that Reported Being Sick And Sought Treatment In The Formal Sector By Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		212	74	221	79
Gender					
	Female	155	79	137	79
	Male	57	63	82	80
Literacy					
	Yes	146	70	170	80
	No	66	83	51	77
Education					
	Yes	150	70	171	79
	No	62	85	50	79
Regular income					
	Yes	134	71	146	80
	No	78	79	75	77
Age					
	18 - 25	38	73	50	79
	26 - 35	46	70	47	77
	36 - 45	41	71	42	79
	46+	87	78	82	80
Communications					
	Yes	175	73	191	80
	No	37	79	30	77
Motorized transport					
	Yes	3	60	6	86
	No	209	74	215	79
Closest facility					
	Hospital/ health centre	26	60	36	75
	Clinic/ dispensary	186	76	185	80
Travel time					
	<60 mins	171	78	178	83
	>60 mins	41	59	43	66
Ever unable to reach facility					
	Yes	110	72	123	80
	No	101	75	98	79

Univariate analysis

In univariate analysis, individuals in the Busia district that reported they were sick in the past three months and sought treatment in the formal sector, were more likely to have a travel time of less than 60 minutes to the nearest health facility (OR = 2.57, CI = 1.45 – 4.57, $p<0.001$) as seen in Table 5.5. Males were also less likely to report being sick and seeking health care in the formal sector (OR = 0.46, CI = 0.26 – 0.79, $p<0.005$) and respondents were less likely to report having any type of formal education if they

reported using formal health care (OR = 0.41, CI = 0.20 – 0.83, $p<0.05$). Individuals in the Busia district that used formal health care services were also less likely to report a hospital or health centre was the closest health facility (OR = 0.49, CI = 0.25 – 0.96, $p<0.05$).

Respondents that stated members of the household used formal health services in the past three months were more likely to have to travel less than 60 minutes to the nearest health care facility (OR = 2.53, CI = 1.35 – 4.73, $p<0.005$).

Multivariate analysis

Multivariate regression analysis results show that individuals from the Busia district that were sick and sought treatment in the formal health sector in the past three months were more likely to have less than 60 minutes time to the nearest health facility (OR = 2.84, CI = 1.55 – 5.21, $p<0.001$). Individual males were less likely to report being sick and seeking treatment in the formal health sector in the past three months (OR = 0.50, CI = 0.28 – 0.91, $p<0.05$), while respondents were also less likely to have any type of formal education (OR = 0.44, CI = 0.20 – 0.94, $p<0.05$).

Table 5.6 shows those reporting for members of the household and using treatment in the formal health sector, were more likely to have to travel less than 60 minutes to the nearest health facility (OR = 2.53, CI = 1.35 – 4.73, $p<0.005$).

Table 5.5
Individuals from the Busia District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.46***	0.26 – 0.79	0.44*	0.23 – 0.83	0.50*	0.28 – 0.91
Literacy						
Yes	1.00					
No	2.00	1.05 – 3.83	0.57	0.15 – 2.21	-	
Education						
No	1.00					
Yes	0.41*	0.20 – 0.83	0.32	0.07 – 1.33	0.44*	0.20 – 0.94
Regular income						
No	1.00					
Yes	0.66	0.37 – 1.17	0.60	0.31 – 1.16	-	
Age						
18 – 25	1.00					
26 – 35	0.85	0.38 – 1.90	0.95	0.40 – 2.25	-	
36 – 45	0.89	0.39 – 2.05	0.80	0.32 – 2.00	-	
46+	1.28	0.60 – 2.73	1.32	0.57 – 3.06	-	
Communications						
No	1.00					
Yes	0.72	0.34 – 1.52	0.64	0.26 – 1.58	-	
Motorized transport						
No Motor	1.00					
Motor	0.53	0.09 – 3.24	0.37	0.05 – 2.56	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.49+	0.25 – 0.96	0.58	0.27 – 1.25	-	
Travel time						
>60 mins	1.00					
<60 mins	2.57****	1.45 – 4.57	2.87***	1.46 – 5.64	2.84****	1.55 – 5.21
Unable to reach nearest facility						
No	1.00					
Yes	0.86	0.50 – 1.45	1.22	0.66 – 2.24	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.6
Members of the Household from the Busia District that Reported Being Sick Months and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.05	0.58 – 1.92	0.96	0.49 – 1.88	-	
Literacy						
Yes	1.00					
No	0.86	0.44 – 1.67	0.47	0.10 – 2.14	-	
Education						
No	1.00					
Yes	0.98	0.49 – 1.98	0.52	0.11 – 2.44	-	
Regular income						
No	1.00					
Yes	1.19	0.65 – 2.17	0.93	0.48 – 1.79	-	
Age						
18 – 25	1.00					
26 – 35	0.87	0.37 – 2.05	0.94	0.39 – 2.27	-	
36 – 45	0.99	0.40 – 2.45	0.86	0.33 – 2.24	-	
46+	1.07	0.49 – 2.33	1.07	0.47 – 2.44	-	
Communications						
No	1.00					
Yes	1.17	0.52 – 2.62	1.21	0.51 – 2.92	-	
Motorized transport						
No Motor	1.00					
Motor	1.59	0.19 – 13.48	1.41	0.16 – 12.59	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.75	0.36 – 1.55	1.41	0.58 – 3.43	-	
Travel time						
>60 mins	1.00					
<60 mins	2.53***	1.35 – 4.73	3.30***	1.53 – 7.12	2.53***	1.35 – 4.73
Unable to reach nearest facility						
No	1.00					
Yes	1.17	0.66 – 2.09	1.49	0.79 – 2.80	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Use of Private or Public Health Services

Descriptive analysis

Again, from the 288 individuals from the Busia district that reported they were sick and where they sought health care, as presented in Table 5.7, 145 (50%) had sought treatment in the private sector in the past three months. A slightly higher percentage of males than females reported using private health care with 96 (48%) females and 49 (53%) males stating they used private health care.

One hundred and seven (47%) individual respondents reported they were literate, while 38 (51%) were not. Despite this a higher percentage of respondents reported they had formal education with 113 (53%) reporting having some type of formal education, while 32 (44%) reported having no type of formal education. Ninety six (51%) respondents reported having a regular income, while 49 (49%) stated they did not have a regular source of income.

The results for the individual age groups of those that sought health treatment in the private sector were fairly evenly divided with the older age group for individuals only slightly more likely to seek treatment in the private sector. These age groups were: 18-25 years, 24 (46%); 26-35 years, 31 (47%); 36-45 years, 31 (53%); and 46+ years, 59 (53%).

One hundred and twenty six (48%) individuals reported they had access to communications, while 19 (40%) did not. Only 4 (80%) individuals had access to motorized transport, while 141 (50%) reported they did not.

For 25 (49%) respondents a hospital or health centre was the closest health facility and a clinic or dispensary was the closest for a greater percentage of the population with 120 (58%) respondents stating these options were closer. Ninety nine (45%) individuals reported they had less than 60 minutes to travel to their nearest health facility, while 46 (46%) reported having further than 60 minutes to travel. Seventy six (51%) individuals reported they had been unable to reach the nearest health facility at some time, but for 66 (49%) this had not been a problem.

For members of the household in the Busia district as seen in Table 5.7, 123 (44%) were reported to have sought treatment in the private health sector in the past three months, 82 (47%) females and 41 (40%) males.

Of those that reported members of the household seeking treatment in the private sector there was little difference based upon literacy or education with 93 (45%) reporting they were literate and 30 (44%) were not, and 96 respondents (44%) reported having had some type of formal education, while 27 (43%) did not. Eighty five (47%) respondents reporting about the health history of members of the household had regular income, while 38 (39%) did not.

The distribution of the age groups for those seeking treatment in the private sector were: 18-25 years, 27 (43%); 26-35years, 29 (48%); 36-45 years, 22 (42%); and

46 and above years, 45 (44%). So in descriptive analysis there was little difference that could be seen between the ages of respondents and members of their household using private health care services.

One hundred and nine (45%) respondents reported having access to communications and 14 (46%) did not, while 4 (57%) had access to motorized transport, and 119 (44%) were unable to obtain access to motorized transport. So while only a very small number of respondents stated they had access to motorized transport, a greater percentage of these reported a member of their household would use private health care services.

A hospital or health centre was reported as the closest health facility for 24 (50%) participants and a clinic or dispensary was closest for 99 (43%). It was reported that 86 (40%) members of the household had less than 60 minutes travel time to the nearest health facility, and 37 (57%) had greater than 60 minutes to travel to the nearest health facility. Seventy one (57%) members of the household were reported to have had a time when they had been unable to reach the nearest health facility, while for 52 (41%) participants this had not been a problem.

Table 5.7
Numbers and Percentages of Respondents from the Busia District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		145	50	123	44
Gender					
	Female	96	48	82	47
	Male	49	53	41	40
Literacy					
	Yes	107	47	93	45
	No	38	51	30	44
Education					
	Yes	113	53	96	44
	No	32	44	27	43
Regular income					
	Yes	96	51	85	47
	No	49	49	38	39
Age					
	18 - 25	24	46	27	43
	26 - 35	31	47	29	48
	36 - 45	31	53	22	42
	46+	59	53	45	44
Communications					
	Yes	126	52	109	45
	No	19	40	14	46
Motorized transport					
	Yes	4	80	4	57
	No	141	50	119	44
Closest facility					
	Hospital/ health centre	25	49	24	50
	Clinic/ dispensary	120	58	99	43
Travel time					
	<60 mins	99	45	86	40
	>60 mins	46	46	37	57
Ever unable to reach facility					
	Yes	76	51	71	57
	No	76	51	71	57

Univariate analysis

Results in Table 5.8 and Table 5.9 show the use of the private health care sector as compared with the public health care sector in the Busia district. In univariate analysis, individuals that reported being sick and sought treatment in the private health sector were less likely to live within 60 minutes travel time of the nearest health facility (OR = 0.43, CI = 0.25 – 0.76, $p<0.005$).

Respondents that reported members of the household used the private health care sector were less likely to live within 60 minutes travel time of the nearest health facility (OR = 0.51, CI = 0.29 – 0.89, $p<0.05$), as compared to those respondents that lived further than 60 minutes travel time.

Multivariate analysis

In multiple regression analysis as shown in Table 5.8, individuals from the Busia district were less likely to have to travel less than 60 minutes to the nearest health care facility, if they used private health services (OR = 0.43, CI = 0.25 – 0.76, $p<0.010$).

Table 5.9, shows that those reporting members of the household used the private health sector were less likely to have less than 60 minutes travel time to the nearest health facility (OR = 0.51, CI = 0.29 – 0.89, $p<0.05$).

Table 5.8
Individuals from the Busia District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.22	0.74 – 2.00	1.21	0.69 – 2.12	-	
Literacy						
Yes	1.00					
No	0.85	0.51 – 1.43	2.06	0.59 – 7.16	-	
Education						
No	1.00					
Yes	1.42	0.83 – 2.42	2.64	0.74 – 9.38	-	
Regular income						
No	1.00					
Yes	1.05	0.65 – 1.71	1.12	0.66 – 1.93	-	
Age						
18 – 25	1.00					
26 – 35	1.03	0.50 – 2.14	0.95	0.45 – 2.05	-	
36 – 45	1.34	0.63 – 2.84	1.60	0.72 – 3.54	-	
46+	1.30	0.67 – 2.51	1.42	0.70 – 2.88	-	
Communications						
No	1.00					
Yes	1.61	0.86 – 3.05	1.91	0.93 – 3.91	-	
Motorized transport						
No Motor	1.00					
Motor	4.03	0.44 – 36.49	5.21	0.54 – 49.90	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.45	0.75 – 2.79	1.18	0.56 – 2.49	-	
Travel time						
>60 mins	1.00					
<60 mins	0.43***	0.25 -0.76	0.39***	0.21 – 0.73	0.43***	0.25 – 0.76
Unable to reach nearest facility						
No	1.00					
Yes	1.09	0.68 – 1.73	0.85	0.51 – 1.43	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.9
Members of the Household From the Busia District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.74	0.45 – 1.22	0.71	0.41 – 1.22	-	
Literacy						
Yes	1.00					
No	1.08	0.62 – 1.87	1.83	0.50 – 6.77	-	
Education						
No	1.00					
Yes	1.07	0.61 – 1.88	1.91	0.51 – 7.18	-	
Regular income						
No	1.00					
Yes	1.36	0.82 – 2.25	1.45	0.84 – 2.53	-	
Age						
18 – 25	1.00					
26 – 35	1.21	0.60 – 2.45	1.19	0.57 – 2.46	-	
36 – 45	0.95	0.45 – 1.98	1.15	0.52 – 2.52	-	
46+	1.05	0.56 – 1.98	1.18	0.60 – 2.32	-	
Communications						
No	1.00					
Yes	1.49	0.74 – 3.00	1.39	0.66 – 2.97	-	
Motorized transport						
No Motor	1.00					
Motor	1.71	0.38 – 7.81	1.62	0.34 – 7.73	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.33	0.72 – 2.49	0.86	0.40 – 1.84	-	
Travel time						
>60 mins	1.00					
<60 mins	0.51*	0.29 – 0.89	0.44*	0.22 – 0.87	0.51*	0.29 – 0.89
Unable to reach nearest facility						
No	1.00					
Yes	1.23	0.77 – 1.98	1.01	0.61 – 1.69	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

5.1.3 Outcome Variable 3: If Individuals/Members of The Household Had A Choice Where Would They Choose To Seek Health Care?

There were 459 individuals in the Busia district that reported where they would obtain their health care if they had a choice, of these 13 (SSC Protocol No 831) would prefer to go to a shop, 17 (4%) would prefer a duka la dawa (pharmacy), 2 individuals would choose a traditional healer, 170 (37%) would choose treatment from a government hospital, 96 (21%) from a private or mission hospital, 47 (10%) from a government health centre, 23 (5%) from a private or mission health centre, 57 (12%) from a government clinic or dispensary, and 34 (7%) from a private clinic or dispensary.

Participants also reported where they would take members of the household for health and medical treatment if they had the choice, of these 12 (SSC Protocol No 831) would prefer a shop, 12 (SSC Protocol No 831) would prefer a duka la dawa (pharmacy), 172 (38%) from a government hospital, 95 (21%) from a private or mission hospital, 49 (11%) from a government health centre, 29 (People & the Planet 2000 - 2006) from a private or mission health centre, 61 (13%) from a government clinic or dispensary, 25 (5%) from a private clinic or dispensary, and 2 from a traditional healer.

Preference for Formal or Informal Health Services

Descriptive analysis

There were 427 individuals as shown in Table 5.10 from the Busia district that responded they would choose to seek health care services in the formal sector. There was no difference in the percentage of females and males that reported they would choose to seek heath care in the formal sector if given the choice, with 277 (93%) female respondents and 149 (93%) male respondents.

Of those participants that reported they were literate, 322 (93%) would prefer the formal sector and 105 (93%) of those that were not literate would also choose formal sector health care if given the choice. Three hundred and thirty seven (93%) of individual respondents that had some type of formal education preferred health care in the formal sector, although 90 (92%) individuals with no formal education stated the same. Two hundred and sixty six (91%) respondents that reported having regular income would choose the formal health care sector, as well as 161 (97%) of those without regular income.

From each of the age groups in the Busia district those that would prefer medical services in the formal sector were: 18-25 years, 93 (95%); 26-35 years, 104 (95%); 36-45 years, 82 (92%); and 46 and over years of age, 148 (91%). These percentages demonstrate essentially no difference in preferences based upon age.

Again, of those individuals that had access to communications 356 (95%) stated they preferred formal health care and the 71 (95%) respondents that did not have access to communications. Six (75%) participants from those that could obtain motorized transport would prefer to use formal health services, as well as the 421 (93%) of those that were unable to gain access to motorized transport.

Of those that lived closest to a hospital or health centre, 69 (90%) would choose formal health care services if given the choice and 358 (94%) of those that lived closest to a clinic or dispensary. Three hundred and eighteen (95%) individual respondents that would choose formal health care reported living within 60 minutes travel time from the closest health facility and the 109 (89%) respondents that lived further than 60 minutes travel time would still choose formal health care. Two hundred and twelve (92%) individuals that preferred formal health services had had problems at some time reaching the nearest health facility, but 214 (94%) had not.

For respondents from the Busia district, 431 (94%) responded they would prefer members of their household to use formal health services if given the choice. Of those that reported they would prefer the formal sector for a member of the household, 277 (94%) were females and 152 (94%) were males.

Three hundred and twenty six (94%) of these participants that reported they would prefer a member of their household to use formal health care services were literate, while 105 (95%) were not. Three hundred and forty one (94%) had some type of formal education, while 90 (94%) had not, and 270 (93%) reported having regular income, while 161 (97%) did not but still reported they would prefer a member of their household to seek treatment in the formal health care sector.

Age does not appear to be the basis for respondents preferring a member of their household use formal health care services as the percentages for each of the age groups does not vary greatly. Of respondents in the 18 – 25 years, 92 (95%) would prefer a member of their household seek treatment in the formal health care sector; 104 (96%) respondents in the 26 – 35 years age group, 85 (94%) respondents in the 36-45 years age group, and 150 (93%) respondents in the 46 years and over age group, would prefer a member of their household seek treatment in the formal health care sector.

Of those participants with access to communications, 361 (94%) stated they preferred formal health care treatment for a member of their household as well as those 70 (95%) respondents that did not have access to communications. Only 7 respondents that had access to motorized transport would prefer formal health care for a member of their household, however this represented 88% of these respondents. Four hundred and twenty four (94%) of those respondents that reported they did not have access to motorized transport also preferred formal health care for a member of their household if given the choice.

For the 68 (88%) members of the household where the closest health facility was a hospital or health centre and for the 363 (96%) respondents with a clinic or dispensary as their closest health facility, the preference was for formal services. Three hundred and twenty (96%) respondents that reported the travel time was less than 60 minutes to the nearest medical facility and the 111 (90%) that reported they had to travel further than 60 minutes to the nearest health facility all preferred formal health services for a member of their household. Of respondents indicating preferences for the medical treatment of members of their household, 204 (93%) reported a time when they had been unable to reach the nearest health facility and 226 (96%) did not have this problem.

Table 5.10
Numbers and Percentages of Respondents from the Busia District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		427	93	431	94
Gender					
	Female	277	93	277	94
	Male	149	93	152	94
Literacy					
	Yes	322	93	326	94
	No	105	93	105	95
Education					
	Yes	337	93	341	94
	No	90	92	90	94
Regular income					
	Yes	266	91	270	93
	No	161	97	161	97
Age					
	18 - 25	93	95	92	95
	26 - 35	104	95	104	96
	36 - 45	82	92	85	94
	46+	148	150	93	151
Communications					
	Yes	356	95	361	94
	No	71	95	70	95
Motorized transport					
	Yes	6	75	7	88
	No	421	93	424	94
Closest facility					
	Hospital/ health centre	69	90	68	88
	Clinic/ dispensary	358	94	363	96
Travel time					
	<60 mins	318	95	320	96
	>60 mins	109	89	111	90
Ever unable to reach facility					
	Yes	212	92	204	93
	No	214	94	226	96

Univariate analysis

Univariate analysis results for individuals that reported they would prefer the formal health care sector showed they were less likely to have regular income (OR = 0.31, CI = 0.12 – 0.81, $p<0.05$) and more often reported living within 60 minutes of the nearest health facility (OR = 2.27, CI = 1.09 – 4.72, $p<0.05$).

Univariate analysis as presented in Table 5.12 showed respondents reporting for members of the household were more likely to live within 60 minutes travel time to the

nearest health facility (OR = 2.47, CI = 1.11 – 5.50, $p<0.05$) and less likely to live closest to a hospital or health centre (OR = 0.35, CI = 0.15 – 0.83, $p<0.05$).

Multivariate analysis

For those individuals that preferred to choose formal health care services as represented in Table 5.11 , not having regular income was a significant factor in their choice, with respondents being less likely to report receiving regular income (OR = 0.24, CI = 0.09 – 0.66, $p<0.005$). Individuals that would prefer formal health care were more likely to have a travel time of less than 60 minutes to the nearest health facility, as compared to those that had to travel further than 60 minutes (OR = 2.95, CI = 1.38 – 6.28).

As reported for members of the household in the Busia district in Table 5.12, respondents that would prefer a member of the household use formal health care were more likely to live less than 60 minutes travel time to the nearest health care facility (OR = 3.07, CI = 1.35 – 6.99, $p<0.010$). Those respondents were also less likely to have regular income and prefer formal health care for a household member, than those that had regular income (OR = 0.31, CI = 0.11 – 0.87, $p<0.05$).

Table 5.11
Individuals from the Busia District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.90	0.43 – 1.88	0.87	0.38 – 1.98	-	
Literacy						
Yes	1.00					
No	0.98	0.43 – 2.24	2.84	0.42 – 19.39	-	
Education						
No	1.00					
Yes	1.25	0.54 – 2.87	3.59	0.53 – 24.50	-	
Regular income						
No	1.00					
Yes	0.31*	0.12 – 0.81	0.23***	0.08 – 0.65	0.24***	0.09 – 0.66
Age						
18 – 25	1.00					
26 – 35	1.12	0.31 – 3.99	0.17	0.32 – 4.28	-	
36 – 45	0.63	0.19 – 2.06	0.59	0.17 – 2.01	-	
46+	0.53	0.19 – 1.51	0.48	0.16 – 1.45	-	
Communications						
No	1.00					
Yes	0.72	0.24 – 2.11	0.69	0.22 – 2.19	-	
Motorized transport						
No Motor	1.00					
Motor	0.21	0.04 – 1.10	0.24	0.04 – 1.42	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.58	0.25 – 1.34	0.71	0.27 – 1.84	-	
Travel time						
>60 mins	1.00					
<60 mins	2.27*	1.09 – 4.72	3.18**	1.35 – 7.50	2.95***	1.38 – 6.28
Unable to reach nearest facility						
No	1.00					
Yes	0.77	0.37 – 1.59	1.19	0.54 – 2.64	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.12
Members of the Household from the Busia District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.04	0.45 – 2.38	1.12	0.45 – 2.78	-	
Literacy						
Yes	1.00					
No	1.07	0.42 – 2.74	3.51	0.44 – 28.17	-	
Education						
No	1.00					
Yes	1.14	0.44 – 2.91	3.40	0.43 – 27.08	-	
Regular income						
No	1.00					
Yes	0.40	0.15 – 1.08	0.32*	0.11 – 0.92	0.31*	0.11 – 0.87
Age						
18 – 25	1.00					
26 – 35	1.41	0.37 – 5.42	1.44	0.36 – 5.72	-	
36 – 45	0.92	0.26 – 3.30	0.82	0.22 – 3.08	-	
46+	0.68	0.23 – 1.99	0.58	0.19 – 1.82	-	
Communications						
No	1.00					
Yes	0.94	0.31 – 2.80	0.85	0.26 – 2.73	-	
Motorized transport						
No Motor	1.00					
Motor	0.41	0.05 – 3.49	0.55	0.06 – 5.07	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.35*	0.15 – 0.83	0.43	0.17 – 1.14	-	
Travel time						
>60 mins	1.00					
<60 mins	2.47*	1.11 – 5.50	2.38	0.94 – 6.04	3.07**	1.35 – 6.99
Unable to reach nearest facility						
No	1.00					
Yes	0.56	0.25 – 1.27	0.78	0.33 – 1.85	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Preferences for Private or Public Health Services

Descriptive analysis

Table 5.13shows the results for respondents from the Busia district that would choose to seek health care in the private sector if given the choice. There were 185 (40%) individuals that reported they would choose health care in the private sector, 118 (40%) of these were female and 67 (42%) were male.

One hundred and forty one (41%) individuals that responded they would prefer health care in the private sector reported they were literate and 44 (39%) were not literate. One hundred and forty seven (59%) reported having some type of formal education and 38 (61%) respondents did not. There appeared to be some differences in the percentages of those that would prefer private health care if given the choice and regular income, with 138 (47%) stating they had regular income and 38 (61%) reporting they did not have regular income but would prefer the private health care sector if given the choice.

The ages of respondents and those that would choose health care in the private sector was fairly evenly divided across the age groups at: 18 – 25 years, with 39 (40%) choosing private health care; 26 – 35 years, with 44 (40%) choosing private health care services; 36-45 years, with 35 (39%) choosing private health care services; and 46 years and over, with 67 (41%) respondents stating they would prefer private health care services if given the choice.

One hundred and sixty four individuals (43%) with access to communications stated they would choose private health care if they were given the choice, while 21 (28%) individuals stated they did not have access to communications but would still choose private sector health care. Only four (50%) respondents that had access to motorized transport would choose private health care, while 181 (40%) individuals that were unable to obtain access to motorized transport would still choose private health care.

Of those individuals that lived closest to a hospital or health centre, 27 (35%) would choose private health care while 158 (41%) of those individual respondents that were closest to a clinic or dispensary would choose the private health care sector if they were able. One hundred and thirty six (40%) individuals preferring private health services lived within 60 minutes travel time of the nearest health facility and 49 (40%) lived further than 60 minutes. One hundred and three (45%) individuals stating they would prefer private health care services if given the choice also stated they had a time when they were unable to reach the nearest health facility, while for 82 (46%) this had not been a problem.

Respondents recorded their preferences for the treatment of members of their household with 175 (38%) choosing to use private health care as seen in Table 5.13. One hundred and ten (37%) of these were female and 65 (40%) were male.

Again, for those that were literate, 138 (40%) stated they would prefer a member of their household to use private health services if given the choice, as did the 37 (33%) that stated they were not literate. One hundred and forty three (60%) respondents stated they had some formal education while 32 (67%) did not. Of those preferring private sector health care services, 131 (45%) responded they had a regular income and 44 (27%) did not.

The age of respondents and their preferences for private health care for members of their household did not vary greatly in percentages between the different age groups. Those choosing private health care services for members of the household ranged from respondents 18 – 25 years, where 36 (37%) would prefer a member of their household used private health care services; 26 – 35 years, where 43 (40%) would prefer a member of their household used private health care services; 36 – 45 years, where 35 (39%) would prefer a member of their household used private health care services; and 46 years and over, where 61 (38%) would prefer a member of their household used private health care services.

Of those with access to communications, 156 (41%) would prefer private health care for a member of their household, as would 19 (26%) respondents that did not have access to communications. Three (37%) respondents that stated they had access to motorized transport and 172 (38%) that did not have access to motorized transport would choose the private health care sector for a member of their household. Of respondents that lived closest to a hospital or health centre, 27 (35%) would prefer private sector health care for a member of their household, as would 148 (39%) of respondents that lived closest to a clinic or dispensary. For those respondents that would choose private health care for members of the household, 129 (39%) had less than 60 minutes travel time to the nearest health facility and 46 (37%) had further than 60 minutes travel time to the nearest health facility. Ninety eight (45%) respondents that reported being unable to reach the nearest health care facility at some time in the past would choose the private health care sector for a member of their household, as would 77 (44%) respondents that had not had this problem.

Table 5.13
Numbers and Percentages of Respondents from the Busia District that Would Choose to Seek Health Care in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		185	40	175	38
Gender					
	Female	118	40	110	37
	Male	67	42	65	40
Literacy					
	Yes	141	41	138	40
	No	44	39	37	33
Education					
	Yes	147	59	143	67
	No	38	61	32	60
Regular income					
	Yes	138	47	131	45
	No	47	28	44	27
Age					
	18 - 25	39	40	36	37
	26 - 35	44	40	43	40
	36 - 45	35	39	35	39
	46+	67	41	61	38
Communications					
	Yes	164	43	156	41
	No	21	28	19	26
Motorized transport					
	Yes	4	50	3	37
	No	181	40	172	38
Closest facility					
	Hospital/ health centre	27	35	27	35
	Clinic/ dispensary	158	41	148	39
Travel time					
	<60 mins	136	40	129	39
	>60 mins	49	40	46	37
Ever unable to reach facility					
	Yes	103	45	98	45
	No	82	46	77	44

Univariate analysis

In univariate analysis as shown in Table 5.14, individuals from the Busia district were more likely to choose private health care services if they reported having regular income as compared to those that did not have regular income (OR = 2.25, CI = 1.50 – 3.39, $p<0.001$), while individuals that reported having access to communications were more likely to prefer private health facilities (OR = 1.92, CI = 1.11 – 3.30, $p<0.05$) than those that stated they did not have access.

Private health care facilities were also preferred for members of the household if respondents were receiving regular income (OR = 2.27, CI = 1.50 – 3.44, p<0.001), rather than those that did not have regular income, and were also more likely to report a time when they had been unable to reach the nearest health facility in the past (OR = 1.66, CI = 1.13 – 2.42, p<0.010).

Multivariate analysis

In multiple regression analysis individuals from the Busia district that reported they would prefer private health facilities were more likely to also have regular income, than those that did not have regular income (OR = 2.25, CI = 1.50 – 3.39, p<0.001).

The same result can be seen in Table 5.15 for respondents that reported they would prefer members of the household to be treated at private health facilities if they had a regular income (OR = 2.18, CI = 1.44 – 3.32, p<0.001). Respondents that would prefer private health care facilities for members of their household were also more likely to report a time when they had been unable to reach the nearest health care facility at some time in the past (OR = 1.54, CI = 1.05 – 2.27, p<0.05).

Table 5.14
Individuals from the Busia District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.08	0.73 – 1.60	1.02	0.66 – 1.56	-	
Literacy						
Yes	1.00					
No	0.93	0.60 – 1.43	1.11	0.44 – 2.76	-	
Education						
No	1.00					
Yes	1.08	0.69 – 1.71	1.02	0.40 – 2.62	-	
Regular income						
No	1.00					
Yes	2.25****	1.50 – 3.39	2.16****	1.40 – 3.33	2.25****	1.50 – 3.39
Age						
18 – 25	1.00					
26 – 35	1.02	0.59 – 1.79	0.98	0.55 – 1.74	-	
36 – 45	0.98	0.55 – 1.76	0.97	0.52 – 1.78	-	
46+	1.06	0.63 – 1.76	1.10	0.64 – 1.90	-	
Communications						
No	1.00					
Yes	1.92*	1.11 – 3.30	1.66	0.93 – 2.97	-	
Motorized transport						
No Motor	1.00					
Motor	1.49	0.37 – 6.04	1.25	0.30 – 5.20	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.77	0.46 – 1.28	0.75	0.42 – 1.33	-	
Travel time						
>60 mins	1.00					
<60 mins	1.03	0.67 – 1.57	0.81	0.49 – 1.32	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.44	0.99 – 2.10	1.39	0.93 – 2.07	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.15
Members of the Household from the Busia District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.13	0.76 – 1.68	1.00	0.65 – 1.54	-	
Literacy						
Yes	1.00					
No	0.75	0.48 – 1.18	0.86	0.34 – 2.18	-	
Education						
No	1.00					
Yes	1.31	0.82 – 2.11	1.00	0.38 – 2.62	-	
Regular income						
No	1.00					
Yes	2.27****	1.50 – 3.44	1.99***	1.28 – 3.10	2.18****	1.44 – 3.32
Age						
18 – 25	1.00					
26 – 35	1.12	0.64 – 1.97	1.08	0.61 – 1.93	-	
36 – 45	1.08	0.60 – 1.95	1.15	0.62 – 2.13	-	
46+	1.02	0.61 – 1.72	1.15	0.66 – 1.99	-	
Communications						
No	1.00					
Yes	1.99	1.14 – 3.48	1.69	0.93 – 3.06	-	
Motorized transport						
No Motor	1.00					
Motor	0.97	0.23 – 4.09	0.78	0.18 – 3.38	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.85	0.51 – 1.41	0.83	0.47 – 1.48	-	
Travel time						
>60 mins	1.00					
<60 mins	1.05	0.69 – 1.61	0.88	0.54 – 1.44	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.66**	1.13 – 2.42	1.61*	1.07 – 2.41	1.54*	1.05 – 2.27
District						

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

5.1.4 Outcome Variable 4: Those That Reported Receiving All The Treatment They Needed?

There were 332 individuals from the Busia district that reported whether they had received all the treatment they needed, (53%) reported they had, while 155 (47%) reported they had not, and one respondent was unsure. The reasons reported by individuals for not receiving all the treatment they needed were: 32 (19%) felt better, 75 (44%) reported the treatment was too expensive, 52 (30%) stated the entire course of

treatment was not available, 6 (SSC Protocol No 831) had other reasons, while 7 (4%) respondents reported they didn't know.

There were 123 responses by participants regarding members of the household, where 208 (65%) reported having received all the treatment they needed and 111 (35%) did not. The reasons reported by participants for members of the household not receiving all the treatment they needed were: 18 (15%) felt better, 58 (47%) stated the treatment was too expensive, 32 (26%) reported the treatment was not available, 6 (5%) had another reason, and 9 (7%) didn't know.

Descriptive Analysis

Results of descriptive analysis for individuals from the Busia district are presented in Table 5.16. There was no significant difference in the percentage of females to males and receiving all the treatment needed, with 119 (54%) females and 56 (51%) males reporting they received all the treatment they needed.

One hundred and thirty two (55%) individual participants that received all the treatment they needed, stated they were literate and 44 (47%) were not. One hundred and thirty four (53%) stated they had had some type of formal education and 42 (52%) reported having no type of formal education. Of those reporting regular income, 127 (58%) reported receiving all the treatment they needed, as did 49 (44%) of those not having regular income.

The age of individual respondents in the Busia district that reported receiving all the treatment needed differed somewhat with those 18 – 25 years more likely to report they had received all the treatment they needed with 36 (61%), while those 36 – 45 years were the least likely (28/44%). The other age groups were fairly even with those 26 – 35 years, 43 (55%) and 46 and above years, 69 (53%).

Of those individual respondents from the Busia district that had access to communications a higher percentage reported receiving all the treatment they needed at 153 (55%) as compared with those individuals, 23 (41%), that did not have access to communications. Only 3 (50%) respondents had access to motorized transport, while the majority did not have access (173 / 53%), however this did not seem to proportionately affect who reported receiving all the treatment needed and who did not.

Thirty two (58%) individuals from the Busia district that stated they received all the treatment they needed reported having a hospital or health centre as the closest health facility, while 144 (52%) individuals reported living closest to a clinic or dispensary. The percentage of those that reported receiving all the needed treatment and time taken to travel to the nearest health facility was fairly even, with 126 (52%) stating they had less than 60 minutes travel time to the nearest health facility and 50 (55%) reporting they had further than 60 minutes to travel. For individuals that reported receiving all the treatment they needed, there were still 90 (52%) that responded they had been unable to reach a health facility at some time, but for 84 (54%) respondents this had not been a problem.

Respondents reporting for members of the household from the Busia district are presented in Table 5.16. A slightly higher percentage of males reported a member of the household had received all the treatment they needed with 126 (63%) females and 81 (69%) males.

More of these respondents reported being literate with 165 (68%) reporting they were literate and 43 (55%) reporting they were not. A higher percentage of respondents also reported having some type of formal education, with 165 (68%) reporting they had and 43 (55%) reported having no type of formal education. One hundred and forty (68%) participants from the Busia district that reported a member of the household received all the treatment needed also reported receiving regular income, while 68 (61%) did not. A higher percentage of those in the 26 – 35 years age group reported a member of their household had received all the treatment they needed (49 / 72%), while the other age groups varied with those: 18 – 25 years, 46 (67%), 36 – 45 years, 38 (62%); and 46 and above years, 75 (62%).

A higher percentage of respondents that had access to communications reported a member of their household had received all the treatment they needed, at 180 (66%), while 28 (58%) respondents reported not having access to communications, but to receiving all the treatment they needed. Five (71%) participants that were able to obtain motorized transport and 203 (65%) that weren't able, reported receiving all needed treatment.

Of those members of the household that were reported to receive all the treatment they needed, 40 (70%) lived closest to a hospital or health centre and 168 (64%) lived closest to a clinic or dispensary. Travel time to the nearest health facility

was less than 60 minutes for 157 (67%) respondents and further than 60 minutes for 51 (61%). One hundred and nine (64%) members of the household were reported as receiving all the treatment they needed in the past three months, although they had still reported a time when they were unable to reach the nearest health facility. This was not a problem for 99 (66%) respondents.

Table 5.16
Numbers and Percentages of Respondents from the Busia District that Reported Being Sick and Receiving All the Treatment They Needed

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		176	53	208	65
Gender					
	Female	119	54	126	63
	Male	56	51	81	69
Literacy					
	Yes	132	55	165	68
	No	44	47	43	55
Education					
	Yes	134	53	165	66
	No	42	52	43	61
Regular income					
	Yes	127	58	140	68
	No	49	44	68	61
Age					
	18 - 25	36	61	46	67
	26 - 35	43	55	49	72
	36 - 45	28	44	38	62
	46+	69	53	75	62
Communications					
	Yes	153	55	180	66
	No	23	41	28	58
Motorized transport					
	Yes	3	50	5	71
	No	173	53	203	65
Closest facility					
	Hospital/ health centre	32	58	40	70
	Clinic/ dispensary	144	52	168	64
Travel time					
	<60 mins	126	52	157	67
	>60 mins	50	55	51	61
Ever unable to reach facility					
	Yes	90	52	109	64
	No	84	54	99	66

Univariate Analysis

Univariate analysis results for individuals having reported receiving all the treatment they needed, showed participants were more likely to report having regular income (OR = 1.69, CI = 1.07 – 2.68, $p<0.05$) than those that did not have regular income. Also individuals that reported having access to communications were more likely than those that did not have access to report receiving all the treatment they needed (OR = 1.81, CI = 1.01 – 3.24, $p<0.05$).

Participants that reported a member of their household received all the treatment needed were less likely to be illiterate, than literate (OR = 0.57, CI = 0.34 – 0.95, $p<0.05$).

Multivariate Analysis

Table 5.17 shows the results for multivariate analysis of individuals from the Busia district. Those that reported they had received all the treatment they needed were less likely to be illiterate, than literate (OR = 0.28, CI = 0.09 – 0.85, $p<0.05$) and less likely more likely to have some formal education, than those that had no education (OR – 0.29, CI = 0.09 – 0.85, $p<0.05$). Individuals that reported receiving all the treatment they needed were also more likely to have access to communications, than those that did not have access to communications (OR = 1.89, CI = 1.00 – 3.59, $p<0.05$). However, these results were significant in the full model only and did not meet the study criteria once stepwise regression had taken place, but may be interpreted with caution in conjunction with other results.

Results reported by respondents for members of the household (see Table 5.18) from the Busia district and receiving all the treatment needed showed they were less likely to be illiterate, than those that were literate (OR = 0.20, CI = 0.06 – 0.73, $p<0.010$) and less likely to have some formal education, than those with no formal education (OR = 0.28, CI = 0.08 – 0.96, $p<0.05$).

Table 5.17
Individuals from the Busia District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.89	0.56 – 1.41	0.74	0.44 – 1.24	-	
Literacy						
Yes	1.00					
No	0.69	0.43 – 1.12	0.28*	0.09 – 0.85	-	
Education						
No	1.00					
Yes	1.08	0.65 – 1.78	0.29*	0.09 – 0.85	-	
Regular income						
No	1.00					
Yes	1.69*	1.07 – 2.68	1.60	0.97 – 2.64	-	
Age						
18 – 25	1.00					
26 – 35	0.78	0.39 – 1.56	0.77	0.38 – 1.57	-	
36 – 45	0.50	0.24 – 1.02	0.55	0.26 – 1.16	-	
46+	0.73	0.39 – 1.37	0.84	0.43 – 1.63	-	
Communications						
No	1.00					
Yes	1.81*	1.01 – 3.24	1.89*	1.00 – 3.59	-	
Motorized transport						
No Motor	1.00					
Motor	0.87	0.17 – 4.39	0.74	0.14 – 3.88	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.27	0.71 – 2.27	1.46	0.76 – 2.83	-	
Travel time						
>60 mins	1.00					
<60 mins	0.91	0.56 – 1.48	0.88	0.51 – 1.54	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.96	0.63 – 1.49	0.91	0.57 – 1.47	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 5.18
Members of the Household from the Busia District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.27	0.78 – 2.06	1.18	0.69 – 2.01	-	
Literacy						
Yes	1.00					
No	0.57*	0.34 – 0.95	0.21*	0.06 – 0.72	0.20**	0.06 – 0.63
Education						
No	1.00					
Yes	1.23	0.71 – 2.13	0.23*	0.07 – 0.82	0.28*	0.08 – 0.96
Regular income						
No	1.00					
Yes	1.35	0.84 – 2.18	1.18	0.70 – 1.99	-	
Age						
18 – 25	1.00					
26 – 35	1.29	0.62 – 2.70	1.39	0.66 – 2.95	-	
36 – 45	0.83	0.40 – 1.70	0.86	0.40 – 1.84	-	
46+	0.82	0.43 – 1.52	0.90	0.47 – 1.73	-	
Communications						
No	1.00					
Yes	1.41	0.75 – 2.64	1.26	0.63 – 2.50	-	
Motorized transport						
No Motor	1.00					
Motor	1.34	0.26 – 7.03	1.11	0.20 – 6.02	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.32	0.71 – 2.45	1.92	0.91 – 4.05	-	
Travel time						
>60 mins	1.00					
<60 mins	1.30	0.79 – 2.18	1.40	0.75 – 2.61	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.90	0.57 – 1.43	0.94	0.57 – 1.54	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

CHAPTER 6
MALINDI DISTRICT

6.1.1 Outcome Variable 1: Who Was Sick And Sought Treatment?

Descriptive Analysis

As Table 6.1 shows, of the 442 participants in the Malindi district, 226 (51%) individuals reported being sick and seeking treatment in the past three months. One hundred and forty (50%) females and 86 (53%) males stated they had been sick and sought treatment in the past three months.

Of those individuals that reported being literate, 127 (49%) were sick and sought treatment while 99 (54%) of those that were not literate also sought treatment. Based on educational level, for those individuals that reported some type of formal education, 135 (51%) reported seeking treatment, while 91 (52%) individuals that reported having no formal education, were also sick and had sought treatment. A higher percentage of individuals that reported having no regular income had been sick and sought treatment in the past three months. Of those individuals that reported regular income 215 (51%) had sought treatment and 11 (65%) of those reported having no regular income sought treatment.

According to the percentages of the ages of respondents that were sick and sought treatment, the older the respondent the higher the percentage likelihood they had been sick and sought treatment. This is represented in Table 6.1 with the ages as follows: 18-25 years, 52 (45%); 26-35 years, 61 (50%); 36-45 years 43 (51%); and 46+ years 70 (58%).

For those individuals that were sick and sought treatment, 152 (50%) reported they had access to communications, while 74 (54%) stated they did not. Sixty five individuals (52%) that sought treatment reported having access to motorized transport, while 161 (51%) of those that were sick stated they were not able to obtain access to motorized transport. Looking at closest facilities, 47 (57%) individuals reported being closest to a hospital or health centre, while 179 (50%) of those that sought treatment report being closest to a clinic or dispensary. Of individuals that reported seeking treatment, there was a difference in the percentage of those that had less travel time to

the nearest health care facility as compared to respondents who had a greater travel time. One hundred and twenty nine (46%) stated they had less than 60 minutes travel time to the nearest health facility while 97 (60%) reported needing to travel for more than 60 minutes. A greater percentage of individuals had a time previously when they had been unable to reach the nearest health facility, with 102 (61%) individuals that were sick reporting a time when they were unable to get to a health facility, and 124 (45%) stating they had not experienced this difficulty.

In Table 6.1, from 442 respondents in Malindi, 254 (58%) reported a member of the household had been sick and sought care in the past three months. Male respondents more often reported a member of the household had been sick and sought treatment, with 150 (53%) of females and 104 (66%) of males reporting a member of the household as being sick and seeking treatment.

Of those reporting being literate, 159 (62%) reported a member of the household had been sick and sought treatment as compared to 95 (52%) of those respondents that reported being illiterate. Examination of education level shows that 164 (62%) of those with some type of formal education reported a member of the household was sick and sought treatment while 90 (52%) had no formal education. Of those respondents with regular income, 245 (58%) reported a member of the household seeking treatment while 9 (53%) reported not having regular income.

The differences based on age are seen in Table 6.1. There is little differences in the percentages of the ages of respondents with 71 (62%) of those aged 18-25 years, 68 (57%) of those aged 26-35years, 49 (58%) of those aged 36-45 years, and 66 (55%) of those aged 46 years and above reporting they were sick and sought treatment.

A larger percentage of those that had access to communications reported a member of the household had been sick and sought treatment in the past three months, with 187 (62%) reporting having access to communications and 67 (50%) reporting they did not have access to communications. Seventy six (61%) respondents that reported a member of the household had sought treatment reported having access to motorized transport and 178 (57%) did not.

Of those respondents reporting a member of the household had been sick and sought treatment in the past three months, 49 (60%) reported a hospital or health centre was the closest health facility and 205 (57%) reported a clinic or dispensary was closest.

In terms of travel time, 152 (54%) reported members of the household had less than 60 minutes travel time to the nearest health facility and 102 (64%) reported more than 60 minutes. One hundred and ten (74%) respondents reported a member of the household had been unable to reach a health facility at some time previously, a much greater percentage than the 143 (49%) that reported this had not been an issue for them.

Table 6.1
Numbers and Percentages of Respondents from the Malindi District that Reported Being Sick and Sought Treatment by Independent Variables

		Individual		**Member of the household**	
		n	**%**	**N**	**%**
Overall		226	51	254	58
Gender					
	Female	140	50	150	53
	Male	86	53	104	66
Literacy					
	Yes	127	49	159	62
	No	99	54	95	52
Education					
	Yes	135	51	164	62
	No	91	52	90	52
Regular income					
	Yes	215	51	245	58
	No	11	65	9	53
Age					
	18 - 25	52	45	71	62
	26 - 35	61	50	68	57
	36 - 45	43	51	49	58
	46+	70	58	66	55
Communications					
	Yes	152	50	187	62
	No	74	54	67	50
Motorized transport					
	Yes	65	52	76	61
	No	161	51	178	57
Closest facility					
	Hospital/ health centre	47	57	49	60
	Clinic/ dispensary	179	50	205	57
Travel time					
	<60 mins	129	46	152	54
	>60 mins	97	60	102	64
Ever unable to reach facility					
	Yes	102	61	110	74
	No	124	45	143	49

Univariate Analysis

Univariate analysis results for the Malindi district in Table 6.2 show that individuals that were sick and sought treatment in the past three months were more likely to report being unable to reach the nearest health care facility at some time in the past (OR = 1.91, CI = 1.29 – 2.83, $p<0.001$), while respondents were less likely to live within 60 minutes travel time of the nearest health facility (OR = 0.57, 0.39 – 0.85, $p<0.005$). Respondents that were aged 46 years and above were more likely to report having been sick and seeking treatment in the past three months as compared to the youngest age group (OR = 1.72, CI = 1.03 – 2.88, $p<0.05$).

Respondents reporting for members of the household were more likely to report being unable to reach the nearest health facility at some time as presented in Table 6.3 (OR = 2.98, CI = 1.93 – 4.60, $p<0.001$). Those reporting for a member of the household in the Malindi district were also more likely to have access to communications (OR = 1.62, CI = 1.08 – 2.44, $p<0.05$) if they reported being sick and seeking treatment in the past three months, than those that did not have access to communications. Males in the Malindi district were more likely to report a member of the household had been sick and sought treatment in the past three months than females (OR = 1.68, CI = 1.12 – 2.52, $p<0.05$).

Multivariate Analysis

Results for the Malindi district in Table 6.2 show that for individuals that reported they had been sick and sought treatment, being unable to reach the nearest health facility at some time was more likely (OR = 1.91, CI = 1.29 – 2.83, $p<0.001$), once all other variables had been excluded.

Respondents reporting for members of the household that were sick and sought treatment in the past three months, reported it was more likely there had been a time when they had been unable to reach the nearest health facility than those that did not have this difficulty (OR = 3.03, CI = 1.96 – 4.69, $p<0.001$). Participants that had access to communications were also more likely to report a member of the household had been sick and sought treatment (OR = 1.65, CI = 1.08 – 2.52, $p<0.05$).

Table 6.2
Individuals from the Malindi District that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.15	0.78 – 1.70	1.04	0.66 – 1.64	-	
Literacy						
Yes	1.00					
No	1.22	0.84 – 1.79	2.52	0.91 – 7.00	-	
Education						
No	1.00					
Yes	0.94	0.64 – 1.38	2.71	0.98 – 7.49	-	
Regular income						
No	1.00					
Yes	0.59	0.20 – 1.54	0.58	0.20 – 1.70	-	
Age						
18 – 25	1.00					
26 – 35	1.25	0.75 – 2.09	1.28	0.76 – 2.17	-	
36 - 45	1.26	0.72 – 2.21	1.20	0.66 – 2.17	-	
46+	1.72*	1.03 – 2.88	1.66	0.93 – 2.97	-	
Communications						
No	1.00					
Yes	0.85	0.56 – 1.27	0.91	0.59 – 1.40	-	
Motorized transport						
No Motor	1.00					
Motor	1.05	0.69 – 1.59	1.24	0.80 – 1.93	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.36	0.84 – 2.20	1.19	0.71 – 1.99	-	
Travel time						
>60 mins	1.00					
<60 mins	0.57***	0.39 – 0.85	0.69	0.44 – 1.08	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.91****	1.29 – 2.83	1.67*	1.10 – 2.55	1.91****	1.29 – 2.83

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.3
Members of the Household from the Malindi district that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.68*	1.12 – 2.52	1.46	0.90 – 2.35	-	
Literacy						
Yes	1.00					
No	0.671.22	0.46 – 0.99	1.28	0.48 – 3.39	-	
Education						
No	1.00					
Yes	1.52	1.03 – 2.23	1.57	0.60 – 4.13	-	
Regular income						
No	1.00					
Yes	1.23	0.47 – 3.25	0.98	0.33 – 2.88	-	
Age						
18 – 25	1.00					
26 – 35	0.83	0.49 – 1.39	0.88	0.51 – 1.54	-	
36 - 45	0.84	0.48 – 1.49	0.83	0.44 – 1.54	-	
46+	0.76	0.45 – 1.27	0.73	0.40 – 1.33	-	
Communications						
No	1.00					
Yes	1.62*	1.08 – 2.44	1.60*	1.02 – 2.51	1.65*	1.08 – 2.52
Motorized transport						
No Motor	1.00					
Motor	1.19	0.78 – 1.81	1.36	0.86 – 2.16	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.14	0.70 – 1.87	0.90	0.53 – 1.55	-	
Travel time						
>60 mins	1.00					
<60 mins	0.68	0.46 – 1.01	0.76	0.47 – 1.21	-	
Unable to reach nearest facility						
No	1.00					
Yes	2.98****	1.93 – 4.60	2.82****	1.77 – 4.52	3.03****	1.96 – 4.69

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

6.1.2 Outcome Variable 2: Where Did Individuals And Members Of The Household Seek Treatment?

There were 231 individuals in the Malindi district that reported where they obtained their health care, of these 7 (3%) treated themselves, 54 (23%) received treatment from a shop, 13 (6%) from a pharmacy, 2 (1%) from a traditional healer, 70 (30%) from a government hospital or health centre, 17 (7%) from a private hospital or health centre, 31 (13%) from a government clinic or dispensary, and 37 (16%) from a private clinic or dispensary.

Two hundred and sixty participants reported where members of the household sought health care in the Malindi district. Of these, 7 (3%) treated themselves, 35 (13%) sought treatment in a shop, 17 (7%) at a pharmacy, 2 (1%) at a traditional healer, 91 (35%) at a government hospital or health centre, 9 (3%) at a private hospital or health centre, 52 (20%) at a government clinic or dispensary, and 47 (18%) at a private clinic or dispensary.

As with the aggregate level data, dichotomous variables were created to reflect the possible health care options and were divided into: formal and informal, public and private. Analysis of these outcome variables is presented using the same independent variables as the aggregate level data. Each district will be presented in turn: the Busia district, the Malindi district and the Samburu district.

Use of Formal or Informal Health Services

Descriptive analysis

From the 231 individuals in the Malindi district that reported where they sought health care in the past three months, 155 (67%) of respondents utilized a formal health care facility. As can be seen in Table 6.4, there was essentially no difference between the sexes of those that used formal health care services as 98 (68%) were female and 57 (66%) were male.

Eighty seven (67%) respondents reported being literate and 68 (67%) reported they were not, while 93 (67%) participants reported some formal education, and 62 (67%) did not have any type of formal education. Regular income may have had an impact on individuals seeking treatment in the formal health care sector for the Malindi district as there was a lower percentage of individuals seeking formal health care if they also reported they received no regular income (6/50%), than those that reported receiving regular income (149 / 68%).

There was a difference noted in the percentage of those from the 36-45 years age group, with 34 respondents (74%) reported seeking formal health care services as compared to those 46 years and above, for which there were 42 respondents, but only 61% reportedly sought formal health care. Of the other age groups there was no difference with 36 (68%) of those 18-25 years and 43 (68%) of those 26 – 35 years stating they used formal health care services.

One hundred and nine (70%) individuals had access to communications, and 46 (61%) did not, while 48 (72%) used motorized transport to reach the nearest health facility and 107 (65%) did not have access to motorized transport. Ninety two (69%) respondents reported that travel time to the nearest health facility was less than 60 minutes, but 63 (65%) reported they had to travel more than 60 minutes. A greater percentage of respondents used formal health care if a hospital or health centre was the closest health option for them with 38 (81%) individuals reporting they used formal health services and 117 (64%) individuals that lived closer to a clinic or dispensary reported using formal health services. Sixty five (64%) individual respondents that used formal health services reported being unable to reach a health facility at one time, while 90 (70%) said this had not been a problem.

Responses for members of the household in the Malindi district in

showed that 199 (77%) had sought treatment in the formal health care sector in the past three months. A greater percentage of males reported a member of the household had sought treatment in the formal health care sector with 86 (81%) males reporting this as compared to 113 (73%) females.

One hundred and twenty four (77%) respondents that reported a member of the household had sought treatment in the formal health care sector reported being literate and 75 (77%) were not literate. Education did not appear to be a factor with 126 (75%) respondents having some type of formal education while 73 (78%) had not. Of these 192 (76%) reported receiving regular income, and 7 (78%) did not.

A lower percentage of respondents from the 26 – 35 years age group reported a member of the household had sought treatment in the formal sector with 49 or 69%. The other age groups ranged from 58 (81%) for those 18-25 years, 39 (78%) for those 36-45 years, and 53 (79%) for those in the 46 years and above age group.

One hundred and forty seven (76%) respondents that reported a member of the household sought health care in the formal sector reported having access to communications and 52 (79%) did not. Fifty seven (73%) reported they used motorized transport to reach the nearest health facility, but 142 (78%) were not able to. Thirty eight (76%) reported a hospital or health centre was the nearest medical facility, while 161 (77%) reported that a clinic or dispensary was the closest health facility. Eighty three (74%) members of the household were reportedly unable to reach a formal health

facility at some time, while 115 (78%) members of the household did not have a problem reaching a health facility.

Table 6.4
Numbers and Percentages of Respondents from the Malindi District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		155	67	199	77
Gender					
	Female	98	68	113	73
	Male	57	66	86	81
Literacy					
	Yes	87	67	124	77
	No	68	67	75	77
Education					
	Yes	93	67	126	75
	No	62	67	73	78
Regular income					
	Yes	149	68	192	76
	No	6	50	7	78
Age					
	18 - 25	36	68	58	81
	26 - 35	43	68	49	69
	36 - 45	34	74	39	78
	46+	42	61	53	79
Communications					
	Yes	109	70	147	76
	No	46	61	52	79
Motorized transport					
	Yes	48	72	57	73
	No	107	65	142	78
Closest facility					
	Hospital/ health centre	38	81	38	76
	Clinic/ dispensary	117	64	161	77
Travel time					
	<60 mins	92	69	123	79
	>60 mins	63	65	76	73
Ever unable to reach facility					
	Yes	65	64	83	74
	No	90	70	115	78

Univariate analysis

Results of univariate analysis for individuals that reported they were sick in the past three months and sought treatment in the formal sector is shown in Table 6.5.

Individuals in the Malindi district were more likely to live closest to a hospital or health centre (OR = 2.42, CI = 1.10 – 5.31, $p<0.05$).

Univariate results did not meet the study criteria for significance between a member of the household being ill and seeking treatment in the formal sector in the past three months and the independent variables.

Multivariate analysis

Multivariate regression analysis for respondents in the Malindi district in Table 6.5 show individuals seeking treatment in the formal sector were more likely to have a hospital or health centre as the closest health facility (OR = 2.42, CI = 1.10 – 5.31, $p<0.005$).

For members of the household, it appears that none of the independent variables met the study criteria as significant at the $p<0.05$ level.

Table 6.5
Individuals from the Malindi District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.89	0.51 – 1.57	1.01	0.52 – 1.95	-	
Literacy						
Yes	1.00					
No	0.97	0.56 – 1.68	0.97	0.25 – 3.80	-	
Education						
No	1.00					
Yes	1.03	0.59 – 1.81	0.89	0.22 – 3.57	-	
Regular income						
No	1.00					
Yes	2.13	0.66 – 6.84	2.03	0.58 – 7.18	-	
Age						
18 – 25	1.00					
26 – 35	1.02	0.46 – 2.22	1.22	0.54 – 2.73	-	
36 – 45	1.34	0.56 – 3.21	1.34	0.52 – 3.43	-	
46+	0.73	0.35 – 1.56	0.74	0.30 – 1.79	-	
Communications						
No	1.00					
Yes	1.46	0.82 – 2.60	1.25	0.66 – 2.36	-	
Motorized transport						
No Motor	1.00					
Motor	1.35	0.72 – 2.50	1.36	0.70 – 2.62	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	2.42*	1.10 – 5.31	2.77*	1.21 – 6.37	2.42*	1.10 – 5.31
Travel time						
>60 mins	1.00					
<60 mins	1.18	0.68 – 2.06	1.23	0.64 – 2.35	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.76	0.44 – 1.32	0.78	0.41 – 1.45	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.6
Members of the Household from the Malindi District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.56	0.85 – 2.85	1.86	0.93 – 3.72	-	
Literacy						
Yes	1.00					
No	1.00	0.55 – 1.81	0.43	0.09 – 2.04	-	
Education						
No	1.00					
Yes	0.84	0.46 – 1.55	0.28	0.06 – 1.35	-	
Regular income						
No	1.00					
Yes	0.93	0.19 – 4.60	1.46	0.27 – 7.73	-	
Age						
18 – 25	1.00					
26 – 35	0.54	0.25 – 1.16	0.52	0.24 – 1.16	-	
36 – 45	0.86	0.35 – 2.08	0.74	0.28 – 1.92	-	
46+	0.91	0.40 – 2.09	0.78	0.30 – 2.04	-	
Communications						
No	1.00					
Yes	0.84	0.43 – 1.65	0.85	0.42 – 1.72	-	
Motorized transport						
No Motor	1.00					
Motor	0.76	0.41 – 1.41	0.66	0.34 – 1.30	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.96	0.47 – 1.99	1.07	0.50 – 2.31	-	
Travel time						
>60 mins	1.00					
<60 mins	1.37	0.77 – 2.45	1.48	0.76 – 2.90		
Unable to reach nearest facility						
No	1.00					
Yes	0.83	0.47 – 1.46	0.78	0.41 – 1.50	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Use of Private or Public Health Services

Descriptive analysis

Again from the 231 individuals in the Malindi district that reported they were sick and where they sought health care, Table 6.7 shows that 130 (56%) had sought treatment in the private sector in the past three months. Of these a higher percentage of males reported they used private health care services, with 77 (53%) females and 53 (61%) males stating they used private health services.

Seventy eight (60%) respondents using private health services reported they were literate, and 52 (50%) were not. There appeared to be a difference in the education level of those that used private health care services with 85 (62%) reporting some type of formal education, and 45 (48%) reported having no formal education. One hundred and twenty three (56%) respondents reported having regular income, while 7 (58%) stated they did not have a regular source of income but used private health services.

The results for the individual age groups of those that sought health treatment in the private sector showed only a slightly lower percentage of respondents in the 36 – 45 years age groups used private health care services with 23 or 50%. The other age groups were: 18-25 years with 31 (58%) respondents, 26-35years with 37 (59%) respondents, and 46 years and above with 39 (57%) respondents.

Eighty three (53%) individuals reported they had access to communications, while 47 (63%) did not. Of those respondents that had access to motorized transport, 38 (57%) sought treatment in the private health sector, while 92 (56%) of those that used the private health care sector did not have access to motorized transport. For 18 (38%) respondents a hospital or health centre was the closest health facility and a clinic or dispensary was the closest for 112 (61%) that used private health services. Seventy seven (57%) of those individuals that used private health services reported they had less than 60 minutes to travel to their nearest health facility, while 53 (55%) had further than 60 minutes to travel. Fifty six (55%) individuals that reported using private health services stated they had been unable to reach the nearest health facility at some time, as compared with 74 (57%) respondents for which this had not been a problem.

Table 6.7 shows that for members of the household in the Malindi district, 117 (45%) were reported to have sought treatment in the private sector in the past three months. There was a slightly higher percentage of females to males that reported a member of their household had sought treatment in the private sector with 75 (49%) females and 42 (40%) males.

For those that reported members of the household that sought treatment in the private health sector, literacy did not appear to be a point of difference with those that were literate (72 / 46%) and those that were not literate (45 / 44%) reporting a member of the household had sought health care from a private source. Also there did not appear to be any difference based upon formal education with 76 (46%) of those with some type of formal education reporting a member of the household had sought

treatment in the private sector and 41 (44%) of those without formal education also reporting a member of the household had sought treatment in the private health care sector. Those respondents with regular income (113/45%) and those that reported not having regular income (4 / 44%) similarly reported a member of the household had sought treatment in the private health care sector.

There was a difference in the percentages of those that reported a member of their household had sought health care in the private sector of respondents from the 18 – 25 years age group with 37 (51%) as compared to the percentage of the 46 years and above age group with 26 (39%). For those respondents 26 – 35 years, 33 (46%) reported a member of the household used private health care, while 21 (42%) of those in the 36 – 45 years age group reported the same for a member of their household.

Eighty four (43%) respondents reported that members of the household had access to communications and 33 (50%) did not. There was also little difference based upon access to motorized transport with 34 (44%) that had access to motorized transport reported a member of the household had sought treatment in the private sector and 83 (46%) of those that were unable to obtain access to motorized transport.

A hospital or health centre was reported as the closest health facility for 19 (38%) participants that reported a member of the household had sought treatment in the private health care sector and a clinic or dispensary was closest for 98 (47%). It was reported that 70 (45%) members of the household had less than 60 minutes travel time to the nearest health facility, while 98 (47%) reported they had further than 60 minutes to travel to the nearest health facility. Fifty (50 / 45%) respondents reported a time when a member of the household had been unable to reach the nearest health facility, although 66 (45%) also stated this had not been an issue.

Table 6.7
Numbers and Percentages of Respondents from the Malindi District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		130	56	117	45
Gender					
	Female	77	53	75	49
	Male	53	61	42	40
Literacy					
	Yes	78	60	72	44
	No	52	51	45	46
Education					
	Yes	85	62	76	46
	No	45	48	41	44
Regular income					
	Yes	123	56	113	45
	No	7	58	4	44
Age					
	18 - 25	31	58	37	51
	26 - 35	37	59	33	46
	36 - 45	23	50	21	42
	46+	39	57	26	39
Communications					
	Yes	83	53	84	43
	No	47	63	33	50
Motorized transport					
	Yes	38	57	34	44
	No	92	56	83	46
Closest facility					
	Hospital/ health centre	18	38	19	38
	Clinic/ dispensary	112	61	98	47
Travel time					
	<60 mins	77	57	70	45
	>60 mins	53	55	47	45
Ever unable to reach facility					
	Yes	56	55	50	45
	No	74	57	66	45

Univariate analysis

In univariate analysis as presented in Table 6.8, individuals that reported they were sick and sought treatment in the private sector were less likely to have a hospital or health centre as the closest health facility (OR = 0.40, CI = 0.21 – 0.77, p<0.010). Those individuals that reported they had been sick and sought treatment in the private health care sector were also more likely to have some type of formal education (OR = 1.71, CI = 1.00 – 2.91, p<0.05), as compared to those that did not, and to report a time

when they had been unable to reach the nearest health facility (OR = 1.63, CI = 1.08 – 2.46, $p<0.05$) as compared to those that did not have an issue with seeking health care in the past.

Univariate analysis results from Table 6.9, between those reporting for members of the household in the Malindi district seeking treatment in the private health care sector and the independent variables did not meet the study criteria for significance.

Multivariate analysis

In multiple regression analysis, individuals seeking treatment in the private sector were less likely to live closest to a hospital or health centre (OR = 0.40, CI = 0.21 – 0.77, $p<0.010$). No other independent variables were associated with individuals seeking health care in the private sector.

No independent variables were associated with seeking health care in the private sector as reported by participants for members of the household and can be seen in Table 6.9.

Table 6.8
Individuals from the Malindi District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.36	0.79 – 2.33	1.21	0.64 – 2.27	-	
Literacy						
Yes	1.00					
No	0.68	0.40 – 1.15	1.95	0.46 – 8.26	-	
Education						
No	1.00					
Yes	1.71*	1.00 – 2.91	3.32	0.78 – 14.24	-	
Regular income						
No	1.00					
Yes	0.92	0.28 – 2.97	0.91	0.26 – 3.16	-	
Age						
18 – 25	1.00					
26 – 35	1.01	0.48 – 2.12	0.94	0.44 – 2.05	-	
36 – 45	0.71	0.32 – 1.57	0.87	0.37 – 2.07	-	
46+	0.92	0.45 – 1.90	1.15	0.49 – 2.72	-	
Communications						
No	1.00					
Yes	0.68	0.39 – 1.19	0.69	0.37 – 1.28	-	
Motorized transport						
No Motor	1.00					
Motor	1.03	0.58 – 1.82	1.04	0.56 – 1.91	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.40**	0.21 – 0.77	0.42**	0.21 – 0.85	0.40**	0.21 – 0.77
Travel time						
>60 mins	1.00					
<60 mins	1.12	0.66 – 1.90	0.84	0.44 – 1.58	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.63*	1.08 – 2.46	0.97	0.53 – 1.78	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.9
Members of the Household from the Malindi District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.69	0.42 – 1.14	0.72	0.40 – 1.27	-	
Literacy						
Yes	1.00					
No	1.06	0.64 – 1.76	2.01	0.46 – 8.82	-	
Education						
No	1.00					
Yes	1.06	0.64 – 1.76	2.01	0.46 – 8.76	-	
Regular income						
No	1.00					
Yes	1.02	0.27 – 3.90	0.76	0.19 – 3.07	-	
Age						
18 – 25	1.00					
26 – 35	0.82	0.43 – 1.58	0.78	0.40 – 1.52	-	
36 – 45	0.68	0.33 – 1.42	0.70	0.32 – 1.50	-	
46+	0.60	0.31 – 1.18	0.61	0.29 – 1.32	-	
Communications						
No	1.00					
Yes	0.76	0.44 – 1.34	0.80	0.45 – 1.44	-	
Motorized transport						
No Motor	1.00					
Motor	0.92	0.54 – 1.57	0.94	0.53 – 1.68	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.70	0.37 – 1.32	0.66	0.34 – 1.30	-	
Travel time						
>60 mins	1.00					
<60 mins	0.99	0.60 – 1.63	0.94	0.53 – 1.67	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.04	0.64 – 1.69	1.15	0.67 – 1.98	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

6.1.3 Outcome Variable 3: If Individuals/Members of The Household Had A Choice Where Would They Choose To Seek Health Care?

There were 439 individuals in the Malindi district that reported where they would obtain their health care if they had a choice. The greatest percentage of people, that is 199 (45%) would choose treatment from a government hospital if they were given the choice, while 18 individuals (4%) would prefer to go to a shop, 14 (3%) would prefer a duka la dawa (pharmacy), no individual from the Malindi district chose a traditional healer, 20 (5%) from a private or mission hospital, 86 (13%) from a government health centre, 10 (2%) from a private or mission health centre, 62 (14%)

from a government clinic or dispensary, 62 (14%) from a private clinic or dispensary, while 1 individual chose 'other'.

Study participants also reported where they would take members of the household for health and medical treatment if they had the choice, of these 16 (4%) would prefer a shop, 15 (3%) would prefer a duka la dawa (pharmacy), 219 (50%) from a government hospital, 21 (5%) from a private or mission hospital, 83 (19%) from a government health centre, 13 (3%) from a private or mission health centre, 58 (13%) from a government clinic or dispensary, and 14 (3%) from a private clinic or dispensary.

Preference for Formal or Informal Health Services

Descriptive analysis

There were 406 (93%) individuals from the Malindi district, as shown in Table 6.10, that responded they would choose to seek health care services in the formal sector if given the choice. A high percentage of both females and males would prefer formal health care services with 254 (91%) female respondents and 152 (95%) male respondents choosing this option.

Of those respondents that were literate, 241 (93%) stated they would prefer the formal sector as well as 152 (95%) of those that were not literate. Two hundred and forty seven (93%) individual respondents that had some type of formal education preferred the formal sector, although 159 (92%) individuals with no formal education stated the same. Three hundred and eighty nine (92%) respondents that reported having regular income would choose the formal health care sector, and 17 (100%) of those without regular income.

Age categories for those preferring health and medical services in the formal sector are presented in Table 6.10 and are: 110 (95%) individuals 18-24 years that would prefer formal health care, 112 (94%) individuals 25-35 years that would prefer formal health services, 75 (90%) of those 36-45 years, and 109 (91%) of those 46 years of age and above would also choose formal health care services if they were given the option.

Again, for those that reported having access to communications, 281 (92%) preferred formal health care and 125 (93%) respondents that did not have access to communications, also stated they would prefer to use formal health care services. One hundred and twelve (90%) of those that could obtain motorized transport to the nearest

health facility would prefer to use formal health services and 294 (94%) of those that were unable to gain access to motorized transport.

Of those that lived closest to a hospital or health centre, 78 (95%) would choose formal health care and 328 (92%) of those that lived closest to a clinic or dispensary. Two hundred and fifty two (91%) individual respondents that would choose formal health care reported living within 60 minutes of the closest health facility and the 154 (96%) respondents that lived further than 60 minutes travel time would still choose formal health care. One hundred and fifty five (94%) individuals that preferred formal health services had had problems at some time reaching the nearest health facility, but 251 (92%) had not.

Preferences for members of the household in Malindi and using formal health services were reported for 408 (93%) participants as shown in Table 6.10. Of those that were reported to prefer the formal sector, 256 (92%) were female and 152 (95%) were male.

Two hundred and forty three (94%) of these participants preferring formal health care were literate, while 165 (91%) were not. Two hundred and forty nine (94%) had some type of formal education, while 159 (91%) had not. Having regular income, as the majority of respondents reported they did, meant that 391 (93%) reported they would prefer a member of their household use formal health care services as compared to 17 (100%) that did not.

For other factors potentially affecting health seeking in the formal sector, the results for each of the age groups that preferred to use formal health care as shown in Table 6.10 were: 18 – 25 years, 110 (95%); 26 – 35 years, 113 (94%); 36-45 years, 77 (93%); and 46 years and over, 108 (90%). The consistent percentages across the age categories show that age appeared to make little difference to the choices of participants for members of the household.

Two hundred and eighty two (93%) respondents that reported having access to communications would prefer members of the household used the formal health care sector, while 126 (93%) of those without access to communications still preferred the formal health care sector. One hundred and thirteen (90%) of those respondents that had access to motorized transport and 295 (94%) of those that did not have access to

motorized transport were reported to prefer formal health care services for members of the household.

For the 77 (94%) participants where the closest health facility was a hospital or health centre, and for the 331 (93%) respondents with a clinic or dispensary as their closest health facility, formal sector health and medical services were the preferred option. Two hundred and fifty six (92%) members of the household in the Malindi district with a travel time of less than 60 minutes to the nearest health facility and 152 (94%) members of the household that reportedly had to travel further than 60 minutes to the nearest health facility all preferred formal health services. Of respondents, 142 (95%) reported a time when they had been unable to reach the nearest health facility and 264 (92%) stated they did not have a problem.

Table 6.10
Numbers and Percentages of Respondents from the Malindi District that Reported They Would Choose to Seek Healthcare in the Formal Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		406	93	408	93
Gender					
	Female	254	91	256	92
	Male	152	95	152	95
Literacy					
	Yes	241	93	243	94
	No	165	92	165	91
Education					
	Yes	247	93	249	94
	No	159	92	159	91
Regular income					
	Yes	389	92	391	93
	No	17	100	17	100
Age					
	18 – 25	110	95	110	95
	26 – 35	112	94	113	94
	36 – 45	75	90	77	93
	46+	109	91	108	90
Communications					
	Yes	281	92	282	93
	No	125	93	126	93
Motorized transport					
	Yes	112	90	113	90
	No	294	94	295	94
Closest facility					
	Hospital/ health centre	78	95	77	94
	Clinic/ dispensary	328	92	331	93
Travel time					
	<60 mins	252	91	256	92
	>60 mins	154	96	152	94
Ever unable to reach facility					
	Yes	155	94	142	95
	No	251	92	264	92

Univariate analysis

Univariate analysis results for individuals show there was no significant association between preferring formal health care and the independent variables. All respondents with regular income stated they would prefer formal health care. The result was the same for respondents that reported for members of the household.

Multivariate analysis

Results of multivariate regression analysis for individuals and those reporting for members of the household showed no association between those that would choose formal health care and the independent variables.

Table 6.11
Individuals from the Malindi District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

	Univariate		Multivariate			
Independent Variables			**Full**		**Final**	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender						
Female	1.00					
Male	1.80	0.79 – 4.10	1.96	0.76 – 5.07	-	
Literacy						
Yes	1.00					
No	0.78	0.38 – 1.60	0.78	0.13 – 4.66	-	
Education						
No	1.00					
Yes	1.21	0.58 – 2.50	0.65	0.11 – 3.74	-	
Regular income						
No	1.00					
Yes	-		-		Predicts	perfectly
Age						
18 – 25	1.00					
26 – 35	0.87	0.28 – 2.68	0.89	0.29- 2.80	-	
36 – 45	0.51	0.17 – 1.53	0.45	0.14 – 1.45	-	
46+	0.54	0.19 – 1.51	0.39	0.12 – 1.23	-	
Communications						
No	1.00					
Yes	0.88	0.40 – 1.96	1.07	0.45 – 2.55	-	
Motorized transport						
No Motor	1.00					
Motor	0.56	0.27 – 1.16	0.65	0.30 – 1.42	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.66	0.57 – 4.88	1.24	0.40 – 3.83	-	
Travel time						
>60 mins	1.00					
<60 mins	0.46	0.19 – 1.08	0.48	0.19 – 1.25	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.36	0.63 – 2.95	0.97	0.42 – 2.20	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.12
Members of the Household from the Malindi District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.64	0.31 – 1.32	1.58	0.61 – 4.09	-	
Literacy						
Yes	1.00					
No	0.64	0.71 – 3.05	0.66	0.11 – 3.99	-	
Education						
No	1.00					
Yes	1.47	0.71 – 3.05	0.71	0.12 – 4.13	-	
Regular income						
No	1.00					
Yes					Predicts	Perfectly
Age						
18 – 25	1.00					
26 – 35	0.88	0.29 – 2.70	0.92	0.29 – 2.88	-	
36 – 45	0.70	0.22 – 2.25	0.70	0.21 – 2.36	-	
46+	0.49	0.18 – 1.36	0.42	0.14 – 1.32	-	
Communications						
No	1.00					
Yes	0.92	0.41 – 2.04	0.99	0.42 – 2.35	-	
Motorized transport						
No Motor	1.00					
Motor	0.61	0.29 – 1.29	0.70	0.31 – 1.54	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.21	0.45 – 3.25	0.98	0.35 – 2.80	-	
Travel time						
>60 mins	1.00					
<60 mins	0.69	0.31 – 1.54	0.77	0.31 – 1.88	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.86	0.79 – 4.41	1.57	0.62 – 3.94	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Preferences for Private or Public Health Services

Descriptive analysis

Table 6.13 shows the results for respondents in the Malindi district that would choose to seek health care in the private sector. There were 91 (21%) individuals that reported they would choose health care in the private sector. The percentage of females preferring private health care was slightly higher than males, with 64 (23%) females and

27 (17%) males, that stated they would choose private health care if they were given the option..

There was little difference between the percentages of those that were literate or illiterate and educated or not educated and preferring private health care services. Fifty five (21%) individuals that responded they would prefer health care in the private sector said they were literate and 36 (20%) were not literate, while 57 (22%) reported having some type of formal education and 34 (20%) did not. Eighty nine (21%) respondents that reported having regular income would prefer to use private health care services given the choice and 2 (12%) respondents that would also like to use private health care if given the choice, reported not having regular income.

The percentage of respondents that would choose private health care services if they were given the option, was fairly even across all the age categories. Table 6.13 shows the distribution of respondents which were: 18 – 25 years, 26 (22%); 26 – 35 years, 29 (24%); 36-45 years, 17 (20%); and 46 years and over, 19 (16%).

For individuals with access to communications, 26 (22%) stated they would choose private health care, while 24 (18%) did not have access to communications but would still choose the private health care sector if given the option. Twenty four (19%) respondents reported they had access to motorized transport and would choose private health care services, while 67 (21%) were unable to obtain access to motorized transport but would prefer private health care if they were given the option.

Eleven (13%) individuals that responded they lived closest to a hospital or health centre would choose private health care, while a larger number lived closest to a clinic or dispensary (80 / 22%) and these respondents would also prefer the private health care sector if given the choice. Essentially the same percentage of individuals would choose private health care services if they were given the option, whether they lived less than 60 minutes travel time to the nearest health facility (59 / 21%) or they lived further than 60 minutes travel time to the nearest health facility (32 / 20%). Thirty three (20%) individuals that would prefer to use private health care services, stated a time previously when they were unable to reach the nearest health facility, while for 58 (21%) respondents this had not been a problem, but they would still prefer the private health care sector if they were given the choice.

Table 6.13 shows the preferences of respondents for health care choices for members of the household in the Malindi district. Seventy nine (18%) respondents would choose private health care facilities for members of their household. Fifty three (19%) female respondents and 26 (16%) male respondents stated they would prefer private health care services for a member of their household.

Again there seems to be little difference in the percentages of respondents that would choose private health care services for members of their household and whether they were literate or not, or whether they had formal education or not. Forty nine (19%) of these respondents were literate and 30 (17%) stated they were not literate but would prefer a member of their household used private health services. While 51 (19%) of those that reported having some type of formal education as compared with 28 (16%) of those that did not, also stated they would prefer private health services for a member of their household. Seventy seven (18%) of those with regular income and 2 (12%) of those without regular income would choose private health care for a member of their household.

Once more, the age of respondents appeared to have little bearing upon the percentages of the preference for private health care services. Of those 18 – 25 years, 25 (22%) would prefer private health care for a member of their household, for 26 – 35 year olds, 26 (22%) would prefer private health care services for a member of their household, 9 (19%) of those in the 36 – 45 years age category would prefer the private health care sector for a member of their household, and 19 (16%) of those 46 years and above.

For those respondents with access to communications, 55 (18%) would prefer private health care for a member of their household, as would 24 (18%) that did not have access to communications. Twenty one (21 / 17%) respondents that had access to motorized transport said they would prefer the private health care sector for a member of their household, and 58 (18%) of those that did not have access to motorized transport.

Respondents that lived closest to a hospital or health centre, 12 (15%) would prefer private sector health care for a member of their household as would 67 (19%) for which a clinic or dispensary was the closest health care facility. An equal percentage of respondents would choose private health care for a member of the household whether they had less than 60 minutes travel time to the nearest health facility, 50 (18%)

respondents, or further than 60 minutes travel time to the nearest health facility, 29 (18%). Twenty three (15%) respondents that reported they would prefer the private health sector for a member of their household if given the choice, stated they had been unable to reach the closest health centre at some time, but for 56 (19%) this had not been a problem, but they would still prefer private health care services for a member of their household.

Table 6.13
Numbers and Percentages of Respondents from the Malindi District that Reported They Would Choose to Seek Healthcare in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		91	21	79	18
Gender					
	Female	64	23	53	19
	Male	27	17	26	16
Literacy					
	Yes	55	21	49	19
	No	36	20	30	17
Education					
	Yes	57	22	51	19
	No	34	20	28	16
Regular income					
	Yes	89	21	77	18
	No	2	12	2	12
Age					
	18 - 25	26	22	25	22
	26 - 35	29	24	26	22
	36 - 45	17	20	9	19
	46+	19	16	19	16
Communications					
	Yes	67	22	55	18
	No	24	18	24	18
Motorized transport					
	Yes	24	19	21	17
	No	67	21	58	18
Closest facility					
	Hospital/ health centre	11	13	12	15
	Clinic/ dispensary	80	22	67	19
Travel time					
	<60 mins	59	21	50	18
	>60 mins	32	20	29	18
Ever unable to reach facility					
	Yes	33	20	23	15
	No	25	21	56	19

Univariate analysis

Table 6.14 shows there was no significant association between individuals and members of the household that would choose to seek health care in the private sector in the Malindi district and the independent variables.

Multivariate analysis

Results for multiple regression analysis also show there was no significant association between individuals and members of the household that would choose private health care services and the independent variables.

Table 6.14
Individuals from the Malindi District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

	Univariate		Multivariate			
Independent Variables			**Full**		**Final**	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender						
Female	1.00					
Male	0.681.80	0.41 – 1.12	0.70	0.40 – 1.23	-	
Literacy						
Yes	1.00					
No	0.92	0.58 – 1.48	1.05	0.32 – 3.47	-	
Education						
No	1.00					
Yes	1.12	0.70 – 1.80	1.09	0.33 – 3.58	-	
Regular income						
No	1.00					
Yes	2.01	0.45 – 8.96	1.75	0.38 – 7.96	-	
Age						
18 – 25	1.00					
26 – 35	1.12	0.61 – 2.04	1.04	0.56 – 1.93	-	
36 – 45	0.89	0.45 – 1.78	0.94	0.46 – 1.94	-	
46+	0.65	0.34 – 1.26	0.71	0.34 – 1.47	-	
Communications						
No	1.00					
Yes	1.30	0.77 – 2.18	1.34	0.78 – 2.30	-	
Motorized transport						
No Motor	1.00					
Motor	0.87	0.52 – 1.47	0.79	0.46 – 1.37	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.53	0.27 – 1.06	0.52	0.26 – 1.06	-	
Travel time						
>60 mins	1.00					
<60 mins	1.09	0.67 – 1.77	0.94	0.54 – 1.63	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.93	0.57 – 1.50	1.00	0.59 – 1.67	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.15
Members of the Household from the Malindi District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.83	0.49 – 1.39	0.87	0.49 – 1.54	-	
Literacy						
Yes	1.00					
No	0.85	0.51 – 1.40	1.09	0.32 – 3.72	-	
Education						
No	1.00					
Yes	1.24	0.75 – 2.06	1.23	0.36 – 4.21	-	
Regular income						
No	1.00					
Yes	1.67	0.38 – 7.47	1.41	0.31 – 6.50	-	
Age						
18 – 25	1.00					
26 – 35	1.01	0.54 – 1.87	0.99	0.53 – 1.85	-	
36 – 45	0.44	0.19 – 1.01	0.47	0.20 – 1.09	-	
46+	0.68	0.35 – 1.33	0.75	0.36 – 1.56	-	
Communications						
No	1.00					
Yes	1.02	0.60 – 1.73	1.04	0.59 – 1.81	-	
Motorized transport						
No Motor	1.00					
Motor	0.89	0.51 – 1.54	0.88	0.50 – 1.56	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.74	0.38 – 1.45	0.75	0.38 – 1.51	-	
Travel time						
>60 mins	1.00					
<60 mins	1.00	0.60 – 1.65	0.81	0.46 – 1.44	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.75	0.44 – 1.26	0.72	0.41 – 1.28	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

6.1.4 Outcome Variable 4: Those That Reported Receiving All The Treatment They Needed?

There were 262 individuals from the Malindi district that reported whether they had received all the treatment they needed. Of these individuals, 146 (56%) reported they had, while 116 (44%) reported they had not. These individuals reported the reasons for not receiving all the treatment they needed were: 43 (32%) felt better, 56 (42%) reported the treatment was too expensive, 21 (15%) stated the entire course of treatment was not available, 9 (7%) had other reasons, and 5 (4%) didn't really know.

There were 293 responses for members of the household, where 192 (66%) reported having received all the treatment they needed and 101 (34%) did not. The reasons reported by respondents for members of the household not receiving all the treatment they needed were: 51 (42%) felt better, 44 (36%) stated the treatment was too expensive, 18 (15%) reported the treatment was not available, 7 (People & the Planet 2000 - 2006) had another reason, and 2 (2%) didn't know.

Descriptive Analysis

For individuals from the Malindi district it appeared that there was little difference between the sexes and the percentage of those that reported they received all the treatment they needed, with 93 (55%) females and 53 (56%) males reported receiving all the treatment they needed in the Malindi district.

Eighty three (56%) participants that reported they had received all the treatment they needed, stated they were literate and 63 (56%) were not. Eighty nine (57%) respondents stated they had some type of formal education and 57 (54%) reported having no type of formal education. There is a difference in the percentage of those that reported receiving regular income and all the treatment they needed with 135 (54%) receiving all the treatment they needed and having regular income, and 11 (85%) respondents not having a regular income, but still receiving all the treatment they needed.

The percentages of respondents in each of the age categories for individuals in the Malindi district that reported receiving all the treatment needed was essentially the same across the age groups with those : 18 – 25 years, 33 (55%); 26 – 35 years, 40 (55%); 36 – 45 years, 29 (59%); and 46 and above years, 44 (55%).

Of those that had access to communications, 98 (55%) individuals reported receiving all the treatment they needed, as well as 48 (58%) that did not have access to communications. Of individual respondents reporting they received all the treatment they needed, 44 (56%) respondents had access to motorized transport and 102 (56%) did not.

There was some difference in the percentages of those stating they received all the treatment they needed and living closest to different health and medical facilities. Twenty six (50%) individuals from the Malindi district that stated they received all the treatment they needed reported having a hospital or health centre as the closest facility,

while 120 (57%) individuals reported living closest to a clinic or dispensary. Although the time to travel to the nearest health facility appeared fairly evenly divided with 92 (58%) respondents stating they had less than 60 minutes travel time to the nearest health facility, and 54 (52%) reporting they had further than 60 minutes to travel to the nearest health care facility, but received all the treatment they needed. For individuals that reported receiving all the treatment they needed, there were still 57 (52%) that responded they were unable to reach a health facility at some time, while 89 (59%) that said this had not been a problem.

For members of the household in the Malindi district Table 6.16 shows there were 116 (63%) female respondents and 76 (70%) male respondents that reported a member of the household had received all the treatment they needed.

There was essentially no difference in the percentage of respondents that were literate or had formal education and whether a member of their household had received all the treatment they needed. Of these 117 (65%) respondents were reported to be literate and 75 (66%) were not. One hundred and twenty two (67%) had some type of formal education and 70 (64%) reported having no type of formal education. Even though the number of respondents reporting they did not have regular income was lower, the percentage was higher in this group for reporting a member of the household had received all the treatment they needed, with 7 (78%) reporting they did not have regular income as compared with 185 (65%) that stated they did have regular income.

Once more there was little difference in the percentages of the respondents from the different age categories and reporting if a member of their household had received all the treatment they needed. Table 6.16 shows the age groups and numbers for those reporting that members of the household received all the treatment they needed as: 18 – 25 years, 54 (69%); 26 – 35 years, 53 (62%); 36 – 45 years, 36 (68%); and 46 and above years, 49 (64%).

For respondents that had access to communications, 145 (68%) reported receiving all the treatment they needed, while 47 (59%) respondents reported not having access to communications, but for a member of their household receiving all the treatment they needed. Sixty five (75%) participants that were able to obtain motorized transport and 127 (62%) that weren't able to access motorized transport reported a member of their household had received all needed treatment.

It appears that respondents reporting a member of the household received all the treatment needed had a higher percentage likelihood of living closest to a clinic or dispensary. There were 30 (56%) respondents that reported they lived closest to a hospital or health centre and 162 (68%) that lived closest to a clinic or dispensary. Travel time to the nearest health facility as reported by respondents also showed a difference between the percentages of those that had to travel less than 60 minutes and those that had to travel greater than 60 minutes to the nearest health facility. Travelling less than 60 minutes to the nearest health facility was the situation for 127 (71%) respondents and travelling further than 60 minutes for 65 (57%) respondents that reported a member of the household had received all the treatment they needed. Sixty seven (57%) members of the household were reported to have received all the treatment they needed in the past three months, although they had still reported a time when they were unable to reach the nearest health facility, while this was not a problem for 124 (71%) respondents.

Table 6.16
Numbers and Percentages of Respondents from the Malindi District that Reported Being Sick and Receiving All the Treatment They Needed

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		146	56	192	66
Gender					
	Female	93	55	116	63
	Male	53	56	76	70
Literacy					
	Yes	83	56	117	65
	No	63	56	75	66
Education					
	Yes	89	57	122	67
	No	57	54	70	64
Regular income					
	Yes	135	54	185	65
	No	11	85	7	78
Age					
	18 - 25	33	55	54	69
	26 - 35	40	55	53	62
	36 - 45	29	59	36	68
	46+	44	55	49	64
Communications					
	Yes	98	55	145	68
	No	48	58	47	59
Motorized transport					
	Yes	44	56	65	75
	No	102	56	127	62
Closest facility					
	Hospital/ health centre	26	50	30	56
	Clinic/ dispensary	120	57	162	68
Travel time					
	<60 mins	92	58	127	71
	>60 mins	54	52	65	57
Ever unable to reach facility					
	Yes	57	52	67	57
	No	89	59	124	71

Univariate Analysis

Univariate analysis for individuals having reported receiving all the treatment they needed showed participants were less likely to report receiving regular income, than those that received regular income (OR = 0.22, CI = 0.05 – 0.99, $p<0.05$).

Table 6.18 demonstrates the findings of univariate analysis for a member of the household and receiving all the treatment needed. Respondents that reported having a

travel time of less than 60 minutes to the nearest health facility were more likely to report receiving all the treatment they needed, than those that had further than 60 minutes to travel (OR = 1.92, CI = 1.17 – 3.13, p<0.010).

Multivariate Analysis

As Table 6.17 shows, for individuals from the Malindi district that reported receiving all the treatment they needed were less likely to receive regular income, as compared with those that did have regular income (OR = 0.22, CI = 0.05 – 0.99, p<0.05).

Table 6.18 shows the results for respondents from the Malindi district and reporting if members of the household were able to receive all the treatment they needed in the past three months. Respondents were more likely to live within 60 minutes travel time to the nearest health facility, than those that had further than 60 minutes to travel (OR = 1.92, CI = 1.17 – 3.13, p<0.005) and report a member of the household had received all the treatment they needed.

Table 6.17
Individuals from the Malindi District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.04	0.36 – 1.73	1.02	0.56 – 1.84	-	
Literacy						
Yes	1.00					
No	1.00	0.61 – 1.64	1.53	0.43 – 5.52	-	
Education						
No	1.00					
Yes	1.10	0.67 – 1.81	1.64	0.45 – 5.95	-	
Regular income						
No	1.00					
Yes	0.22*	0.05 – 0.99	0.21*	0.05 – 1.00	0.22*	0.05 – 0.99
Age						
18 – 25	1.00					
26 – 35	0.99	0.50 – 1.97	0.95	0.47 – 1.93	-	
36 – 45	1.19	0.55 – 2.55	1.26	0.56 – 2.85	-	
46+	1.00	0.51 – 1.96	0.96	0.45 – 2.08	-	
Communications						
No	1.00					
Yes	0.88	0.52 – 1.49	0.93	0.53 – 1.64	-	
Motorized transport						
No Motor	1.00					
Motor	1.00	0.59 – 1.70	0.98	0.56 – 1.72	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.75	0.41 – 1.38	0.81	0.42 – 1.57	-	
Travel time						
>60 mins	1.00					
<60 mins	1.29	0.78 – 2.12	1.10	0.61 – 1.97	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.76	0.46 – 1.25	0.79	0.45 – 1.37	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 6.18
Members of the Household from the Malindi District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.35	0.81 – 2.24	1.72	0.95 – 3.10	-	
Literacy						
Yes	1.00					
No	1.02	0.62 – 1.67	5.67	0.99 – 32.59	-	
Education						
No	1.00					
Yes	1.14	0.70 – 1.88	4.27	0.76 – 24.15	-	
Regular income						
No	1.00					
Yes	0.53	0.11 – 2.62	0.47	0.09 – 2.57	-	
Age						
18 – 25	1.00					
26 – 35	0.74	0.38 – 1.41	0.71	0.36 – 1.40	-	
36 – 45	0.94	0.44 – 1.99	0.88	0.39 – 1.96	-	
46+	0.78	0.40 – 1.52	0.68	0.31 – 1.47	-	
Communications						
No	1.00					
Yes	1.43	0.84 – 2.44	1.45	0.82 – 2.56	-	
Motorized transport						
No Motor	1.00					
Motor	1.84	1.05 – 3.21	1.50	0.82 – 2.56	-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.59	0.33 – 1.08	0.79	0.41 – 1.53	-	
Travel time						
>60 mins	1.00					
<60 mins	1.92**	1.17 – 3.13	1.57	0.89 – 1.18	1.92***	1.17 – 3.13
Unable to reach nearest facility						
No	1.00					
Yes	0.58	0.36 – 0.94	0.69	0.40 – 1.18	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

CHAPTER 7
SAMBURU DISTRICT

7.1.1 Outcome Variable 1: Who Was Sick And Sought Treatment?

Descriptive Analysis

As Table 7.1 shows, of the 238 participants from the Samburu district, 92 (39%) individuals reported being sick and seeking treatment in the past three months. There was a percentage difference between the number of females and the number of males that reported being sick and seeking treatment, with 64 (42%) females and 27 (33%) males stating they had sought treatment.

There was a difference in the percentage of respondents that were sick and sought treatment based on literacy, with 23 (32%) of those that reported being literate also reporting they were sick and sought treatment as well as 69 (42%) that were not literate. Of those reporting they were sick and had sought treatment in the past three months, 20 (36%) reported having some type of formal education and 65 (39%) had no formal education. Looking at those individuals that reported regular income, there was some difference in the percentages of those that sought treatment based upon regular income, with 42 (45%) of those reporting regular income having sought treatment and 50 (35%) of those that reported having no regular income.

Based upon the age of the respondent, the percentage difference was marked with 13 (25%) of those aged 18-25 years seeking treatment, 22 (39%) of those 26-35 years seeking treatment; 25 (58%) of those 36-45 years seeking treatment and 39 (46%) of those 46 years and above seeking treatment. Those in the 26 – 35 years age group had the highest percentage for those individual respondents from the Samburu district that were sick and had sought treatment.

For those individuals that were sick and sought treatment, 50 (41%) reported they had access to communications, while 42 (37%) stated they did not. No individual reported having access to motorized transport, but 92 (39%) individuals still reported being sick and seeking treatment. Looking at closest facilities, these were fairly evenly divided between respondents that lived closest to a hospital or health centre, of which there were 79 (39%) and those that reported being closest to a clinic or dispensary, of

which there were 13 (38%). For individuals that reported seeking treatment, 62 (39%) stated they had less than 60 minutes travel time to the nearest health facility while 30 (39%) reported needing to travel for more than 60 minutes. Forty one (43%) individuals that were sick and sought treatment report a time when they were unable to reach the nearest health facility, 50 (37%) stated they had not experienced this difficulty.

In Table 7.1, from 238 respondents in Samburu, 68 (29%) reported a member of the household had been sick and sought care in the past three months. There was relatively little difference between the percentages of females and males that reported a member of their household had been sick and sought treatment in the past three months, with 43 (28%) females and 40 (24%) male participants stating this.

Of those reporting for a member of the household 28 (39%) also said they were literate, as compared to 40 (24%) of those respondents that reported being illiterate. Examination of education level shows that 26 (46%) of those with some type of formal education reported a member of the household was sick and sought treatment while 36 (22%) had no formal education. Of those respondents with regular income, 31 (32%) reported a member of the household sought treatment while 37 (26%) reported not having regular income.

Again, those respondents in the 26-35 years age groups with 18 (32%), recorded a higher percentage of members of their household that were sick and sought treatment as compared to the 18-25 years age group with 15 (29%); the 36-45 years age group with 10 (23%); and the 46 years and above age group with 25 (29%).

Those that reported members of the household seeking treatment also reported a greater percentage of those with access to communications, with 43 (35%) reporting they were able to obtain communications and 25 (22%) saying they did not. Motorized transport was not available for any participants in the Samburu district, but 68 (29%) members of the household were still reported as being sick and seeking treatment despite not having access.

Of those that reported which facility was closest, 54 (26%) reported a hospital or health centre and 14 (41%) reported a clinic or dispensary was closest. In terms of travel time, 46 (29%) participants reported that members of the household had less than 60 minutes travel time to the nearest health facility and 22 (29%) reported travel time

was more than 60 minutes. Thirty three (36%) respondents reported they were unable to reach a health facility at one time and 35 (24%) reported this had not been an issue for them.

Table 7.1
Numbers and Percentages of Respondents from the Samburu District that Reported Being Sick and Sought Treatment by Independent Variables

		Individual		**Member of the household**	
		n	**%**	**n**	**%**
Overall		92	39	68	29
Gender					
	Female	64	42	43	28
	Male	27	33	25	29
Literacy					
	Yes	23	32	28	39
	No	69	42	40	24
Education					
	Yes	20	36	26	46
	No	65	39	36	22
Regular income					
	Yes	42	45	31	32
	No	50	35	37	26
Age					
	18 – 25	13	25	15	29
	26 – 35	22	39	18	32
	36 – 45	25	58	10	23
	46+	39	46	25	29
Communications					
	Yes	50	41	43	35
	No	42	37	25	22
Motorized transport					
	Yes	-		-	
	No	92	39	68	29
Closest facility					
	Hospital/ health centre	79	39	54	26
	Clinic/ dispensary	13	38	14	41
Travel time					
	<60 mins	62	39	46	29
	>60 mins	30	39	22	29
Ever unable to reach facility					
	Yes	41	43	33	36
	No	50	37	35	24

Univariate Analysis

In all univariate and multivariate analyses for the Samburu district the variable for motorized transport is excluded from the equation as no respondent from the district in the study reported having access to motorized transport.

Univariate analysis results for the Samburu district show that those individuals 46 years and above were significantly more likely to report being sick and seeking treatment some time in the past three months (OR = 2.54, CI = 1.19 – 5.43, $p<0.005$).

Those respondents reporting about members of the household being sick and seeking treatment were more likely to have some type of formal education (OR = 3.00, CI = 1.59 – 5.70, $p<0.001$). They were also less likely to report a member of the household had been sick and sought treatment if they were illiterate (OR = 0.50, CI = 0.28 – 0.90, $p<0.05$) and also had access to communications (OR = 1.98, CI = 1.11 – 3.53, $p<0.05$). Respondents were also more likely to report a member of the household had been unable to reach the nearest health facility at some time in the past (OR = 1.80, CI = 1.02 – 3.20, $p<0.05$).

Multivariate Analysis

Individuals from the Samburu district that reported they were sick and sought treatment were more likely to be aged 46 years or over, than 18 – 25 years (OR = 3.18, CI = 1.44 – 7.04, $p<0.005$) and more likely to be male, than female (OR = 0.53, CI = 0.29 – 0.95, $p<0.05$).

Respondents reporting for members of the household that were sick and sought treatment in the past three months were more likely to have some type of formal education (OR = 3.28, CI = 1.71 – 6.31, $p<0.001$) and less likely to have a hospital or health centre as the nearest health facility (OR = 0.41, CI = 0.19 – 0.91, $p<0.05$).

Table 7.2
Individuals from the Samburu District that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.67	0.38 – 1.16	0.50*	0.26 – 0.97	0.53*	0.29 – 0.95
Literacy						
Yes	1.00					
No	1.50	0.84 – 2.69	1.90	0.66 – 5.45	-	
Education						
No	1.00					
Yes	0.85	0.46 – 1.60	1.83	0.59 – 5.70	-	
Regular income						
No	1.00					
Yes	1.49	0.87 – 2.53	1.41	0.76 – 2.62	-	
Age						
18 – 25	1.00					
26 – 35	1.94	0.85 – 4.43	2.01	0.83 – 4.89	-	
36 - 45	2.16	0.90 – 5.17	2.88	1.12 – 7.37	-	
46+	2.54***	1.19 – 5.43	3.83***	1.55 – 9.48	3.18***	1.44 – 7.04
Communications						
No	1.00					
Yes	1.22	0.72 – 2.07	1.52	0.82 – 2.82	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.04	0.49 – 2.19	1.07	0.46 – 2.47	-	
Travel time						
>60 mins	1.00					
<60 mins	1.00	0.57 – 1.75	0.92	0.68 – 1.24	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.32	0.77 – 2.25	1.38	0.73 – 2.58	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 7.3
Members of the Household from the Samburu District that Reported Being Sick and Sought Treatment by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.04	0.58 – 1.86	0.73	0.36 – 1.50	-	
Literacy						
Yes	1.00					
No	0.50*	0.28 – 0.90	1.31	0.42 – 4.16	-	
Education						
No	1.00					
Yes	3.00****	1.59 – 5.70	4.24*	1.29 – 13.92	3.28****	1.71 – 6.31
Regular income						
No	1.00					
Yes	1.35	0.77 – 2.39	1.04	0.54 – 2.03	-	
Age						
18 – 25	1.00					
26 – 35	1.17	0.51 – 2.66	1.39	0.54 – 3.56	-	
36 - 45	0.73	0.29 – 1.83	1.05	0.37 – 3.00	-	
46+	1.01*	0.47 – 2.16	2.15	0.81 – 5.69	-	
Communications						
No	1.00					
Yes	1.98*	1.11 – 3.53	1.73	0.88 – 3.40	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.51	0.24 – 1.09	0.45	0.19 – 1.06	0.41*	0.19 – 0.91
Travel time						
>60 mins	1.00					
<60 mins	1.00	0.55 – 1.82	0.92	0.66 – 1.26	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.80*	1.02 – 3.20	1.36	0.68 – 2.70	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

7.1.2 Outcome Variable 2: Where Did Individuals And Members Of The Household Seek Treatment?

There were 106 individuals in the Samburu district that reported where they obtained their health care, of these 5 (5%) received treatment from a pharmacy, 12 (11%) from a traditional healer, 70 (66%) from a government hospital or health centre, 5 (5%) from a private hospital or health centre, 7 (7%) from a government clinic or dispensary, and 7 (7%) from a private clinic or dispensary.

There were 72 participants in the Samburu district that reported where members of the household sought health care. Of these, 1 (1%) reported a member of their household would seek treatment at a pharmacy, 4 (6%) from a traditional healer, 54 (75%) at a government hospital or health centre, 4 (6%) at a private hospital or health centre, 3 (4%) at a government clinic or dispensary, and 6 (8%) at a private clinic or dispensary. Again, dichotomous variables were created to reflect the health care options of participants and were divided into: formal and informal, public and private.

Use of Formal or Informal Health Services

Descriptive analysis

Out of the 106 individuals from the Samburu district that reported where they sought health care in the past three months, 89 (84%) respondents utilized a formal health care facility. As can be seen in Table 7.4, of these, 61 (86%) were female and 28 (80%) were male.

Twenty five (93%) participants that reported they sought health care from a formal health care facility also stated they were literate, while 64 (81%) participants were not literate. Of those respondents that reported being sick and seeking treatment in the formal sector in the past three months, 21 (91%) reported they had some formal education, while 60 (80%) reported no type of formal education. There is a percentage difference based upon regular income and those using formal health care services with a higher percentage of those with regular income using formal services. Table 7.4 shows 44 /(92%) reported they received regular income, and 45 (78%) reported not having regular income.

There is also a difference based upon age with the percentages of those that reported they would use formal health care services. It appears the older age group used formal services less with 37 reporting they were sick and sought treatment in the formal sector but this represented only 79% of the population as compared with the youngest age category, that is, 18 – 25 year olds, where 93% of those that were sick in the past three months used formal health services. The other two age categories were those 26 - 35 years, 21 (91%) and 36-45 years, 17 (81%) respectively.

Of those individuals that reported they used formal health care services, 50 (86%) individuals reported having access to communications, and 39 (81%) did not

have access. No individual participant that was sick and sought treatment in the formal health sector reported having access to motorized transport.

Seventy four (84%) individual participants reported a hospital or health centre as their nearest health facility, while 15 (88%) reported a clinic or dispensary as the closest. Sixty one (84%) individuals had less than 60 minutes travel time to the nearest health facility and 28 (85%) reported they had further than 60 minutes to travel. For those that had used formal health care services, 42 (82%) individuals responded there had been a time when they had been unable to reach the nearest health facility, while for 46 (87%) respondents this had not been the case.

Responses for members of the household in the Samburu district showed that 67 (94%) had sought treatment in the formal health care sector in the past three months. There was a slight difference in the percentage of females as compared to males that reported a member of the household had used formal health care services with 43 (91%) females and 24 (96%) males responding.

Of those respondents that reported a member of their household had been sick and sought treatment in the formal health care sector, 26 (90%) were literate, and 41 (95%) were not literate. Twenty four (89%) respondents had some type of formal education and 35 (95%) did not. Of these 34 (97%) reported receiving regular income, a slightly higher percentage than the 33 (89%) respondents that reported they did not have regular income.

The youngest respondents, those in the 18 – 25 years age group had the lowest percentage for reporting a member of their household had been sick and sought treatment in the formal health care sector with 14 or 88%. The other respondents were those 26-35 years where 19 (100%) reported a member of the household had sought treatment in the formal sector; 36-45 years where 9 (90%) participants responded and 46 years and above where 25 (93%) participants stated a member of their household had sought treatment from the formal health care sector.

Forty (89%) respondents that reported having access to communications stated a member of the household had used formal health care and 27 (100%) participants that did not have access to communications. None had the opportunity to use motorized transport to reach the nearest health facility.

Fifty one (51 / 91%) participants that said a member of their household used formal health care, reported a hospital or health centre was the nearest medical facility, while 16 (100%) reported that a clinic or dispensary was the closest health facility. Forty two (91%) respondents reported a member of the household had a travel time of less than 60 minutes to the nearest health facility, and 25 (96%) had further than 60 minutes travel time. Thirty six (95%) members of the household were reportedly unable to reach a formal health facility at some time, while 31 (91%) members of the household did not have a problem reaching a health facility.

Table 7.4
Numbers and Percentages of Respondents from the Samburu District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		89	84	67	94
Gender					
	Female	61	86	43	91
	Male	28	80	24	96
Literacy					
	Yes	25	93	26	90
	No	64	81	41	95
Education					
	Yes	21	91	24	89
	No	60	80	35	95
Regular income					
	Yes	44	92	34	97
	No	45	78	33	89
Age					
	18 - 25	14	93	14	88
	26 - 35	21	91	19	100
	36 - 45	17	81	9	90
	46+	37	79	25	93
Communications					
	Yes	50	86	40	89
	No	39	81	27	100
Motorized transport					
	Yes	-		-	
	No	89	84	67	93
Closest facility					
	Hospital/ health centre	74	84	51	91
	Clinic/ dispensary	15	88	16	100
Travel time					
	<60 mins	61	84	42	91
	>60 mins	28	85	25	96
Ever unable to reach facility					
	Yes	42	82	36	95
	No	46	87	31	91

Univariate analysis

Univariate analysis results show no association between individuals that reported they were sick in the past three months and sought treatment in the formal sector and the independent variables that met the study criteria. No respondent from the Samburu district had access to motorized transport, so the variable was excluded from subsequent analysis.

For members of the household as reported for the Samburu district, univariate results are presented in Table 7.6. The variable for motorized transport is dropped as no respondent had access to motorized transport. The variables for access to communications and the closest health care facility perfectly predict that a member of the household would seek treatment in the formal sector and therefore cannot be used for this analysis. That is, of those that did not have access to communications, *all* sought treatment in the formal health care sector and those members of the household that had a clinic or dispensary as their closest health care facility, *all* sought treatment in the formal sector.

Multivariate analysis

Results of multivariate regression analysis are shown in Table 7.5 and Table 7.6. For individuals in the Samburu district no independent variable was significantly associated with seeking health care in the formal sector using the study criteria.

For members of the household in the Samburu district, having access to communications and having a clinic or dispensary as the closest health facility perfectly predicted the use of the formal health care sector. No other independent variables were significant using the study criteria.

Table 7.5
Individuals from the Samburu District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender						
Female	1.00		1.00		1.00	
Male	0.66	0.27 – 1.90	0.66	0.27 – 1.90	0.66	0.27 – 1.90
Literacy						
Yes	1.00		1.00		1.00	
No	0.34	0.07 – 1.60	0.34	0.07 – 1.60	0.34	0.07 – 1.60
Education						
No	1.00		1.00		1.00	
Yes	2.63	0.55 – 12.45	2.63	0.55 – 12.45	2.63	0.55 – 12.45
Regular income						
No	1.00		1.00		1.00	
Yes	3.18	0.96 – 10.50	2.73	0.60 – 12.29		
Age						
18 – 25	1.00		1.00		1.00	
26 – 35	0.75	0.06 – 9.08	0.91	0.06 – 12.88	-	
36 – 45	0.30	0.03 – 3.04	0.18	0.01 – 2.33	-	
46+	0.26	0.03 – 2.26	0.27	0.03 – 2.94		
Communications						
No	1.00		1.00		1.00	
Yes	1.44	0.51 – 4.08	1.44	0.51 – 4.08	1.44	0.51 – 4.08
Motorized transport						
No Motor	1.00		1.00		1.00	
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00		1.00		1.00	
Hosp/health centre	0.66	0.14 – 3.18	0.66	0.14 – 3.18	0.66	0.14 – 3.18
Travel time						
>60 mins	1.00		1.00		1.00	
<60 mins	0.91	0.29 – 2.82	0.91	0.29 – 2.82	0.91	0.29 – 2.82
Unable to reach nearest facility						
No	1.00		1.00		1.00	
Yes	0.71	0.24 – 2.08	0.71	0.24 – 2.08	0.71	0.24 – 2.08

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 7.6
Members of the Household from the Samburu District that Reported Being Sick and Sought Treatment in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	2.23	0.24 – 21.13	8.62	0.35 – 210.74	-	
Literacy						
Yes	1.00					
No	2.37	0.37 – 15.13	3.04	0.12 – 74.33	-	
Education						
No	1.00					
Yes	0.46	0.07 – 2.95	0.18	0.00 – 7.17	-	
Regular income						
No	1.00					
Yes	4.12	0.44 – 38.83	18.07	0.40 – 815.21	-	
Age						
18 – 25	1.00					
26 – 35	Predicts	Perfectly	-		-	
36 – 45	1.29	0.10 – 16.34	1.09	0.04 – 32.19	-	
46+	1.79	0.23 – 14.10	0.45	0.02 – 13.11	-	
Communications						
No	1.00					
Yes	Predicts	perfectly	All	without		
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	Predicts	Perfectly	All	without		
Travel time						
>60 mins	1.00					
<60 mins	0.42	0.04 – 3.97	0.32	0.01 – 7.14	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.74	0.27 – 11.11	3.24	0.23 – 45.98	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Use of Private or Public Health Services

Descriptive analysis

There were 238 individuals from the Samburu district that reported they were sick and where they sought health care. The results of descriptive analysis are presented in Table 7.7 . For individuals that were sick in the past three months and sought treatment, 29 (27%) sought health care treatment in the private sector. Of these, a

slightly lower percentage of females sought treatment in the private sector, with 17 (24%) females and 12 (34%) males.

For both literacy and education, slightly lower percentages of those that were literate and those that had some formal education used private health care. That is, 6 (22%) of respondents that were literate used private health care as compared to 23 (29%) respondents that were not literate. Five (22%) of those that had some formal education used private health care as compared to 24 (32%) of those that were not formally educated. A lower percentage of individuals also reported they had regular income with 40 (21%) of those with regular income using private health care services and 19 (33%) of those without regular income.

Using private health care services was somewhat dependent upon the age of respondents with those in the 46 years and above age category having a higher percentage of individuals that used private health care. Sixteen (34%) of those in the oldest age category used private health care followed by 7 (33%) respondents from the 36 – 45 years age category, then 3 (20%) respondents from the 18 – 25 years age category and 3 (13%) of those 36 – 45 years.

Of individuals that reported using private health care services, 15 (26%) had access to communications as compared to 14 (29%) that did not. No individuals in the Samburu district had access to motorized transport.

There was no real difference in the percentage of those individual respondents that reported they used private health care services and those that lived closest to a hospital or health centre (24 / 27%) as compared to those that lived closest to a clinic or dispensary (5 / 29%). For 21 (29%) individuals that sought private health care, the nearest health care facility was less than 60 minutes travel time, while for 8 (24%) individuals travel time to the nearest health care facility was more than 60 minutes. Seventeen (33%) respondents that used private health care services also reported a time when they had been unable to reach the nearest health care facility, and 11 (21%) individuals that used private health care had not found this to be a problem for them in the past.

There were 15 (21%) respondents that reported a member of the household used private health care services as can be seen in Table 7.7. There was a difference in the percentages of females to males and using private health care with 8 (17%) females and

7 (28%) of males reporting that a member of the household used private health care in the past three months.

A higher percentage of respondents that were literate, that is 8 (28%), reported a member of the household used private health care services, as compared to 7 (16%) that were not literate. The percentage of those that were formally educated however, did not appear to be so different with 6 (22%) of those that had some formal education and 9 (24%) of those that did not have some formal education reporting that a member of the household had used private health care in the past three months. Six (17%) respondents that had regular income reported a member of the household used private health care as did 9 (24%) of those that did not have regular income.

The age of respondents reporting a member of the household sought treatment in the private sector may have been a factor with 8 (30%) of respondents from the 46 years and above age group reporting a member of their household sought treatment in the private sector. While the fewest respondents to report this came from the 26 – 35 years age category with 2 (11%). Three (19%) respondents in the 18 – 25 years age category and 2 (20%) in the 36 – 45 years age category also reported a member of the household sought treatment in the private sector.

Having access to communications appeared to be a factor for those reporting a member of the household had sought treatment in the private sector, as 13 (29%) respondents stated they had access to communications, while 2 (7%) stated they did not. Once more, no respondent from the Samburu district had access to motorized transport.

Of those reporting a member of the household sought treatment in the private sector, 10 (18%) reported a hospital or health centre was the nearest health care facility, and 5 (31%) reported a clinic or dispensary was the nearest health care facility. Eleven (24%) respondents reported having less than 60 minutes travel time to the nearest health care facility, as compared to 4 (15%) that reported they had greater than 60 minutes to travel to the nearest health care facility and that a member of the household had used the private health care sector. There were 9 (14%) respondents that reported a member of the household used private health care and had a time when they had been unable to reach the nearest health facility in the past, while for 6 (18%) respondents this had not been a difficulty.

Table 7.7
Numbers and Percentages of Respondents from the Samburu District that Reported Being Sick Sought Treatment in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		29	27	15	21
Gender					
	Female	17	24	8	17
	Male	12	34	7	28
Literacy					
	Yes	6	22	8	28
	No	23	29	7	16
Education					
	Yes	5	22	6	22
	No	24	32	9	24
Regular income					
	Yes	40	21	6	17
	No	19	33	9	24
Age					
	18 - 25	3	20	3	19
	26 - 35	3	13	2	11
	36 - 45	7	33	2	20
	46+	16	34	8	30
Communications					
	Yes	15	26	13	29
	No	14	29	2	7
Motorized transport					
	Yes	-		-	
	No	29	27	15	21
Closest facility					
	Hospital/ health centre	24	27	10	18
	Clinic/ dispensary	5	29	5	31
Travel time					
	<60 mins	21	29	11	24
	>60 mins	8	24	4	15
Ever unable to reach facility					
	Yes	17	33	9	14
	No	11	21	6	18

Univariate analysis

The results for univariate analysis are presented in Table 7.8. The variable for motorized transport could not be used for analysis as no respondent reported having access to motorized transport. No significant association was found between the independent variable and individuals that were sick and sought treatment in the private health care sector in the past three months.

However, univariate analysis of the results for members of the household in the Samburu district showed that respondents were five times more likely to have access to communications if they sought private health treatment (OR = 5.08, CI = 1.05 – 24.60, $p<0.05$).

Multivariate analysis

In multiple regression analysis results for individuals from the Samburu district, show no significant association between the independent variables and being sick and seeking treatment in the private health care sector.

Responses for members of the household in Table 7.9 also showed no significant association between the independent variables and using private health care.

Table 7.8
Individuals from the Samburu District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.66	0.68 – 4.02	1.38	0.50 – 3.83	-	
Literacy						
Yes	1.00					
No	1.44	0.51 – 4.02	1.33	0.18 – 9.69	-	
Education						
No	1.00					
Yes	0.59	0.20 – 1.78	1.01	0.13 – 8.17	-	
Regular income						
No	1.00					
Yes	0.54	0.22 – 1.31	0.75	0.24 – 2.28	-	
Age						
18 – 25	1.00					
26 – 35	0.6	0.10 – 3.46	0.60	0.09 – 4.05	-	
36 – 45	2	0.42 – 9.49	2.98	0.51 – 17.51	-	
46+	2.06	0.51 – 8.39	1.76	0.37 – 9.16	-	
Communications						
No	1.00					
Yes	0.85	0.36 – 1.99	0.80	0.29 – 2.21	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.89	0.28 – 2.78	1.45	0.33 – 6.30	-	
Travel time						
>60 mins	1.00					
<60 mins	1.26	0.49 – 3.24	1.16	0.36 – 3.76	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.91	0.79 – 4.62	2.31	0.86 – 6.15	-	

(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)

Table 7.9
Members of the Household from the Samburu District that Reported Being Sick and Sought Treatment in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	1.90	0.60 – 6.04	0.97	0.22 – 4.19	-	
Literacy						
Yes	1.00					
No	0.51	0.16 – 1.61	0.35	0.03 – 3.42	-	
Education						
No	1.00					
Yes	0.89	0.27 – 2.89	0.43	0.12 – 55.76	-	
Regular income						
No	1.00					
Yes	0.64	0.20 – 2.05	0.71	0.14 – 3.53	-	
Age						
18 – 25	1.00					
26 – 35	0.51	0.07 – 3.51	0.63	0.08 – 4.85	-	
36 – 45	1.08	0.15 – 7.96	1.08	0.12 – 10.20	-	
46+	1.82	0.41 – 8.20	1.83	0.31 – 10.99	-	
Communications						
No	1.00					
Yes	5.08*	1.05 – 24.60	4.53	0.78 – 26.17	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.48	0.14 – 1.68	0.48	0.08 – 2.92	-	
Travel time						
>60 mins	1.00					
<60 mins	1.73	0.49 – 6.11	0.94	0.20 – 4.30	-	
Unable to reach nearest facility						
No	1.00					
Yes	1.35	0.42 – 4.29	1.88	0.45 – 7.79	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

7.1.3 Outcome Variable 3: If Individuals/Members of The Household Had A Choice Where Would They Choose To Seek Health Care?

There were 234 individuals in the Samburu district that reported where they would obtain their health care, if they had a choice. Of these 13 (6%) would prefer to go to a shop, 13 (6%) would prefer a duka la dawa (pharmacy), 7 (3%) individuals would choose a traditional healer, 147 (63%) would choose treatment from a government hospital, 9 (4%) from a private or mission hospital, 13 from a government

health centre, 9 (4%) from a private or mission health centre, 5 (2%) from a government clinic or dispensary, 17 (7%) from a private clinic or dispensary, while 1 individual chose 'other'.

Participants also reported where they would take members of the household for health and medical treatment if they had the choice, of these 13 (6%) would prefer a shop, 15 (6%) would prefer a duka la dawa (pharmacy), 159 (67%) from a government hospital, 15 (6%) from a private or mission hospital, 8 (4%) from a government health centre, 9 (4%) from a private or mission health centre, 5 (2%) from a government clinic or dispensary, 11 (5%) from a private clinic or dispensary, and 1 person would prefer a traditional healer.

Preference for Formal or Informal Health Services

Descriptive analysis

There were 200 individuals in the Samburu district as presented in Table 7.10 that responded they would choose to seek health care services in the formal sector. Of all respondents, females had a higher percentage that would choose formal sector health care with 134 (90%) respondents as compared to 66 (79%) male respondents.

It appeared those individuals that were not literate had a higher percentage of respondents that would choose formal health care services if given the choice. Of those that were literate, 52 (74%) would prefer the formal health care sector and 148 (91%) of those that were not literate. However, having formal education did not appear to be a factor as 48 (86%) individual respondents that had some type of formal education preferred the formal sector, while 136 (84%) individuals with no formal education stated the same. Eighty seven (92%) respondents that reported having regular income would choose the formal health care sector, as well as 113 (82%) of those without regular income.

The older the age, the lower the percentage of respondents that would choose formal health care if they were given the option with 65 (78%) of those 46 years and above choosing formal health care. The other age categories were those 18 – 25 years where 46 (92%) would choose formal health care services, 26 – 35 years where 49 (88%) would choose formal health care services and 36 – 45 years where 40 (91%) would choose formal health care services.

For those individual respondents that had access to communications, 103 (86%) preferred formal health care as did the 97 (86%) respondents that did not have access to communications. No individual reported having access to motorized transport in the Samburu district.

A slightly higher percentage of those that lived closest to a hospital or health centre, 174 (87%), would choose formal health care while 26 (76%) of those that lived closest to a clinic or dispensary stated they would prefer formal health care if they were given the option. One hundred and thirty (83%) individual respondents that would choose formal health care reported living within 60 minutes of the closest health facility and 70 (92%) respondents that lived further than 60 minutes travel time would also choose formal health care. Sixty seven (70%) individuals that preferred formal health services had problems at some time in the past reaching the nearest health facility, but 130 (97%) had not.

Respondents in the Samburu district noted their preferences for members of the household to use formal health services if they were given the choice. Two hundred and seven (88%) participants would prefer members of the household used formal sector health services. Of those that were reported to prefer the formal sector, 136 (90%) were females and 71 (84%) were males.

Fifty two (73%) of these participants that preferred a member of the household used formal health care services were literate, while 155 (94%) were not. Forty nine (86%) had some type of formal education, and 142 (87%) did not. For those reporting having regular income, 88 (93%) respondents would choose to seek health care for a member of their household in the formal sector, while 119 (84%) would not.

The results for each of the age groups with a preference for a member of the household to use formal health care services is shown in Table 7.10, and was fairly even across the age categories. Those 46 (92%) in the 18 – 25 years would prefer a member of the household sought treatment in the formal health care sector, as well as 48 (86%) of those in the 26 – 35 years age category. There were 40 (91%) participants in the 36-45 years age category that responded they would prefer a member of the household seek treatment in the formal health care sector and 73 (86%) of those in the 46 years and over age category stated the same.

One hundred and five (87%) respondents with access to communications reported they preferred formal health care treatment for a member of the household, while 102 (89%) of those without access to communications still preferred a member of the household used the formal health care sector. No member of the household was reported to use motorized transport to reach the nearest health facility.

For the 180 (89%) members of the household where the closest health facility was a hospital or health centre and for the 27 (79%) respondents with a clinic or dispensary as their closest health facility, formal health services were the preferred option as reported by study participants. One hundred and thirty seven (86%) of the respondents that would prefer formal health services for a member of the household reported a travel time of less than 60 minutes to the nearest medical facility, while the 70 (91%) members of the household that reportedly had to travel further than 60 minutes to the nearest health facility also preferred formal health services. Of respondents, 65 (71%) reported a time when they had been unable to reach the nearest health facility and 129 (98%) did not have a problem.

Table 7.10
Numbers and Percentages of Respondents from the Samburu District that Reported They Would Choose to Seek Healthcare in the Formal Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		200	86	207	88
Gender					
	Female	134	90	136	90
	Male	66	79	71	84
Literacy					
	Yes	52	74	52	73
	No	148	91	155	94
Education					
	Yes	48	86	49	86
	No	136	84	142	87
Regular income					
	Yes	87	92	88	93
	No	113	82	119	84
Age					
	18 - 25	46	92	46	92
	26 - 35	49	88	48	86
	36 - 45	40	91	40	91
	46+	65	78	73	86
Communications					
	Yes	103	86	105	87
	No	97	86	102	89
Motorized transport					
	Yes	-		-	
	No	200	86	207	88
Closest facility					
	Hospital/ health centre	174	87	180	89
	Clinic/ dispensary	26	76	27	79
Travel time					
	<60 mins	130	83	137	86
	>60 mins	70	92	70	91
Ever unable to reach facility					
	Yes	67	70	65	71
	No	130	97	141	98

Univariate analysis

Univariate analysis for individuals from the Samburu district that reported they would prefer the formal health care sector, showed they were more likely to be illiterate (OR = 3.42, CI = 1.61 – 7.26, p<0.001) and less likely to report a time when the respondent was unable to reach the nearest health facility (OR = 0.07, CI = 0.02 – 0.21,

p<0.001). Respondents that preferred formal health care services were also less likely to be male (OR = 0.41, CI = 0.19 – 0.87, p<0.05).

In univariate calculations, respondents reporting for a member of the household were more likely to be illiterate and choose to seek formal health care treatment (OR = 5.66, CI = 2.48 – 12.96, p<0.001) and less likely to report a time they had been unable to reach the nearest health care facility in the past (OR = 0.05, CI = 0.02 – 0.18, p<0.001).

Multivariate analysis

Results for multivariate analysis (see Table 7.11) show individual respondents that preferred formal health care were more likely to be illiterate, than literate (OR = 9.47, CI = 2.68 – 33.40, p<0.001) and also less likely to report a time when they had been unable to reach the nearest health facility in the past (OR = 0.07, CI = 0.02 – 0.22, p<0.001). Individual respondents were more likely to report some formal education (OR = 4.58, CI = 1.18 – 17.77, p<0.05). Those respondents in the 46 years and above age category were less likely to choose formal health care services if they were sick, than those that were 18 – 25 years (OR = 0.22, CI = 0.05 – 0.90, p<0.05).

Respondents that reported they would prefer formal health services for members of the household as shown in Table 7.12 , were more likely to be illiterate (OR = 14.80, CI = 3.72 – 58.84, p<0.001) and have been unable to reach the nearest health facility at some time (OR = 0.05, CI = 0.01 – 0.18, p<0.001). Those respondents reporting on behalf of members of their household were also more likely to report having some formal education (OR = 8.64, CI = 2.03 – 36.73, p<0.005) as compared to those that did not have formal education..

Table 7.11
Individuals from the Samburu District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.41*	0.19 – 0.87	0.75	0.25 – 2.21	-	
Literacy						
Yes	1.00					
No	3.42****	1.61 – 7.26	9.00****	2.49 – 32.51	9.47****	2.68 – 33.40
Education						
No	1.00					
Yes	1.10	0.47 – 2.61	4.31**	0.99 – 18.79	4.58*	1.18 – 17.77
Regular income						
No	1.00					
Yes	2.41*	1.03 – 5.59	2.54	0.82 – 7.94	-	
Age						
18 – 25	1.00					
26 – 35	0.61	0.17 – 2.22	0.57	0.11 – 2.95	-	
36 – 45	0.87	0.20 – 3.70	0.57	0.10 – 3.42	-	
46+	0.31	0.10 – 0.99	0.22	0.05 – 1.07	0.22*	0.05 – 0.90
Communications						
No	1.00					
Yes	1.00	0.48 – 2.09	0.87	0.33 – 2.30	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	2.14	0.87 – 5.25	2.49	0.71 – 8.75	-	
Travel time						
>60 mins	1.00					
<60 mins	0.41	0.16 – 1.05	0.77	0.20 – 2.96	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.07****	0.02 – 0.21	0.08****	0.02 – 0.24	0.07****	0.02 – 0.22
District						

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 7.12
Members of the Household from the Samburu District that Reported They Would Choose to Seek Health Care in the Formal Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.56	0.26 – 1.22	0.98	0.30 – 3.14	-	
Literacy						
Yes	1.00					
No	5.66****	2.48 – 12.96	15.71****	3.73 – 66.12	14.80****	3.72 – 58.84
Education						
No	1.00					
Yes	0.91	0.38 – 2.18	8.49***	1.76 – 41.09	8.64****	2.03 – 36.73
Regular income						
No	1.00					
Yes	2.32	0.95 – 5.68	3.19	0.94 – 10.84		
Age						
18 – 25	1.00					
26 – 35	0.65	0.20 – 2.14	0.58	0.11 – 2.95	-	
36 – 45	1.09	0.27 – 4.33	0.66	0.12 – 3.77	-	
46+	0.66	0.22 – 2.00	0.54	0.11 – 2.69		
Communications						
No	1.00					
Yes	0.84	0.38 – 1.83	0.77	0.26 – 2.24	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	2.12	0.83 – 5.44	1.52	0.42 – 5.51	-	
Travel time						
>60 mins	1.00					
<60 mins	0.62	0.25 – 1.53	1.40	0.40 – 4.88	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.05****	0.02 – 0.18	0.05****	0.01 – 0.20	0.05****	0.01 – 0.18
District						

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Preferences for Private or Public Health Services

Descriptive analysis

Table 7.13 shows the results for respondents that would choose to seek health care in the private sector if they had the option. There were 68 (29%) individuals that reported they would choose health care from the private sector. This decision appeared to be about the same for individual females and males, with 23 (30%) females and 45

(27%) males saying they would choose health care from the private sector if they were given the choice.

Those respondents that were literate had a higher percentage of individuals that stated they would prefer private health care with 42 (37%) as compared with 26 (26%). Although there was little difference between those with or without formal education, as 16 (29%) of those with formal education and 52 (32%) of those without formal education stated they would prefer private sector health services. However, there does appear to be a difference based upon regular income with 17 (18%) of those having regular income preferring private services as compared to 51 (37%) of those reporting they did not have regular income.

It would appear that respondents from the 46 years and above age group had a higher percentage that would prefer private health services with 34 (41%) choosing this option. The other age groups were fairly even with those 18 – 25 years old where 11 (22%) preferred private health care, those 26 – 35 years old where 13 (23%) preferred private health services, and those 36 – 45 years old where 10 (23%) preferred private health services.

For individuals with access to communications, 37 (31%) stated they would choose private health care, while 31 (27%) respondents that did not have access to communications but would still choose health services from the private sector. No participants reported having access to motorized transport.

Fifty five (28%) individuals that lived closest to a hospital or health centre would choose private health care, while 13 (38%) of those individual respondents that were closest to a clinic or dispensary would also choose private health services if they were given the option. Fifty three (34%) individuals preferring private services lived within 60 minutes travel time of the nearest health facility and 15 (20%) lived further than 60 minutes. There appears to be a large difference in the percentages of those respondents that experienced a time when they had been unable to access health care services as compared to those without this experience and seeking health services from the private sector. Forty two (44%) individuals stated there was a time when they were unable to reach the nearest health facility, while 26 (19%) did not have this problem.

The preferences of respondents for members of the household and choosing to use private health care are presented in Table 7.13. Sixty four (27%) respondents

reported they would prefer members of the household used private health services. There was little difference in the percentage of females and males that would choose this option for a member of their household with 20 (29%) females and 44 (24%) stating this option.

There appeared to be a difference based upon the literacy of respondents and choosing private health services as reflected in the percentages. For those respondents that were literate, 38 (37%) stated they would prefer a member of their household to use private health services, as did 26 (23%) that were not literate. Fifteen (26%) respondents stated they had some formal education while 49 (30%) did not, so formal education did not seem to have the same impact as literacy. However, of those preferring private health care services, only 18 (19%) responded they had regular income and 46 (33%) said they did not receive regular income.

Again there was a slightly higher percentage of those from the 46 years and above age category (30 / 35%) that would prefer members of their household used the private health care sector if given the choice. The other age categories appeared fairly static with 11 (22%) of those 18 -25 years preferring private health services for a member of their household, 14 (25%) of those 26 – 35 years, and 9 (20%) of those 36 – 45 years.

Of those respondents with access to communications, 35 (29%) would prefer private health care for a member of the household, as would the 29 (25%) respondents that did not have access to communications. No respondent reported having access to motorized transport.

For respondents that lived closest to a hospital or health centre, 51 (25%) would choose private health services for a member of the household and 13 (38%) of those that reported they lived closest to a clinic or dispensary. There were 47 (30%) respondents that would choose private health care for members of the household, that had less than 60 minutes travel time to the nearest health facility and 17 (22%) that had further than 60 minutes travel time. Thirty nine (42%) respondents that reported they would choose private health care for a member of their household also reported a time when they had been unable to reach the nearest health facility, while for 25 (17%) this had not been a problem in the past.

Table 7.13
Numbers and Percentages of Respondents from the Samburu District that Reported They Would Choose to Seek Healthcare in the Private Sector by Independent Variables

		Individual		Member of the household	
		n	**%**	**n**	**%**
Overall		68	29	64	27
Gender					
	Female	23	30	20	29
	Male	45	27	44	24
Literacy					
	Yes	42	37	38	37
	No	26	26	26	23
Education					
	Yes	16	29	15	26
	No	52	32	49	30
Regular income					
	Yes	17	18	18	19
	No	51	37	46	33
Age					
	18 - 25	11	22	11	22
	26 - 35	13	23	14	25
	36 - 45	10	23	9	20
	46+	34	41	30	35
Communications					
	Yes	37	31	35	29
	No	31	27	29	25
Motorized transport					
	Yes	-		-	
	No	68	29	64	27
Closest facility					
	Hospital/ health centre	55	28	51	25
	Clinic/ dispensary	13	38	13	38
Travel time					
	<60 mins	53	34	47	30
	>60 mins	15	20	17	22
Ever unable to reach facility					
	Yes	42	44	39	42
	No	26	19	25	17

Univariate analysis

In univariate analysis for individuals (see Table 7.14) from the Samburu district and those that would choose private sector health care, were more likely to have been unable to reach the nearest health facility at some time (OR = 3.23, CI = 1.79 – 5.82, p<0.001) and less likely to report receiving regular income (OR = 0.37, CI = 0.20 –

0.70, p<0.005). Individual respondents were less likely to be illiterate (OR = 0.59, CI = 0.32 – 1.07, p<0.010) if they sought health services from the private sector. They were also likely to be older, as those in the 46 years and above age category were more likely to chose to seek health care from the private sector (OR = 2.46, CI = 1.11 – 5.47, p<0.05) and respondents were more likely to live within 60 minutes travel time to the nearest health care facility if they preferred to use private health services (OR = 2.07, CI = 1.08 – 3.99, p<0.05).

For those respondents preferring members of the household choose a private health facility, respondents were more likely to have been unable to reach the nearest health care facility at some time (OR = 3.57, CI = 1.96 – 6.50, p<0.001), and less likely to be illiterate (OR = 0.52, CI = 0.28 – 0.95, p<0.001) , as well as less likely to report receiving regular income (OR = 0.48, CI = 0.26 – 0.90, p<0.05).

Multivariate analysis

Individuals that would choose health care in the private sector were less likely to report receiving regular income, than those that received regular income (OR = 0.32, CI = 0.16 – 0.64, p<0.001) and were more likely to have been unable to reach the nearest health facility at some time in the past (OR = 2.97, CI = 1.57 – 5.63, p<0.001). Those choosing private health care services were also less likely to be illiterate, than those that were literate (OR = 0.30, CI = 0.14 – 0.66, p<0.005) and more likely to be aged 46 years and above, as compared with those in the youngest age group (OR = 4.47, CI = 1.62 – 12.34, p<0.005). Those that would prefer to use private health care services were less likely to be male than female (OR = 0.43, CI = 0.21 – 0.90, p<0.05).

Those respondents that stated they would prefer private health care services for a member of the household were more likely to be 46 years and above (OR = 4.09, CI = 1.51 – 11.10, p<0.005) than those 18 – 25 years, as seen in Table 7.14. Once more, those that reported they would choose health care in the private sector for a member of the household were more likely to have been unable to reach the nearest health facility at some time previously (OR = 4.44, CI = 2.23 – 8.82, p<0.001). Respondents that would prefer the private health care sector for a member of the household were less likely to be illiterate, than literate (OR = 0.20, CI = 0.06 – 0.64, p<0.05) and less likely to report receiving regular income (OR = 0.30, CI = 0.09 – 1.00, p<0.05).

Table 7.14
Individuals from the Samburu District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.87	0.48 – 1.58	0.38*	0.17 – 0.83	0.43*	0.21 – 0.90
Literacy						
Yes	1.00					
No	0.59**	0.32 – 1.07	0.27*	0.09 – 0.83	0.30***	0.14 – 0.66
Education						
No	1.00					
Yes	0.84	0.43 – 1.64	0.55	0.17 – 1.80	-	
Regular income						
No	1.00					
Yes	0.37***	0.20 – 0.70	0.40*	0.18 – 0.85	0.32****	0.16 – 0.64
Age						
18 – 25	1.00					
26 – 35	1.07	0.43 - 2.67	1.32	0.47 – 3.70	-	
36 – 45	1.04	0.39 – 2.76	1.75	0.58 – 5.32	-	
46+	2.46*	1.11 – 5.47	4.94*	1.75 – 13.95	4.47***	1.62 – 12.34
Communications						
No	1.00					
Yes	1.18	0.67 – 2.08	1.49	0.74 – 3.00	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.62	0.29 – 1.32	0.53	0.21 – 1.32	-	
Travel time						
>60 mins	1.00					
<60 mins	2.07*	1.08 – 3.99	1.37	0.61 – 3.08	-	
Unable to reach nearest facility						
No	1.00					
Yes	3.23****	1.79 – 5.82	3.69****	1.87 – 7.28	2.97****	1.57 – 5.63
District						

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 7.15
Members of the Household from the Samburu District that Reported They Would Choose to Seek Health Care in the Private Sector by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.75	0.41 – 1.38	0.35*	0.16 – 0.78	0.39*	0.18 – 0.84
Literacy						
Yes	1.00					
No	0.52*	0.28 – 0.95	0.20***	0.06 – 0.67	0.20*	0.06 – 0.64
Education						
No	1.00					
Yes	0.83	0.42 – 1.64	0.29**	0.08 – 1.01	0.30*	0.09 – 1.00
Regular income						
No	1.00					
Yes	0.48*	0.26 – 0.90	0.46*	0.22 – 0.99	0.51**	0.25 – 1.03
Age						
18 – 25	1.00					
26 – 35	1.21	0.49 – 2.98	1.69	0.61 – 4.63	-	
36 – 45	0.94	0.35 – 2.52	1.62	0.53 – 4.96	-	
46+	1.98	0.89 – 4.42	4.02**	1.42 – 11.32	4.09**	1.51 – 11.10
Communications						
No	1.00					
Yes	1.21	0.68 – 2.15	1.54	0.76 – 3.12	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	0.55	0.25 – 1.17	0.63	0.25 – 1.59	-	
Travel time						
>60 mins	1.00					
<60 mins	1.48	0.78 – 2.80	1.10	0.51 – 2.39	-	
Unable to reach nearest facility						
No	1.00					
Yes	3.57****	1.96 – 6.50	4.40****	2.16 – 8.96	4.44****	2.23 – 8.82

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

7.1.4 Outcome Variable 4: Those That Reported Receiving All The Treatment They Needed?

There were 119 individuals from the Samburu district that reported whether they received all the treatment they needed. These results are shown in Table 7.16. Seventy two (61%) reported they had, while 47 (39%) reported they had not. Individuals' reported reasons for not receiving all the treatment they needed were: 10 (17%) felt better, 38 (63%) reported the treatment was too expensive, 9 (15%) stated the entire course of treatment was not available, and 3 (5%) didn't really know.

There were 82 responses for respondents reporting for members of the household, where 62 (76%) reported a member of the household had received all the treatment they needed and 20 (24%) did not. The reasons reported by members of the household for not receiving all the treatment they needed were: 3 (13%) felt better, 16 (67%) stated the treatment was too expensive, 3 (13%) reported the treatment was not available, 1 had another reason, and 1 didn't know.

Descriptive Analysis

A higher percentage of females than males reported they received all the treatment they needed in the past three months in the Samburu district. For individuals, 52 (67%) females and 20 (49%) males reported receiving all the treatment they needed.

Of those individuals that reported they received all the treatment they needed, 16 (55%) participants stated they were literate and 56 (62%) were not. The percentages of those that reported having formal education and receiving treatment was essentially the same, but the number of those that reported having formal education was lower, with 15 (63%) stating they had some type of formal education and 54 (62%) reported having no type of formal education. Of those receiving regular income 31 (57%) reported receiving all the treatment they needed, as did 41 (63%) of those not having a regular income.

The greatest difference in percentages of the ages of individual respondents from the Samburu district that reported receiving all the treatment needed was between those 18 – 25 years where 10 (50%) reported they received all treatment and the 26 – 35 years age category where 16 (67%) reported receiving all the treatment they needed. Of respondents in the 36 – 45 years age category, 14 (56%) stated they had received all the treatment they needed and 32 (64%) of those 46 years and above.

Of those that had access to communications, 38 (58%) individuals reported receiving all the treatment they needed, as well as 34 (64%) that did not have access to communications. There were no respondents in the Samburu district that had access to motorized transport.

Sixty one (62%) individuals from the Samburu district that stated they received all the treatment they needed reported having a hospital or health centre as the closest facility, while 11 (55%) individuals reported living closest to a clinic or dispensary. For those receiving all the needed treatment, 50 (60%) stated they had less than 60 minutes

travel time to the nearest health facility, while 22 (61%) had further than 60 minutes to travel. For individuals that report receiving all the treatment they needed, there were still 31 (57%) that responded they were unable to reach a health facility at some time, but 40 (63%) that said this had not been a problem.

Responses with regard to members of the household in the Samburu district are shown in Table 7.16. There were 62 (76%) responses that members of the household had received all the treatment they needed. There was some difference in the percentages of respondents that received all the treatment they needed, with 42 (79%) females and 20 (69%) males reporting a member of their household had sought treatment and received all the treatment they needed.

Respondents for members of the household were similarly reported to be literate or not literate with 23 (77%) reporting they were literate and 39 (75%) reporting they were not. Twenty two (79%) respondents had some type of formal education and 34 (74%) reported having no type of formal education. Twenty eight (68%) participants from the Samburu district were reported to receive a regular income, while a higher percentage reported they did not (34 / 83%).

The age groups and numbers for those reporting that members of the household had received all the treatment they needed varied somewhat with those in the 26 – 35 years age group having a higher percentage for reporting a member of the household had received all the treatment they needed. These age categories are recorded in Table 7.16 and were: 18 – 25 years, 13 (76%); 26 – 35 years, 18 (86%); 36 – 45 years, 9 (69%); and 46 and above years, 22 (71%).

For those respondents that had access to communications 37 (76%) reported a member of their household had received all the treatment they needed, while 25 (76%) respondents reported not having access to communications, but that a member of their household had received all the treatment they needed. No respondents that were sick and reported receiving all the treatment they needed had access to motorized transport.

Table 7.16
Numbers and Percentages of Respondents from the Samburu District that Reported Being Sick and Receiving All the Treatment They Needed

		Individual		Member of the household	
		n	%	n	%
Overall		72	61	62	76
Gender					
	Female	52	67	42	79
	Male	20	49	20	69
Literacy					
	Yes	16	55	23	77
	No	56	62	39	75
Education					
	Yes	15	63	22	79
	No	54	62	34	74
Regular income					
	Yes	31	57	28	68
	No	41	63	34	83
Age					
	18 - 25	10	50	13	76
	26 - 35	16	67	18	86
	36 - 45	14	56	9	69
	46+	32	64	22	71
Communications					
	Yes	38	58	37	76
	No	34	64	25	76
Motorized transport					
	Yes	-		-	
	No				
Closest facility					
	Hospital/ health centre	61	62	48	80
	Clinic/ dispensary	11	55	14	64
Travel time					
	<60 mins	50	60	41	79
	>60 mins	22	61	21	70
Ever unable to reach facility					
	Yes	31	57	30	70
	No	40	63	32	82

Univariate Analysis

Results of univariate analysis for individuals (see Table 7.17) having reported receiving all the treatment they needed, showed no association between the independent variables that was significant to meet the study criteria.

Univariate analysis for members of the household and receiving all needed treatment, also provided no significant association with between the outcome and the independent variables.

Multivariate Analysis

The results of multivariate analysis for individuals from the Samburu district and receiving all the treatment needed, shows again, no association between receiving treatment and the independent variables that was found to meet the study criteria. This result was the same for members of the household (see Table 7.18) and receiving all the treatment they needed, as reported by respondents.

Table 7.17
Individuals from the Samburu District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

	Univariate		Multivariate			
Independent Variables			**Full**		**Final**	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender						
Female	1.00					
Male	0.48	0.22 – 1.03	0.52	0.21 – 1.24	-	
Literacy						
Yes	1.00					
No	1.34	0.57 – 3.12	3.41	0.56 – 20.78	-	
Education						
No	1.00					
Yes	1.02	0.44 – 2.59	3.72	052 – 26.57	-	
Regular income						
No	1.00					
Yes	0.79	0.38 – 1.65	0.93	0.37 – 2.37	-	
Age						
18 – 25	1.00					
26 – 35	2	0.59 – 6.77	2.34	0.59 – 9.27	-	
36 – 45	1.27	0.39 – 4.14	1.81	0.50 – 6.52	-	
46+	1.78	0.62 – 5.08	2.40	0.72 – 7.95	-	
Communications						
No	1.00					
Yes	0.76	0.36 – 1.60	0.80	0.33 – 1.94	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	1.31	0.50 – 3.46	1.09	0.34 – 3.52	-	
Travel time						
>60 mins	1.00					
<60 mins	0.96	0.43 – 2.15	0.89	0.33 – 2.39	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.78	0.37 – 1.63	0.94	0.40 – 2.24	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

Table 7.18
Members of the Household from the Samburu District that Were Sick and Sought Treatment and Reported Receiving All the Treatment They Needed by Independent Variables

Independent Variables	Univariate		Multivariate			
			Full		Final	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Female	1.00					
Male	0.58	0.21 – 1.63	0.63	0.17 – 2.32	-	
Literacy						
Yes	1.00					
No	0.91	0.32 – 2.62	0.74	0.08 – 7.08	-	
Education						
No	1.00					
Yes	1.29	0.42 – 3.95	1.27	0.14 – 11.98	-	
Regular income						
No	1.00					
Yes	0.44	0.16 – 1.26	0.45	0.12 – 1.73	-	
Age						
18 – 25	1.00					
26 – 35	1.85	0.35 – 9.69	1.31	0.22 – 7.61	-	
36 – 45	0.69	0.14 – 3.52	0.85	0.13 – 5.42	-	
46+	0.75	0.19 – 2.94	1.24	0.24 – 6.33	-	
Communications						
No	1.00					
Yes	0.99	0.35 – 2.76	0.57	0.16 – 2.04	-	
Motorized transport						
No Motor	1.00					
Motor	-		-		-	
Closest facility						
Clinic/Dispensary	1.00					
Hosp/health centre	2.29	0.78 – 6.69	1.25	0.27 – 5.72	-	
Travel time						
>60 mins	1.00					
<60 mins	1.60	0.57 – 4.46	1.70	0.47 – 6.21	-	
Unable to reach nearest facility						
No	1.00					
Yes	0.50	0.18 – 1.44	0.46	0.12 – 1.68	-	

*(****p<0.001, ***p<0.005, **p<0.010, *p<0.05)*

CHAPTER 8
RESULTS SUMMARY

8.1 SUMMARY OF RESULTS BY OUTCOME VARIABLES

The factors investigated for their influence on health care seeking behaviour and unmet health needs are presented for each outcome variable. Some descriptive information is presented, while results for both univariate and multivariate analyses are summarised. Univariate results measure the direct association between an independent factor and the outcome measure only, while multivariate analysis examines independent variables and their association with the outcome measure when all other independent variables have been controlled for.

8.1.1 Who Reported Being Sick and Sought Treatment?

In the study population, 66% of respondents reported they were sick in the past three months and 80% of these or 53% of the total population sampled stated they sought treatment. Respondents overall stating where they sought treatment were more likely to report a government hospital or health centre (31%), followed by a government clinic or dispensary (24%). Other options included a private clinic or dispensary (15%), a duka la dawa (10%), shop (9%), a private hospital or health centre (7%), self-treatment (2%) or traditional medicine (2%).

In descriptive analysis for each district and those reporting being sick and seeking treatment, 62% of individual respondents and 60% of members of the household from the Busia district, 38% of individual respondents and 40% of members of the household from the Malindi district, and 51% of individual respondents and 58% of members of the household from the Samburu district, reported being sick and seeking treatment.

In terms of characteristics of those that reported being sick and seeking treatment, in the aggregate results for the overall population, males were significantly less likely than females to report they had been sick and sought treatment in the past three months in multivariate analysis, but significantly more likely in univariate analysis to report a member of the household had been sick. Male respondents in the Busia

district were significantly less likely than female respondents to report being sick and seek treatment in univariate and multivariate analysis. Males in the Malindi district were significantly more likely than females to report a member of the household had sought treatment in univariate analysis. Individual males in the Samburu district were significantly less likely than females to report being sick and seek treatment in the past three months in multivariate analysis.

Respondents, from the aggregate level results, were significantly more likely to be literate and report a member of the household had been sick and sought treatment in the past three months, in univariate analysis. Individuals in the Busia district were significantly more likely to be illiterate in univariate analysis and report they had been sick and sought treatment, while respondents from the Samburu district that reported a member of the household had sought treatment were significantly more likely to be literate in univariate analysis. Respondents from the Busia district that reported a member of the household sought treatment were significantly more likely, in multivariate analysis, to be literate.

In the aggregate level results respondents that reported a member of the household was sick and sought treatment were significantly more likely, in univariate analysis, to have formal education. Individuals from the Busia district were significantly less likely, in univariate analysis, to have formal education, while those reporting for members of the household were also significantly less likely to have formal education, in multivariate analysis only. Residents of the Samburu district that reported a member of the household sought treatment were significantly more likely to have formal education in univariate and multivariate analysis.

Having regular income was significant in the overall population for members of the household that were sick and sought treatment, in multivariate analysis. Respondents were more likely to have regular income and report a member of the household had sought treatment, than those without regular income. Regular income was not significant for individual districts.

In the aggregate results for the overall population, age was significant for individuals in univariate and multivariate analysis. Those in the 46 years and above age group were significantly more likely to report they were sick and sought treatment. Age was also significant in univariate and multivariate analysis for individuals in the Busia

and the Samburu districts, where individuals 46 years and above were significantly more likely to report they were sick and sought treatment.

Respondents in the overall population were significantly more likely to report access to communications where a member of the household was sick and sought treatment, in univariate and multivariate analysis, for the aggregate results. Having access to communications was also significant for members of the household in the Malindi district, in univariate and multivariate analysis and for members of the household in the Samburu district, in univariate analysis only. Respondents were more likely to access communications.

Respondents were significantly more likely to have access to motorized transport, in univariate and multivariate analysis, and report members of the household were sick and sought treatment in the past three months, from the overall population. Motorized transport was not significant for the individual districts, while no respondent from the Samburu district reported having access to motorized transport, so logistic analysis was not possible.

Individuals, and those reporting for members of the household, in the aggregate level results for the overall population, reported they were less likely to have a hospital or health centre as the closest health care facility rather than a clinic or dispensary. This was significant in both univariate and multivariate analysis. A similar result was found for members of the household in the Samburu district, that were more likely to live closest to a clinic or dispensary.

The time taken to travel to the nearest health care facility was significant in the Busia district for individuals in multivariate analysis and for members of the household in univariate and multivariate analysis. Respondents from the Busia district were more likely to live within 60 minutes travel time of the nearest health care facility. Travel time was also significant in univariate analysis for individuals in the Malindi district, however these individuals were significantly less likely to live within 60 minutes of the nearest health care facility.

For the population overall, in univariate analysis and when all other factors were controlled for, those that reported they had been sick and sought treatment in the past three months, were also significantly more likely to report a time when they had been unable to reach the nearest health facility, as compared to those for which this was not a

problem. Individuals from the Busia district in multivariate analysis and members of the household in univariate and multivariate analyses, were significantly more likely to a report a time when they had been unable to reach the nearest health care facility previously. Individuals and members of the household from the Malindi district were also significantly more likely to report a time when they had been unable to reach the nearest health facility. This result was in both univariate and multivariate analysis. While only respondents in the Samburu district reported a member of the household had been unable to travel to the nearest health care facility at some time previously, in univariate analysis.

8.1.2 Seeking Formal Health Care Services

In descriptive analysis for each district and using formal health care services, 74% of individual respondents and 79% of members of the household from the Busia district, 67% of individual respondents and 77% of members of the household from the Malindi district, and 84% of individual respondents and 93% of members of the household from the Samburu district, reported being sick and using formal health and medical care facilities.

For respondents that reported seeking treatment using formal health care services, there was a significant difference in the overall population between males and females, with male individuals significantly less likely than female respondents, to report being sick and seeking treatment in the formal health care sector. This was the case in univariate and multivariate analysis. There was a similar result for male respondents from the Busia district, who were less likely than female respondents to report being sick and seeking treatment in the formal health care sector, in univariate and multivariate analysis.

Although literacy did not meet the exact study criteria to be a significant factor in the use of formal health care services, in the aggregate results for the overall population, it was included and interpreted as significant in combination with other study results. The aggregate results may be reflective of the univariate results for individuals from the Busia district that were significantly more likely to be illiterate and seek health care in the formal sector.

The results of univariate and multivariate analysis for formal education in the overall population, also did not meet the study criteria for significance, however, it will

be interpreted with caution in combination with other factors for this study. Individual respondents from the Busia district were significantly less likely to have formal education and use formal health care services, than those that had formal education. This result was significant in univariate and multivariate analysis. Overall respondents were more likely to be literate and to have some type of formal education, but once education was controlled for, were actually less likely to have formal education and use formal health care services.

Regular income was not reported as a significant factor for the overall population or the districts, except in univariate analysis for the Samburu district. Individual respondents in the Samburu district were significantly more likely to report regular income and use formal health care services.

The age of participants was not significant in the population overall, nor in any of the districts, for using formal health care services. However, in the Samburu district all respondents in the 26 – 35 years age group reported a member of their household sought health care in the formal health sector.

Having access to communications was not significant for using formal health care services in the overall survey population or for any of the districts, including members of the household in the Samburu district where univariate and multivariate was not possible as no respondents reported having access to communications.

For the population overall, having access to motorized transport was significant only for those reporting a member of the household sought treatment in the formal sector. These respondents were significantly less likely to have access to motorized transport. For each of the Busia and Malindi districts, having access to motorized transport to reach the nearest health facility was not statistically significant for seeking treatment in the formal health care sector. While no respondent from the Samburu district had access to motorized transport and therefore univariate or multivariate analysis was not possible.

For respondents from the overall population and those in the Busia district having a hospital or health centre as the closest health care facility was not statistically significant in either univariate or multivariate analysis. Individual respondents from the Malindi district were significantly more likely to seek formal health care and live closest to a hospital or health centre, than those living nearest a clinic or dispensary, in

univariate analysis. Living closest to a hospital or health centre was not significant for individuals using formal health care in the Samburu district, while no member of the household that had sought treatment had access to a hospital or health centre according to respondents from the Samburu district, so logistical analysis was not possible.

For participants overall and in the Busia distict, living within 60 minutes travel time to the nearest health facility was significantly associated with seeking formal health care, as compared to those that did not live within 60 minutes travel time to the nearest health facility. Respondents were more likely to live within 60 minutes travel time in both univariate and multivariate analysis. Results from the Malindi and Samburu districts were not statistically significant.

For the overall population, and each of the individual districts where respondents reported seeking treatment in the formal sector, being unable to reach the nearest health facility was not statistically significant.

8.1.3 Seeking Private Health Care Services

In descriptive analysis for each district and seeking private health care services, 50% of individual respondents and 44% of members of the household from the Busia district, 56% of individual respondents and 45% of members of the household from the Malindi district, and 27% of individual respondents and 21% of members of the household from the Samburu district, reported being sick and using formal health and medical care facilities..

For the population overall and for each of the districts surveyed, results show that gender did not appear to affect the use of private health care services. This was evident in both univariate and multivariate analysis, with individuals and members of the household.

Individual respondents from the overall population that sought treatment through private health care services were significantly more likely to be literate in univariate analysis. Being literate was not significant however at the district level.

For the study population as a whole, individuals that would seek private medical services were also significantly more likely to report having formal education, in univariate and multivariate analysis, than those that did not have formal education. This was not significant however, for those respondents reporting about members of the

household. Having formal education was significant for individuals using private health care services, in univariate analysis for the Malindi district only.

Regular income was not shown to be a significant factor for this study population and seeking private medical services, in the overall aggregate results or at the district level.

The age of respondents did not appear to be a significant factor for the population overall and seeking private medical services. At the district level, age was not a significant factor for respondents using private health care services.

For those respondents that sought treatment in the private health care sector, having access to communications was not a significant factor overall in univariate or multivariate analysis. At the district level, access to communications did not appear to be a significant factor for those in the Busia and Malindi districts, it was however significant for respondents stating a member of the household in the Samburu district used private health services. Members of the household were significantly more likely to use private health care services if the respondent had access to communications, as compared to those that did not have access to communications. This result was consistent in univariate and multivariate analysis.

For the study population overall, access to motorized transport as a means of travelling to the nearest health care facility was not a significant factor for seeking private health care services. This was also the same for those respondents in the Busia and Malindi districts. No logistic regression analysis was possible in the Samburu district as no respondent reported having access to motorized transport.

In terms of the closest health care facility for respondents from the survey population overall, those that sought treatment in the private sector were significantly less likely to have a hospital or health centre as the closest health care facility as compared to those where a clinic or dispensary was the closest health care facility. This was significant for individuals and members of the household in univariate and multivariate regression analysis. Having a hospital or health centre as the closest health care facility was not found to be significant in the results from the Busia and Samburu districts. However, in the Malindi district, individuals were significantly less likely to state a hospital or health centre was the closest health care facility.

For the population overall, individuals and members of the household were significantly less likely to live within 60 minutes travel time to the nearest health care facility and seek treatment in the private health care sector, than those that lived within 60 minutes travel time to the nearest health facility. This result was found in multivariate analysis, and a similar result was found in the Busia district, in univariate and multivariate analysis, for individuals and members of the household.

In the overall study population, being unable to reach the nearest health facility was not a significant factor for those seeking treatment in the private health care sector, as compared with those that did not have a problem with being unable to travel to the nearest health care facility. However it was significant in univariate analysis for individuals in the Malindi district and for individuals, in multivariate analysis, from the Samburu district.

8.1.4 Preference For Formal Health Care Services

In descriptive analysis for each district and preferences for seeking health care in the formal sector, of all respondents that would choose health care in the formal sector, 93% of individual respondents and 94% of members of the household from the Busia district, 93% of individual respondents and 93% of members of the household from the Malindi district, and 86% of individual respondents and 88% of members of the household from the Samburu district reported they would prefer health care in the formal sector given the choice.

The gender of respondents did not affect their preference for formal health care in the aggregate level results for the population overall. Gender was also not a significant factor for respondents from the Busia and Malindi districts. However, individual male respondents from the Samburu district were significantly less likely to report they would prefer formal health care services given the choice, than female respondents. This result was significant in univariate analysis only.

In the aggregate level results for participants in the overall population, those individuals that were not literate were significantly more likely to report they would choose health care in the formal sector, than those participants that were literate. This result was evident in multivariate analysis for individuals and members of the household. Literacy was not a significant factor for respondents from the Busia and Malindi districts. However, a similarly significant result was found in the Samburu

district, and included univariate analysis. Respondents were significantly more likely to state they were illiterate and prefer formal health care services, than those respondents that were literate.

Having some type of formal education was indicated for participants in the overall population and preferring formal health care services, in univariate analysis and when all other variables were controlled for. Respondents were significantly more likely to have formal education. This result was significant for both individuals and members of the household. Formal education did not appear to be a significant factor for respondents in the Buisa and Malindi districts. However, in the Samburu district individuals and those reporting their preferences for members of the household were significantly more likely to have some formal education, in multivariate analysis only.

Participants from the overall population that reported they did not have regular income in the aggregate level data, were significantly more likely than those that had regular income, to favour formal health services if given the choice. This was a significant result for individuals and members of the household, in univariate and multivariate analysis. This result was similar in the Busia district for individuals preferring formal health care, but significant only in multivariate analysis for members of the household. Not having regular income perfectly predicted that respondents in the Malindi district would choose formal health care if they could and so could not be used for logistic analysis. While regular income was significant for individuals from the Samburu district that stated they preferred formal health care services, in univariate analysis. Individual respondents from the Samburu district were significantly more likely to report having regular income if they chose formal health care services.

Age was a significant factor in the aggregate results for the overall study population, in univariate and multivariate analysis. Individuals aged 46 years and above, were significantly less likely to choose formal health care services than those respondents from the other age groups. Results were not significant for the Busia and Malindi districts, however, those in the Samburu district that were 46 years and above were significantly less likely to choose formal health care services than those in the other age categories. This result remained significant once all other variables were controlled for.

In the overall survey population, access to communications was not a significant factor for preferring formal health care services. Having access to communications did

not appear to be a significant factor for choosing formal health care services, at the district level either.

Having access to motorized transport did not appear to be a significant factor in logistical analysis for the overall population and preferring formal health care services, in the aggregate level data. Motorized transport did not appear to be significant at the district level either, and no respondent from the Marlala district reported having access, so logistical analysis was not possible.

Participants from the overall population were significantly less likely to live nearest a hospital or health centre and prefer formal health care services, if they were a member of the household, in univariate analysis for the aggregate level data. This result was the same for respondents from the Busia district, where those reporting they would prefer members of the household to use formal health care services were less likely to live nearest a hospital or health centre, from univariate analysis only.

Travel time to the nearest health care facility and preferring formal health care services was not significant for respondents from the overall population, it was however significant for individuals and members of the household in the Busia district. Individuals and those reporting for members of the household from the Busia district were significantly more likely to live within 60 minutes travel time to the nearest health care facility and chose formal health care, than those that lived further away. Results were significant in univariate and multivariate analysis.

Participants, that reported they would prefer to seek treatment in the formal health care sector, from the overall survey population were significantly less likely to report a time when they had been unable to reach the nearest health care facility, as compared with those for which this had not been a problem in the past. This was the case for individuals and members of the household, in univariate and multivariate analysis. A similar result was found for respondents from the Samburu district. Individuals and members of the household from the Samburu district were significantly less likely to report a time they had been unable to reach the nearest health care facility, than those that did not have this problem, and prefer to use formal health care services, if given the choice.

8.1.5 Preference For Private Health Care Services

In descriptive analysis for each district and preferring private health care services, 40% of individual respondents and 38% of members of the household from the Busia district, 21% of individual respondents and 18% of members of the household from the Malindi district, and 29% of individual respondents and 27% of members of the household from the Samburu district, reported they would prefer private health care services if given the choice.

Gender was not a significant factor that met the study criteria, in the overall population for those reporting where they would prefer to seek health care. Gender did not appear to be a significant factor for those in the Busia and Malindi districts, however for respondents in the Samburu district, males were significantly less likely than females to state they would prefer private health care services if given the choice, for themselves or for a member of the household. This result was significant in multivariate analysis only.

In the aggregate results for the overall population, respondents that would choose the private health care sector were significantly more likely to be literate, than not. This result was significant in univariate analysis for individuals and in univariate and multivariate for members of the household. Literacy did not appear to be a significant factor for respondents from the Busia and Malindi districts. However, individual respondents and those reporting for members of the household, were more likely to be literate and state they would prefer the private health care sector if given the choice, than those that were not literate. This result was significant in both univariate and multivariate analysis.

Having formal education, as compared to those with no formal education, did not appear to be a significant factor for those choosing private health care services in the overall population or at the district level. Although respondents that were less likely to report having formal education in the Samburu district, were also more likely to prefer private health care, than those that had formal education. This did not meet the study criteria for significance however, but may be interpreted with caution in conjunction with other factors in the final analysis.

Having regular income was significantly positively associated with respondents choosing to use private health care facilities, in the aggregate level data for the

population overall. This result was the same for individuals and those reporting for members of the household, in univariate and multivariate analysis. Respondents from the Busia district, were also more likely to prefer private health care services if they had regular income than those that did not have regular income. These results were for individuals and members of the household, in univariate and multivariate analysis, for individuals and members of the household. While respondents from the Samburu district were less likely to have regular income and choose private health care services, for individuals and members of the household. This result was also in both univariate and multivariate analysis.

The age of respondents was not a significant factor for the population overall and preferring private health care services in the aggregate level data. This was the same for respondents from the Busia and Malindi districts. Respondents in the Samburu district that were 46 years and above were significantly more likely than those in the other age categories to prefer private health care if given the choice. This result was significant for individuals in univariate and multivariate analysis, and for those reporting preferences for members of the household once all other variables had been controlled for.

Those participants from the population overall with access to communications were significantly more likely to prefer health care in the private sector, given the choice, than those without access to communications. This result was significant in univariate analysis for individuals and members of the household. Individual respondents from the Busia district were also significantly more likely to have access to communications and prefer private health care services, than those that did not have access to communications, in univariate analysis only.

Those participants from the overall population from the aggregate level data, that preferred private sector health care services, were significantly less likely to have access to motorized transport, than those that reported they could obtain motorized transport. This was the case for both individuals and those reporting for members of the household, and in univariate and multivariate analysis. Motorized transport did not appear to be a significant factor for preferring private health care in the Busia and the Malindi districts and it was not possible to perform any logistical analysis on motorized transport in the Samburu district, as no participant reported having access to motorized transport.

Individual respondents from the overall population were significantly less likely to have a hospital or health centre as the closest health care facility and prefer to use private health care, than those with a clinic or dispensary as the closest health care facility. This result was for univariate analysis only.

Again for the study population overall, individuals that would choose the private health care sector were significantly more likely to report living within 60 minutes travel time of the nearest health facility, than those that lived further than 60 minutes. This was significant for individuals in multivariate analysis only. Travel time was not significant for participants from the Busia and Malindi districts, but was significant for individual respondents from the Samburu district who were more likely to prefer to use private health care services if they had to travel less than 60 minutes to reach the nearest health care facility, as compared to those that had to travel further. This result was in univariate analysis only.

Respondents from the overall population that stated they would prefer the private health care sector, given the choice, were significantly more likely to report a time when they had been unable to reach the nearest health facility. This result was for individuals and members of the household, in both univariate and multivariate analysis after all other factors had been controlled for. In the Busia district, only those reporting they would prefer a member of the household used private health care services, were significantly more likely in univariate and multivariate analysis to report they had been unable to reach the nearest health facility at some time previously. While individuals and members of the household from the Samburu district reported significantly more often there had been a time when they had been unable to reach the nearest health facility, rather than those that did not, and state their preference for the private health care sector.

8.1.6 Receiving All Treatment Needed.

In descriptive analysis for each district and receiving all the treatment needed, 53% of individual respondents and 65% of members of the household from the Busia district, 56% of individual respondents and 66% of members of the household from the Malindi district, and 61% of individual respondents and 76% of members of the household from the Samburu district, reported receiving all the treatment they needed.

For the overall population, in the aggregate level results, gender did not appear to be a significant factor for individual respondents or members of the household reporting whether they received all the treatment they needed, in univariate or multivariate analysis. The univariate and multivariate results for gender at the district level, also did not meet the study criteria to be considered significant.

For participants overall in the aggregate level results, literacy was not significantly associated with receiving all the treatment needed, except for respondents from the Busia district. Individual respondents from the Busia district were more likely to report receiving all the treatment they needed if they were literate, than not literate, in the full model for multivariate analysis, but this result did not meet the study criteria for significance in the final model, so must be interpreted with caution . While those that staetd members of their household had received all the treatment they needed were also significantly more likely to be literate, than not, in univariate and multivariate analysis. Results were not significant in the Malindi or Samburu districts.

For the population overall, aggregate level data shows that having formal education did not appear to be a significant factor for reporting receiving all the treatment needed. In the Busia district, individual respondents were less likely to report they had formal education and received all the treatment they needed, as compared to those that had formal education. This result was for the full model for multivariate analysis only and should be interpreted with caution. Those reporting that a member of the household had received all the treatment needed were significantly less likely to report they had formal education, than those that reported having formal education. This result was for multivariate analysis once all other factors had been controlled for.

Regular income did not appear to be a significant factor for the overall population reporting they received all needed treatment. However, regular income was significant for individuals in the Busia and Malindi districts in univariate analysis. Respondents from the Busia district that reported they received all the treatment they needed were significantly more likely to state they received regular income, than those that did not have regular income. While those from the Malindi district that reported they received all the treatment they needed were significantly less likely to report they had regular income. This result was significant in univariate and multivariate analysis.

The age of respondents did not appear to be a significant factor associated with participants' receiving all the treatment they needed in the population overall, or at the district level. Both univariate and multivariate analysis were performed.

Having access to communications and reporting receiving all the treatment needed did not appear to be significantly associated through univariate or multivariate analysis in the aggregate level data for the population overall. Individual respondents from the Busia district were significantly more likely to have access to communications and receive all the treatment needed, than those that did not have access to communications, in univariate analysis. The results of logistic analysis for the Malindi and Samburu districts do not appear to show any significant association with access to communications and receiving all the treatment needed, that meets the study criteria.

Motorized transport did not appear to be a significant factor for the overall population and receiving all the treatment needed in univariate or multivariate analysis for the aggregate level data. Access to motorized transport also did not seem to be a significant factor for respondents in the Busia or Malindi districts and reporting receiving all needed treatment. Once more, logistical regression analysis was not possible for the Samburu district as no respondent reported having access to motorized transport.

For the population overall and the results for each of the districts in the study, closest health care facility was not significantly associated with receiving all needed treatment, in either univariate or multivariate analysis, for individual respondents or for those reporting for a member of the household.

For the overall population, aggregate results show members of the household were reported to have received all the treatment they needed if the travel time to the nearest health care facility was less than 60 minutes, rather than those that lived further than 60 minutes. This was significant in univariate and multivariate analysis. While travel time was not significant for respondents from the Busia or Samburu districts, those members of the household in the Malindi district that received all the treatment they needed were significantly associated with having less than 60 minutes to travel to the nearest health facility were. This result was also consistent across univariate and multivariate analysis.

In the aggregate level results for the population overall, members of the household that were reported to have received all the treatment they needed were less likely to have been unable to reach a health care facility at some time previously. This result was for univariate analysis only. It did not appear that being unable to reach the nearest health care facility at some time in the past was significantly associated with receiving all the treatment needed at the individual district level.

8.2 SUMMARY OF RESULTS BY INDEPENDENT VARIABLES

A summary of the results for each of the independent variables used in this study is presented. These are the factors being investigated for their influence on health care seeking and unmet health needs. The results from univariate and multivariate analyses are summarised.

8.2.1 Gender

In the aggregate level data for the overall survey population, gender was shown to have a significant influence on health care seeking. For individuals overall, women were significantly more likely than men, to report being sick and seeking treatment, once all other variables had been controlled for. While men, were significantly more likely than women, to report a member of their household had been sick and sought treatment in the past three months, in univariate analysis. Individual male respondents in the Busia district were significantly less likely than female respondents, to report being sick and seeking treatment. For members of the household in the Malindi district, males were significantly more likely than females, in univariate analysis, to report a member of the household had sought treatment. In the Samburu district, individual males were significantly less likely in multivariate analysis, to report having been sick and seeking treatment.

For respondents that reported seeking treatment using formal health care services, there was a significant difference in the overall population between males and females, with male individual respondents significantly less likely than female respondents, to report being sick and seeking treatment in the formal health care sector. This was the case in univariate and multivariate analysis. There was a similar result for male respondents from the Busia district, who were less likely than female respondents to report being sick and seeking treatment in the formal health care sector.

Gender did not appear to be a statistically significant factor for those seeking treatment and using private health care services in this study, with this survey population.

The gender of respondents did not affect their preference for formal health care in the population overall, however individual male respondents from the Samburu district were significantly less likely than females to report they would prefer formal health care services, given the choice. This result was significant in univariate analysis.

Gender was a significant factor in the overall population for members of the household in univariate analysis for those respondents that reported they preferred private health services. While male residents of the Samburu district were significantly less likely than females to state they would prefer the private health care sector, given the choice. This result was significant in multivariate analysis when all other variables had been controlled for, for individuals and members of the household.

For the overall population, gender was not a significant factor for individual respondents or members of the household reporting whether they received all the treatment they needed, in univariate or multivariate analysis. A similar result was found for each of the study districts.

8.2.2 Literacy

In the aggregate level results for the overall study population, participants reporting a member of their household had been sick and sought treatment were more likely to be literate, than not. This result was significant in univariate analysis only. Individuals in the Busia district were significantly more likely to be illiterate in univariate analysis and report they had been sick and sought treatment, while those reporting a member of the household had been sick and sought treatment were significantly more likely to be literate, in multivariate analysis. Respondents from the Samburu district that reported a member of the household had sought treatment were significantly more likely to be literate, than not, in univariate analysis.

Although literacy did not meet the exact study criteria to be a significant factor in the use of formal health care services, in the aggregate results for the overall population, it was included and interpreted as significant in combination with other study results. Individuals from the Busia district were significantly more likely to be illiterate and seek formal health care services in univariate analysis only.

Individual respondents from the overall population that sought treatment through private health care services were significantly more likely to be literate, than those that were illiterate, in univariate analysis only.

In the aggregate results for participants in the overall population, those individuals that were not literate were significantly more likely to report they would choose health care in the formal sector, than those participants that were literate. This result was evident in multivariate analysis for individuals and members of the household. A similar result was found in the Samburu district, and included univariate analysis.

In the aggregate results for the overall population, respondents that would choose the private health care sector were significantly more likely to be literate, than not. This result was significant in univariate analysis for individuals and in univariate and multivariate for members of the household. A similar result was found in the Samburu district in both univariate and multivariate analysis.

For participants overall, literacy was not significantly associated with receiving all the treatment needed, except for respondents from the Busia district. Individual respondents from the Busia district were more likely to receive all the treatment they needed if they were literate, than not literate, in multivariate analysis. While those stating members of the household had received all the treatment they needed were also more likely to be literate, than not, in univariate and multivariate analysis.

8.2.3 Formal Education

In the aggregate level results for the overall population, those reporting members of the household were sick and sought treatment were significantly more likely to have formal education, in univariate analysis. Individuals in the Busia district were significantly less likely to have formal education, in univariate analysis, and those reporting for members of the household, were significantly less likely to have formal education, in multivariate analysis. Respondents, reporting members of the household were sick and sought treatment from the Samburu district, were significantly more likely to have formal education, in univariate and multivariate analysis, than those that did not have formal education.

The results of univariate and multivariate analysis for formal education in the overall population, did not meet the study criteria for significance, however, it will be

interpreted with caution in combination with other factors for this study. Individual respondents from the Busia district were less likely to have formal education and use formal health care services, than those that had formal education. This result was significant in univariate and multivariate analysis.

For the study population as a whole in the aggregate level results, those that would seek private medical services were significantly more likely to report having formal education, in univariate and multivariate analysis, than those that did not. Having formal education was also a significant factor in univariate analysis for the Malindi district and those using private health care treatment.

Having some type of formal education was indicated for participants in the overall population, in univariate analysis and when all other variables were controlled for and preferring formal health care services. Individuals and those responding for members of the household were significantly more likely to have some type of formal education and prefer the formal health care sector. These findings were also evident in the Samburu district, but in multivariate analysis only.

Formal education did not present itself as a significant factor for those choosing private health care services in the overall population or in the Busia or Samburu districts. However, those responding they would prefer a member of the household used private health care services was less likely to report formal education in multivariate analysis. These results crossed 1.00 and therefore did not meet the study criteria for significance, however in conjunction with other factors, may be interpreted with caution.

For the overall population, having formal education was not a significant factor, it was however for individuals and members of the household from the Busia district. Individuals were less likely to have formal education and receive all the treatment they needed, than those that had formal education from the full model in multivariate analysis, while it was reported for members of the household, also in multivariate analysis

8.2.4 Regular Income

In the aggregate results for the overall survey population, having regular income was significant only for members of the household that were sick and sought treatment from the overall population, in multivariate analysis. Those that had regular income

were more likely than those that did not, to report a member of the household was sick and sought treatment.

Regular income was not reported as a significant factor for the overall population or the districts, except in univariate analysis for the Samburu district. Individual respondents in the Samburu district were significantly more likely to report regular income and use formal health care services.

Regular income was not a significant factor for this study population and seeking private medical services. Results did not meet the study criteria in the aggregate level data or for any of the districts.

Participants from the overall population that reported they did not have a regular income, were significantly more likely than those that did, to favour formal health services if given the choice. This was a significant result for individuals and members of the household, in univariate and multivariate analysis. This result was similar in the Busia district for individuals preferring formal health care, but significant only in multivariate analysis for members of the household. Regular income was significant for individuals in univariate analysis and members of the household in multivariate analysis for respondents from the Samburu district. These respondents were significantly more likely to have regular income, than those that did not. Regular income was perfectly predicted in the Malindi district, so no logistic analysis was possible, but from descriptive analysis, those few that did not have regular income were 100% likely to prefer formal health care services.

Having regular income was significantly positively associated with respondents choosing to use private health care facilities, given the choice, for individuals and members of the household, in univariate and multivariate analysis. A similar result was found in the Busia district, while regular income was negatively associated with choosing private health care services in the Samburu district, for individuals and members of the household in univariate and multivariate analysis.

Regular income was not significant for the overall population and receiving all needed treatment, but it was for individuals in the Busia and Malindi districts. Those in the Busia district that received all the treatment they needed were more likely to report regular income, than those that did not have regular income. The opposite was true in the Malindi district, where individuals were significantly less likely to report regular

income and receiving all treatment, than those that had regular income. This result was significant in univariate and multivariate analysis.

8.2.5 Age

In the aggregate results for the overall population, age was significant for individuals, in univariate and multivariate analysis, that reported they were sick and sought treatment in the past three months. In univariate analysis, respondents from the 36 – 45 years age group and those 46 years and above were more likely to report they were sick and sought treatment, than respondents from the younger age groups. Those in the 46 years and above age category were also more likely than the younger age groups to report they were sick and sought treatment when all other factors had been controlled for. Age was a significant factor, in univariate and multivariate analysis, for individuals in the Busia and the Samburu districts, as those respondents aged 46 years and above were significantly more likely to report they were sick and sought treatment.

The age of participants was not significant in the population overall, nor in any of the districts, for using formal health care services. However, logistic analysis was not possible in the Samburu district as all respondents in the 26 – 35 years age group reported a member of their household sought health care in the formal health sector.

The age of respondents did not appear to be a significant factor for the population overall and seeking private medical services. At the district level, age was not significant factor for respondents using private health care services.

Age was significant in the overall study population, in univariate and multivariate analysis, for individuals in the 46 years and above age group that would choose formal health care. As respondents became older they were less likely to choose formal health services, but this pattern became significant enough to meet the study criteria only in those 46 years and older. Results were not significant for the Busia and Malindi districts, however, those in the Samburu district that were 46 years and above were significantly less likely to choose formal health care services than those in the other age categories. This result was once all other variables were controlled for.

The age of respondents was not a significant factor for the population overall and preferring private health care services in the aggregate level data. This was the same for respondents from the Busia and Malindi districts. Respondents in the Samburu district that were 46 years and above however, were significantly more likely

than those in the younger age categories to prefer private health care if given the choice. This result was significant for individuals in univariate and multivariate analysis, and for those reporting preferences for members of the household once all other variables had been controlled for.

Age was not a significant factor and did not meet the study criteria, for respondents reporting if they received all the health care treatment they needed, in the overall population or for any of the districts.

8.2.6 Communications

Having access to communications was significant, in univariate and multivariate analysis in the aggregate results, for the overall population for those that reported a member of the household was sick and sought treatment in the past three months. Having access to communications was also significant for members of the household in the Malindi district, in univariate and multivariate analysis and for members of the household in the Samburu district, in univariate analysis only.

Having access to communications was not significant for using formal health care services in the overall survey population or for any of the districts, including members of the household in the Samburu district, where univariate and multivariate was not statistically possible due to perfect prediction. That is, the fact that 100% of members of the household without access to communication used formal health care services.

For those respondents that sought treatment in the private health care sector, having access to communications was not a significant factor, however members of the household in the Samburu district were significantly more likely to have access to communications and use private health care services, than those that did not have access to communications. This result was consistent in univariate and multivariate analysis.

In the overall survey population, access to communications was not a significant factor for preferring formal health care services, and not for any of the districts.

Those participants from the population overall with access to communications were significantly more likely to prefer health care in the private sector, given the choice, than those without access to communications. This result was significant in univariate analysis, while a similar result was found in the Busia district.

Having access to communications and receiving all the treatment needed was not significant in aggregate results for the population overall, however individual respondents from the Busia district were more likely to have access to communications and receive all the treatment needed, than those that did not have access to communications. This result was in univariate and multivariate analysis.

8.2.7 Motorized Transport

Having access to motorized transport was significant, in univariate and multivariate analysis, for those that reported members of the household were sick and sought treatment in the past three months in the overall population. While no respondent from the Samburu district reported having access to motorized transport, so logistic analysis was not possible.

For the population overall and for each of the Busia and Malindi districts, having access to motorized transport to reach the nearest health facility was not statistically significant for seeking treatment in the formal health care sector. However, no respondent from the Samburu district had access to motorized transport and therefore univariate or multivariate analysis is not possible.

For the study population overall, access to motorized transport as a means of travelling to the nearest health care facility was not a significant factor for seeking private health care services, while no logistic regression analysis was again possible in the Samburu district as no respondent reported having access to motorized transport.

Having access to motorized transport was also not a significant factor in logistical analysis for the overall population or those respondents from the Busia and Malindi districts. In the Samburu district however, it was not possible to analyse results for choosing formal health care services and motorized transport, as no respondent reported access to motorized transport.

Those participants from the overall population that preferred private sector health care services were significantly less likely to have access to motorized transport. This was the case for both individuals and members of the household, and in univariate and multivariate analysis. It was not possible to perform any logistical analysis on motorized transport in the Samburu district, as no participant reported having access to motorized transport.

Motorized transport was not a significant factor for the overall population or for the Busia and Malindi districts for those reporting receiving all needed treatment. However, logistical regression analysis was not possible for the Samburu district as no respondent reported having access to motorized transport.

8.2.8 Closest Facility

Individuals and those reporting for members of the household that stated they were sick and sought treatment, in the aggregate level results for the overall population ,reported being less likely to have a hospital or health centre as the closest health care facility, rather than a clinic or dispensary, this was significant, in both univariate and multivariate analysis. A similar result was found for members of the household in the Samburu district, who were more likely to live closest to a clinic or dispensary.

For individuals and members of the household from the overall population and those in the Busia district, that reported they used formal health services, having a clinic or dispensary as the closest health care facility was not statistically significant, while those respondents from the Malindi district were significantly more likely to seek formal health care and live closest to a hospital or health centre, than those living nearest a clinic or dispensary. The result for members of the household from the Samburu district was not able to be used for logistical analysis.

In terms of the closest health care facility for respondents from the survey population overall, those that sought treatment in the private sector were significantly less likely to have a hospital or health centre as the closest health care facility as compared to those where a clinic or dispensary was the closest health care facility. This was significant for individuals and members of the household in univariate and multivariate regression analysis. A similar result was found for individuals in the Malindi district, where they wee less likely to state a hospital or health centre was the closest health care facility.

Participants from the overall population were significantly less likely to nearest a hospital or health centre and prefer formal health care services, if they were a member of the household, in univariate analysis. This result was the same for respondents of the Busia district.

Having a hospital or health centre, or clinic or dispensary as the closest health care facility was not significant for participants in the overall population or any of the districts, and preferring private health care services if they were sick.

For the population overall and in each of the district, closest health care facility was not significantly associated with receiving all needed treatment in univariate or multivariate analysis.

8.2.9 Travel Time

The time taken to travel to the closest health care facility was not significant in the aggregate level results for the overall population. However, the time taken to travel to the nearest health facility was significant in the Busia district, for individuals in multivariate analysis, and for members of the household in univariate and multivariate analysis. Respondents from the Busia district were significantly more likely to travel less than 60 minutes to the nearest health care facility. While individual respondents from the Samburu district, in univariate analysis only, were more likely to live further than 60 minutes away from the nearest health care facility.

For participants overall and in the Busia distict, living within 60 minutes travel time to the nearest health facility was strongly associated with seeking formal health care, as compared to those that did not live within 60 minutes travel time tothe nearest health facility. Results from the Malindi and Samburu districts were not statistically significant.

For the population overall, individuals and members of the household were less likely to live within 60 minutes travel time to the nearest health care facility and seek treatment in the private health care sector, than those that lived within 60 minutes travel time to the nearest health facility. This result was found in multivariate analysis and a similar result was found in the Busia district, in univariate and multivariate analysis.

Travel time to the nearest health care facility was not significant for respondents from the overall population and preferring formal health care facilities, it was however significant for members of the household in the Busia district. Members of the household from the Busia district were significantly more likely to live within 60 minutes travel time to the nearest health care facility and respondents reporting for them, to prefer formal health care services, in univariate analysis.

Again for the study population overall, individuals that would choose the private health care sector were more likely to report living within 60 minutes travel time of the nearest health facility, than those that lived further than 60 minutes. This was significant for individuals in multivariate analysis. Individual respondents from the Samburu district were significantly more likely to travel less than 60 minutes to reach the nearest health care facility, and prefer to use private health care services. This result was significant in univariate analysis.

For the overall population aggregate results, receiving all the treatment needed was significantly more likely for members of the household that lived within 60 minutes travel time of the nearest health care facility, than those that lived further than 60 minutes. This was significant in univariate and multivariate analysis. This result was also similar for members of the household in the Malindi district, also in univariate and multivariate analysis.

8.2.10 Unable To Reach

For the population overall, in univariate analysis and when all other factors were controlled for, those that reported they had been sick and sought treatment in the past three months, were also significantly more likely to report a time when they had been unable to reach the nearest health facility, as compared to those that did not have a problem. Individuals from the Busia district in multivariate analysis and members of the household in univariate and multivariate analyses, were significantly more likely to a report a time when they had been unable to reach the nearest health care facility previously. Individuals and members of the household from the Malindi district were alos significantly more likely to report a time when they had been unable to reach the nearest health facility. This result was significant in univariate and multivariate analysis.

For the overall population, and each of the individual districts that reported seeking treatment in the formal sector, having a time when they had been unable to reach the nearest health facility was not statistically significant.

In the overall study population, being unable to reach the nearest health facility was not a significant factor for those seeking treatment in the private health care sector, however it was significant in univariate analysis for individuals in the Malindi district and for individuals, in multivariate analysis, from the Samburu district.

Participants from the overall study population, that reported they would prefer to seek treatment in the formal health care sector, were significantly less likely to report a time when they had been unable to reach the nearest health care facility. This was the case for individuals and members of the household in univariate and multivariate analysis. A similar result was found for respondents from the Samburu district and preferring formal health care services.

Respondents from the overall population that stated they would prefer the private health care sector, given the choice, were significantly more likely to report a time when they had been unable to reach the nearest health facility. This result was for individuals and members of the household in both univariate and multivariate analysis after all other factors had been controlled for. This result was also found to be so in the Samburu district and for members of the household in the Busia district.

Members of the household in the aggregate results for the overall population were more likely to have been able to reach the nearest health facility at some time previously and have received all the treatment needed, than those that had been unable to at some time. This result was in univariate analysis only and was not a statistically significant factor for any of the districts individually.

8.2.11 District

In descriptive analysis for each district and those reporting being sick and seeking treatment, 62% of individual respondents and 60% of members of the household from the Busia district, 38% of individual respondents and 40% of members of the household from the Malindi district, and 51% of individual respondents and 58% of members of the household from the Samburu district, were reported to be sick and sought treatment.

The district respondents came from was statistically significant for individuals and members of the household, in univariate and multivariate analysis, for those that reported being sick and seeking treatment in the past three months. Individual respondents from the Malindi and Samburu districts were significantly less likely to report they were sick and sought treatment than those from the Busia district. This result was found in univariate analysis and multivariate analysis. While respondents from the Samburu district were significantly less likely than those from the Busia and

Malindi districts to report a member of the household was sick and sought treatment, in univariate and multivariate analysis.

In descriptive analysis for each district and seeking formal health care services, 74% of individual respondents and 79% of members of the household from the Busia district, 67% of individual respondents and 77% of members of the household from the Malindi district, and 84% of individual respondents and 93% of members of the household from the Samburu district, were reported to use formal health and medical care facilities in the past three months.

The district respondents resided in and the use of formal health care services was statistically significant for individuals in the Samburu district, in univariate analysis. Individual respondents from the Samburu district were significantly more likely to report seeking treatment in the formal health care sector than those from the Busia and Malindi districts. In univariate and multivariate analysis, members of the household from the Samburu district were significantly more likely than those from the Busia and Malindi districts to use formal health care services.

In descriptive analysis for each district and seeking private health care services, 50% of individual respondents and 44% of members of the household from the Busia district, 56% of individual respondents and 45% of members of the household from the Malindi district, and 27% of individual respondents and 21% of members of the household from the Samburu district, reported being sick and using formal health and medical care facilities.

The district respondents resided in was a significant factor for individuals in univariate analysis, that used private health care facilities. Respondents from the Samburu district were significantly less likely than state they used private health care services, as compared to respondents from the Busia and Malindi districts. Those reporting that members of the household used private health care facilities were significantly less likely to come from the Samburu district, than the Busia or Malindi districts. This result was for both univariate and multivariate analysis.

In descriptive analysis for each district and preferences for seeking health care in the formal sector, of all respondents that would choose health care in the formal sector, 93% of individual respondents and 94% of members of the household from the Busia district, 93% of individual respondents and 93% of members of the household from the

Malindi district, and 86% of individual respondents and 88% of members of the household from the Samburu district reported they would prefer health care in the formal sector.

Individuals from the Samburu district were significantly less likely to choose formal health care services, than those from the Busia or Malindi districts, if given the choice. This result was for univariate and multivariate analysis. Respondents that stated they would prefer a member of the household use formal health care services, were also less likely to prefer formal than the other districts, if they resided in the Marlal district. This result was also consistent across both univariate and multivariate analysis.

In descriptive analysis for each district and preferences for private health care services, 40% of individual respondents and 38% of members of the household from the Busia district, 21% of individual respondents and 18% of members of the household from the Malindi district, and 29% of individual respondents and 27% of members of the household from the Samburu district, reported they would prefer private health care services if given the choice.

In univariate and multivariate analysis for individuals and members of the household, respondents from the Malindi and Samburu districts were less likely to choose private health care than those in the Busia district. While the results for the Samburu district were for univariate analysis only, the results for the Malindi district were in both univariate and multivariate logistic analysis.

In descriptive analysis for each district and receiving all the treatment needed, 53% of individual respondents and 65% of members of the household from the Busia district, 56% of individual respondents and 66% of members of the household from the Malindi district, and 61% of individual respondents and 76% of members of the household from the Samburu district, reported receiving all the treatment they needed.

The results of univariate and multivariate logistic analysis for each of the districts was not significant to those responding if they had received all the treatment they needed.

CHAPTER 9
DISCUSSION

There are many factors that influence health and health care seeking. Although many of these factors are similar across populations, exactly how they interact and influence the actions of people is often unique to a specific population in the context of the environment they live in. The current study, a population-based cross sectional survey, studied three specific geographically diverse populations to gain information regarding overall influences on health care seeking, and also information specific to each geographical area to assist in directly targeting the health needs of the individual population living there.

Participants of the survey were interviewed for personal information and details regarding their activities in response to their health and ill-health. These findings are summarised and considered in terms of the research questions, while individual factors are presented separately. Some conclusions are drawn from the study findings and areas for further investigation are proposed.

9.1 REVIEW OF RESULTS

The results of the information gathered show many similarities across the survey population. Over all three districts, women were more likely than men to seek formal health care treatment. Participants that were illiterate were more likely to use and choose formal health care services, while those that were literate and had formal education were more likely to use and prefer formal health care services for a member of their household, but use and prefer private health care for themselves. The older the participant, the less likely they were to choose formal health care services. If participants had regular income a member of their household was more likely to seek treatment and prefer formal and private health care.

Having access to communications meant that members of the household were more likely to seek treatment, but communications did not generally affect which facilities were used. The majority of respondents that sought treatment lived closest to a smaller health care facility, while people that lived farthest from a hospital or health centre preferred informal services. Close to half of the respondents had a time when

they were unable to reach the nearest health facility, but this was not specific to formal or informal, private or public health care services. Respondents that stated they would prefer formal over informal, or private over public, were all more likely to have a time when they or a member of their household, had been unable to reach a facility or receive treatment.

There were also some differences in the results between each of the districts which had as much to do with the resources and services available, as it did the sociodemographic aspects of the community members themselves. Respondents from the Busia district more often sought treatment than those from the Malindi or Samburu districts. In the Busia district those that had access to communications were more likely to receive treatment. Those with no regular income would prefer formal and private health care services. Respondents were more likely to live within 60 minutes travel time of a health care facility and less likely to live nearest a hospital or health centre. Respondents from the Busia district were more likely to report a time they had been unable to reach the nearest health care facility.

Those respondents who were from the Malindi district were more likely to have formal education and prefer private health care. Residents from the Malindi district that did not have regular income would prefer formal health care services, although those without regular income were less likely to receive all the treatment they needed. Respondents from the Malindi district were more likely to seek formal health care and live closest to a hospital or health centre, while members of the household were more likely to receive all the treatment they needed if they lived within 60 minutes travel time of the nearest health care facility.

Respondents from the Samburu district were more likely to use formal health care and less likely to use private health care services, but given the choice were least likely to prefer formal. Respondents were more likely to be literate, have formal education and regular income, if a member of the household had sought formal health care. Older respondents in the Samburu district were less likely to choose formal health care, and more likely to choose private health care services, while those with regular income would use formal. Respondents were more likely to use private health care is they had access to communications. From the Samburu district, no respondent reported having access to motorized transport and they were also likely to live further than 60

minutes from a health care facility, but more likely to report they had received all the treatment they needed.

Along with the overall findings of the study, the influence of each of the districts will be discussed in relation to the research questions regarding health care seeking and unmet health needs.

9.2 WHAT TYPE OF HEALTH AND MEDICAL SERVICES ARE BEING USED?

Of the 749 respondents that reported being ill in the previous three months, more than 80% reported accessing some form of health service, whether formal or informal, public or private. Between 70% and 80% of all respondents used formal health care services over informal health care services, while 90% to 95% responded they would prefer formal health care services given the choice. More than half of those seeking medical services did so at a public hospital or health centre, while approximately a quarter sought care directly from a shop or pharmacy and less than 5% report seeking care from a traditional healer. About one in five of those seeking care did so from a private hospital or clinic. Very similar results were obtained regarding members of the household.

The findings of this current study are consistent with Pokhrel and Sauerborn (2004) who took information from the 1996 Nepal Living Standards Survey and determined that public providers were the most commonly consulted practitioners, followed by private practitioners, but with informal settings remaining important. Because of the small numbers involved at the district level for individual types of care sought, even a discussion of district-level usage really must rely upon the use of variables as consolidated into formal versus informal health care options, and private versus public health care options. Overall, respondents from the Busia district, were the most likely, and those from the Samburu district, were the least likely, to access any form of health care services, either for themselves or for members of their household, with the Malindi district falling in between.

There was very little difference between the three surveyed districts and reported use of the formal health care system, either for respondents' reports of their individual health care use or for their reports of household members' care. After controlling for other factors, there was a somewhat higher and statistically significant, difference in the percentage use of the formal health care system among respondents' household

members in the Samburu district as compared to the other districts. There was also a higher use of the formal health system among respondents themselves, but this was not statistically significant. Taken together, this provides evidence for a greater use of formal health care services among the population surveyed in the Samburu district as compared to the populations of the Busia and Malindi districts. This could represent nothing more than the types of services available, but it could represent a difference in preference or health care access behaviours. A conclusive explanation for this cannot be given using the data available and is an area for further possible investigation.

In terms of private and public health care use, there was no substantial difference between the respondents' health care usage, either for their own care or that of members of their household, among the survey populations in the Busia and Malindi districts. However, those surveyed from the Samburu district reported a much lower rate of private sector use, for both themselves and for members of the household. These differences are both practically and statistically significant, as the rates of private health care use are approximately half in the Samburu district than they are in the Busia and Malindi districts.

Therefore, it seems that health care system use is similar among the respondents and members of their household, and among the survey populations from the Busia and the Malindi districts. However, those from the Samburu district and members of their household were more likely to seek formal health care and less likely to seek private health care, than those from the other districts. These similarities and differences will be explored further using the individual level characteristics and factors affecting access to health care services. It is important to note that both cultural and environmental factors, such as availability of facilities, could explain the differences noted.

There is a great deal of literature about the urban/rural dichotomy in developing countries (Celik & Hotchkiss, 2000; Noor et al., 2003; Onwujekwe, 2005; Smith, 2004) and developed countries (Mayer et al., 2005). Urban settings were deliberately excluded in this study and therefore, differences between the districts or the overall findings, cannot be attributed to this. It is however, of importance to note, that the areas for this study were all rural, as an estimated 67% of the Kenyan population live in rural areas (USAID, 2002). It has often been noted that living in a rural area can have a negative impact on health and the decision to seek health care, partly due to access

issues (Noor et al., 2003), partly due to poorer infrastructure and often the perceptions and expectations for health are different (Hjortsberg, 2003; Mayer et al., 2005)

Rural areas especially in developing countries are also often distinguished for their lower rates of literacy and education (Thapa, 1997), and often lower income (People & the Planet 2000 - 2006, n.d.; UK Department for International Development, 2004). Although this study was not designed to make comparisons between urban and rural areas as mentioned, the influence of these factors is worth consideration as the discussion of health care service use progresses over the next sections.

9.3 THE USE OF FORMAL AND INFORMAL HEALTH CARE SERVICES

In this population, the survey respondents overwhelmingly used formal health care services - between 70% and 80% of individuals and members of the households. This trend was similar for individual districts, with people from the Samburu district using formal services the most, then those from the Busia district and those from the Malindi district.

The literature available on the use of formal and informal health care investigates multiple settings and multiple conditions, ranging from preventive to curative. Formal health care is defined in terms of what is considered conventional medicine in official or registered settings such as government or private hospitals, health centres, authorized clinics and dispensaries. Informal health care relates to self-treatment, self-medication, traditional healers and remedies, and other non-sanctioned heath services. The assumption in the literature is that informal health care in the form of traditional medicines and self-medication is somehow negative (Hjortsberg, 2003) and that it is used only by those with lower education or literacy (Gibbon, 1998) or limited financial means (Waweru et al., 2003) or those that are marginalised in some other way, such as the rural area they reside in (Hjortsberg, 2003). In the current study however, the overall results showed respondents using formal health care services were actually more likely to be illiterate, and when education was controlled for, respondents using formal health care services were less likely to have formal education than those that used informal health care services. And while finances have been cited as a reason for self-treatment, that is informal health care (Nyamongo, 2002; Ryan, 1998; Waweru et al., 2003), the current study found regular income had no bearing upon the use of formal health care services. Interestingly, those that would prefer to use formal health

care services if given the choice were more likely to be illiterate *and* have formal education.

The gender of the respondent was a characteristic that proved significant to the use of formal or informal health care. Women were more likely than men to *use* formal health care services, particularly in the Busia district and also in the Samburu district. In the Samburu district only, were women more likely than men to prefer formal health care services if given the choice, and this was significant in univariate analysis only. Being illiterate and having formal education became more significant factors once literacy and education were controlled for.

Financial means, in terms of regular income, was not a significant factor overall for actual use of formal health care services, but was significant for preferences to use formal health care services. In the Samburu district having regular income was associated with formal health care use in univariate analysis but not when other factors were considered. At the aggregate level, those choosing formal health care services were significantly less likely to have regular income, although in the Samburu district this was the opposite in univariate analysis, but was not when other factors were controlled for. The interesting point here is that it is assumed that finances would affect the actual *use* of health care services rather than the choice.

The final characteristic that might be assumed to have an impact on formal health care service use is age. As could be expected, the older the participant, the more likely it was they were sick and sought treatment. Age did not affect the type of health services that were used, but it did affect preferences, with those older respondents less likely to use formal health care services. And respondents from the Samburu district specifically more likely to also choose private health care services. Age however, did not affect receiving treatment.

The most significant factors for using formal health care services were access related. At the aggregate level for the survey population, the time taken to travel to the nearest health facility was most significant. In the Busia district, the time taken to travel to the nearest health facility was associated with using formal health care when all other factors were considered, while in the Malindi district having a hospital or health centre as the closest health facility was most associated with formal health care use. In the Samburu district, for example, not one of the respondents that used formal health care services reported having access to motorized transport. As expected access issues do

not significantly affect the choices people make regarding formal or informal health care service use.

Being unable to reach the nearest health facility did not affect those using formal health care services, but was significant in the aggregate result for those choosing to use formal health care services. Those that would choose to seek health care in the formal sector were *less likely* to have experienced a time when they had been unable to reach the nearest health facility.

The findings of the current study conflict with those of Nyamongo (2002) in Kenya, Ryan (1998) in Cameroon and Kroeger (1983) in developing countries generally, who all found that more than 80% of illness episodes were treated within the home. Given that approximately 40% of the overall population from the current survey sought formal medical treatment in the previous three months, these results are difficult to reconcile. The findings of the current study indicate a much higher level of formal health care usage by this study population than the populations of the Nyamongo, Ryan or Kroeger studies.

There are certainly many reasons that can potentially explain these contradictory findings. The first may be as they are different populations. Although the Nyamongo study was conducted in a rural population in Kenya, the populations are from different districts and as the results from the current study show, the differences between districts can be striking. However, the current study was conducted over three districts, not one, and constitutes a representative sample of these districts, so it is unlikely to depict an anomalous population. Further, as multiple districts were examined with similar results, it is not unreasonable to say the findings from the current study are more robust and representative. Second, there is the potential for recall bias and reporting bias in the data. It is possible that many individuals that did not report being ill or obtaining formal health care services were in fact ill, and did not remember self-treatment. Also there are differing definitions of illness which can be cultural (Hill, Kendall, Arthur, Kirkwood, & Adjei, 2003; Kengeya-Kayondo et al., 1994; McCombie, 2002) and even gender related (Macintyre, Ford, & Hunt, 1999) for example, which could lead to reporting bias. Additionally, the research team performing this study may have been viewed as members of the formal health care system, that is, working for the Kenya Medical Research Institute, part of the Ministry of Health, so respondents may have been uncomfortable reporting informal health practices to the researchers.

A further explanation may be that what is being seen is the second order or third order cycle of health care use. Once options in the home and informal options within the community have been exhausted, we may be seeing the final step in health care use, moving onto formal health care. Reading further into the findings of Nyamongo (2002), those involved in the study were more likely to begin self-treatment at home and then observe the progress of the illness before undertaking other options. According to Nyamongo this was primarily to minimise expenditure before moving onto other alternatives outside the home. With further consideration, a possible limitation of this study is that it is asking individuals for a single illness episode only and it may be that what is being seen is in fact the most severe illnesses. For example, perhaps the individual has had five episodes of illness in the past three months and treated four at home, however the fifth was severe enough to warrant a visit to a formal health care service. This may be the same illness with the effects of disease progression and its complications or a different one which was severe enough to justify the effort to seek formal health care. Perception of the severity of illness was also indicated as part of the decision making process. So another possibility is that we are seeing a greater severity of illness. Muller (2003) found formal health care seeking was associated with accessibility and disease severity.

Severity of illness was indeed a factor related to health care seeking in the Samburu district, as discussed by MacIntyre, Lochigan and Letipila (2003), which is just adjacent to the Samburu district. People were often severely ill by the time they had arrived at the nearest formal health facility. The broader study found very high levels of infectious disease (Coldren, Ofula et al., 2005; Coldren, Prosser et al., 2005) in the Busia and Malindi districts. As the study was investigating the presence of arboviruses, mosquito-born illnesses were the main focus. Many of these diseases are endemic to these populations where a certain resistance has the opportunity to develop in some individuals. This makes it virtually impossible to separate out the difference between a single disease episode as compared to the reoccurrence of an existing infection which has become acute enough to motivate seeking health care. Further examination of the data from Ryan (1998), shows that he describes “treatment sequences” (p.209) where delay of treatment is actually part of the decision making process, before home remedies and then possibly outside treatment.. While these reasons may explain the motive behind seeking health care and even formal health care

services, they still do not explain the high percentage of formal health care seeking that was found in this study.

The Nyamongo study was based upon a number (35) of malaria-focused ethnographic interviews, while the current study was based upon the survey results from 1141 participants, a greater representation of the community at large. The current study was not focused upon a specific illness and is therefore a better reflection of the overall health actions of the population. It is true the current study was not designed to assess disease severity, and this may be a possible limitation. However, to further demonstrate the novel findings of the current study. Ryan still found that out of 454 illness episodes, only 22.5% sought treatment outside the home, and this often meant a traditional healer and is thus considered informal treatment.

From the literature reviewed the only other study identified that came close to the current study was from another region of Kenya where it was identified that for 40% of episodes of ill health the person sought treatment in a dispensary, health centre or hospital (Nordberg & Oranga, 1996). The results from the current study for seeking formal health care services are still greater with the percentage ranging from 67% to 84% in each of the separate districts. A final thought, is that the decision by survey respondents to use formal health care services over informal may reflect the options available to them at the district level and with this in mind, the issue of accessibility will be considered in greater detail later in the discussion.

9.4 THE USE OF PRIVATE AND PUBLIC HEALTH CARE SERVICES

Forty nine percent of individuals overall reported they sought treatment in the private health care sector, ranging from 56% in the Malindi district to 27% in the Samburu district, with the Busia district in between at 50%. Respondents reported that members of the household in all districts used private health care facilities less than surveyed individuals, with 45% in the Malindi district, 44% in the Busia district and 21% in the Samburu district.

The independent factors that were significantly associated with using private health care services over public health care services at the aggregate level for the survey population were formal education, having a clinic or dispensary as the closest health facility and travel time to the nearest health facility. The factors significantly associated with preferring private health care services if given the choice were regular income,

access to motorized transport, and having a previous experience of being unable to reach the nearest health facility. Other factors that will be discussed are literacy, access to communications and travel time. Once more however, the differences in each of the districts were apparent and will be discussed.

People with formal education were more likely to use private health care services than people without formal education. Of the characteristics for those using private health care services, having formal education was significant in univariate analysis for the Malindi district only, but when combined with having formal education and using private health care services in the Busia district, produced a significant result in the aggregate analysis for the overall population even when all other factors are considered. In the aggregate results, being literate is also significant in univariate analysis but is excluded once the education variable is controlled for, making formal education a more powerful influence on using private health care services. While formal education is the more powerful influence for using private health care services, the data does support being literate as a predictor of choosing private health care services.

In univariate analysis, the aggregate results for the overall population show literacy to be significant for those that would prefer private health care services, mainly reflecting the results from the Samburu district. In the Samburu district, people that were literate would choose private health care services even when other factors were controlled for. Although literacy was not significant in either the Busia or Malindi district, the results combined were able to influence the aggregate, especially for respondents and the choice of private health care services for members of their household.

People were more likely to *use* private health care services if they lived nearest to a clinic or dispensary than those that lived nearest a hospital or health centre. Living closest to a clinic or dispensary was significant in the aggregate results for the overall population and was significant in the Malindi district. Results however were mixed from the other districts, and not statistically significant in either the Busia or the Samburu districts.

People were more likely to live further than 60 minutes travel time to the nearest health facility if they used private health care services. It was significant in the aggregate results for the overall population that respondents had to travel more than 60

minutes travel time to reach the nearest health facility if they used private health care services, than those living closer to a health facility. This result was significant for the Busia district where the larger numbers are able to influence the aggregate, and once more is mixed in the Malindi and the Samburu districts.

From the survey population, 30% of individuals would *prefer* private health care services if they had the choice, ranging from 40% of individuals in the Busia district to 21% in the Malindi district, with 29% in the Samburu district. Respondents reported that 28% of members of the household in all districts would prefer private health care services if they had the choice, once more ranging from 38% in the Busia district to 18% in the Malindi district, and the Samburu district in between with 27%. There was a decrease between use and preference in all districts, except the Samburu district.

People that chose private health care services had regular income. In the aggregate level results for the overall study population, those that had regular income were more likely to prefer private health care services if they had the choice, than those that did not have regular income. This was significant in univariate analysis and when all other factors were controlled for and was also significant in the Busia district. In the Malindi district the trend was the same, but was not significant when compared with other variables at a level that met the study criteria. From the Samburu district however, those that would choose private health care services were actually significantly less likely to have regular income, but because the numbers are smaller for the Samburu study population, this result does not carry through to the aggregate level.

People that would choose private health care services were less likely to have access to motorized transport. For the overall study population, the aggregate level results show that not having motorized transport was a significant factor for those that would prefer private health care services. In all districts, motorized transport was an issue.

People that had a previous experience of being unable to reach the nearest health facility would prefer private health care services. In the aggregate level results for the overall population, it was statistically significant that those people that had been unable to reach the nearest health facility at some time would choose private health care services. This result was also statistically significant for the Samburu district and for members of the household in the Busia district. While not statistically significant a similar pattern was followed by individuals in the Busia district.

Other factors to be considered that may be associated with the type of health services preferred, are literacy and access to communications. People that would prefer private health care services were more often literate, than not. In the aggregate level data for the overall population, literacy was significant in univariate analysis for individuals and in univariate and when other characteristics had been controlled for in multivariate analysis for members of the household. In the Samburu district it was statistically significant to be literate and prefer health care in the private sector. Being literate is also associated with gender and education, but becomes less significant when regular income is accounted for.

People that had access to communications would prefer private sector health care. Having access to communications is statistically significant in univariate analysis for individuals and members of the household in the aggregate level data for the overall population, and in univariate analysis for members of the household in the Busia district, which has the power to affect results at the aggregate level. The interpretation of access to communications for this study is that while communication is important to the health of communities, there are other factors for the participants of this study that appear to take precedence.

People that preferred private health care services were more likely to live within 60 minutes of the nearest health care facility. This result was significant for individuals in the aggregate level results for the overall population when all other factors were controlled for, but not in univariate analysis and probably reflects results from the Samburu district and a trend in univariate analysis for the Busia and Malindi districts. For these reasons time to travel to the nearest health facility will be interpreted with caution.

Shaikh and Hatcher (2004) most recently discuss the under-utilization of public health care services in favour of private health services as being an almost “universal phenomenon” in developing countries, although the current study found this was not the case. In the Busia district, 50% of individuals used private health care services, but only 40% of individuals would prefer to use them if they had the choice, while from the Malindi district 56% of individuals used private health care services and only 21% of individuals would prefer to use them given the choice. Only in the Samburu district would individuals that used private health care services prefer to use them if they were

given the choice. That is 27% as compared with 29%. Results were similar for members of the household.

The *use* of private or public health care facilities by respondents in the current study was associated with a combination of formal education, a clinic or dispensary as the closest health care facility and travel time of less than 60 minutes, while *choosing* between private or public facilities was more reliant upon mode of transportation, regular income and having a previous experience of being unable to reach a health facility. Once more contrary to the literature, regular income was not associated with use, but rather with preference.

Exactly what constitutes the definition of private or public health care services is inconsistent in developed (Hoyt, 2005) and developing countries (Birungi et al., 2001). The reason for this lies in an over-burdened public health care system that, in searching for strategies to deal with this, must first tactically decide where the boundaries of their responsibility should lie. Thus, definitions can be fluid. Conversely, many private practitioners, services and facilities have all but taken over large portions of the health care sector to fill considerable and profitable gaps, often with little or no regulation in developing countries (Birungi et al., 2001). The assumption is that these services are of a higher quality, which may in fact be true in some cases, but often is not (Tuan et al., 2005). People will even pay more and bypass public services to use private health care services (Akin & Hutchinson, 1999) that tend to be open at more convenient hours (Noorali et al., 1999), (sometimes because they are staffed by the very same people as the government services who have set up satellite businesses (Birungi et al., 2001) and frequently public practitioners refer patients to their personal private practice) and may be better equipped and supplied with medications or other remedies, often because they have been pilfered from the government stores.

Examples of the preference for private health care services are widespread (Rani & Bonu, 2003), for instance, the Mission Hospital in Wamba in the Samburu district, which is adjacent to the Samburu district of this study. It is a private, fee-for-service institution run by a mission. It is perceived to be of very high quality and the local population would use it if possible despite the comparatively high charges (Macintyre et al., 2003). This phenomenon may be driving the results from the Samburu district, which is the only district where respondents would use and choose private health care

services to a comparable level, however, with the much smaller numbers from the Samburu population a definitive statement is not possible.

The definitions used in this study not only make the distinction between government and private health facilities such as hospitals and clinics, but also include self-medication, shops, 'duka la dawas' and traditional healers in the category of private. Given the overall levels of self-medication which is estimated to be as high as 80% by some studies (Nyamongo, 2002), it is a little surprising that less than half the survey population said they used private health care services, but is consistent with the significant use of formal health care services as compared to informal services overall. In this study population as mentioned previously, just under half of the participants stated they used private health care, but if they had the choice this dropped to around 30%. The Samburu district was the only district that appeared to be satisfied enough with private health care, that they would still prefer it, given the choice. However, with approximately half the survey population admitting they self-medicate, and one in five using a private hospital or clinic, it would be reasonable to expect this number would decrease, given that fewer people overall would choose private. If the results are considered in this way, the lower preference to use private health care given the choice becomes more logical, and rather than appearing as an indictment of the quality of services offered or received in private hospitals or clinics, may mean that people would rather not be self-medicating or buying pharmaceuticals over the counter. This corresponds with the increase in preference for formal health care, as mentioned earlier.

Something to consider further then, is the role of regular income in choosing private health care services. If the assertion is correct that the reason less people would prefer to use private health care is because they are self-medicating, why then is it that people reporting regular income were significantly more likely to prefer private health care services? This result was significant for the Busia district, not significant but followed the same pattern in the Malindi district, and the opposite in the Samburu district. There are two possible explanations to consider. The first explanation is that people with regular income are employed and would prefer self-medication so not to lose days from work. This is consistent with the literature (Nyamongo, 2002). At the district level 64% of Busia respondents reported regular income, 56% of Malindi respondents and 40% of Samburu respondents. The second possible explanation for these results may be that quality private health care services are not available to people in the Busia or Malindi districts, but if there was the choice they would access them.

According to the 1999 Kenya Service Provision Survey, Nyanza Province, of which the Busia district is a part, has the highest concentration of mission-operated facilities in Kenya (Ministry of Health [Kenya], National Council for Population and Development [NCPD Kenya], & Macro, 2000)so there certainly are private facilities available, there is no reference to the quality in this survey. Due to the nature of the definition of private health care in this study, the current evidence does not definitively point toward either reason, and it would be necessary to investigate further the distinction between private as in formal facilities, and private, as in self-medication and informal health care options.

9.5 THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF HEALTH CARE SEEKING

9.5.1 Gender

In the survey population overall women were more likely than men to use formal health care services, while men were more likely to report a member of the household used formal health care services. If we assume that some household members were women, then practically and statistically, women were the greater formal health care users.

The literature regarding gender and health care seeking is often contradictory. The fact that gender influences health seems to be undisputed. Even studies that have found no differences are cautious to state there is no gender disparity and attribute their findings to variation in age and condition (Walters et al., 2002). Just *how* gender affects health is the major topic.

A part of this discussion regarding gender and health involves health care service use. Again, the literature conflicts, with men using services more than women and vice versa. Studies are often specific to a particular country (Bashour & Mamaree, 2003), a type of illness or condition (Johansson et al., 2000), a specific health care facility (Macintyre et al., 2003), quality and attitudes of the service providers (van Wijk, van Vliet, & Kolk, 1996), and then how these relate to the socio-cultural and economic factors that are inherent in each of these situations (Shaikh & Rabbani, 2004). So the results of the current study regarding gender differences in health care service use are not unexpected. However, there are some points worth considering.

Often the discussion of women and health care is centred around inequalities in women's access to health care services, either due to socio-economic (Okojie, 1994), socio-cultural (Shaikh & Rabbani, 2004) or physical access (Buor, 2003). In the current study it would appear that women are not being disadvantaged, at least in terms of their use of formal health care services, or if there are barriers to their health care seeking they are overcoming them in some way.

Another explanation is that women suffer far more ill-health than men and that the proportion of women using formal health care services instead reflects this. However, from the descriptive analysis, 55% of women in the study population overall stated they were sick and sought treatment and 76% of these women would use formal health care services, as compared to 50% of men stating they sought treatment and 67% using formal health care services. With 68% of women stating they were sick and 62% of men stating they were sick, this would not appear to be the reason. Secondly, even if women suffered more ill-health than men, a point for which Macintyre, Ford and Hunt (1999) find little support, by logical progression this does not automatically translate into choosing to use formal health care services over informal health care services.

Perhaps the greater use of formal health care services by women as compared to men is related to reproductive health issues. As Cashin, Borowitz and Zuess (2002) found, women in Central Asia of reproductive health age (15 to 49 years in this study) use health services one and a half times more than the national average, while men of a similar age use health care services half the average. It would seem unusual that women would label some reproductive health issues such as pregnancy or child birth as an illness, but not impossible, and there certainly could be other reproductive health concerns that could be considered a sickness depending upon cultural definitions (Fei-ling Go, Quan, Chung, Zenilman, & Hanh, 2002)

It is true that studies in developing and developed countries show there are gender differences in the reporting of certain conditions, particularly those with a corresponding social stigma such as a sexually transmitted infections (Fonck et al., 2001), tuberculosis (Bashour & Mamaree, 2003) or depression (Galdas et al., 2005). It is proposed these cultural definitions would actually lead to the opposite finding where men would use formal health care services more than women who may be more inclined to avoid societal judgement and seek informal options for socially awkward diseases as in Zambia (Msiska et al., 1997) or just generally as in Nepal (Gibbon, 1998).

In the current study findings, gender appears as part of a pattern related to literacy, formal education and regular income. This association, while not always statistically significant, is still evident. This is particularly so in the Busia district. Examination of descriptive and multivariate data shows that, in the Malindi district, the use of formal health care services is fairly evenly divided between men and women, those that are literate or not literate, and those that are formally educated or not formally educated. In the Busia district more respondents are literate (75%) and formally educated (79%), but if they are women, illiterate and not educated they are more likely to use formal health care services. In the Samburu district the numbers are smaller but a greater number of respondents are not literate (70%) or formally educated (74%). These respondents are just as likely to seek formal health care as those in the Busia district that are not literate or formally educated. However, a higher proportion of the literate and educated in the Samburu district would use formal health care, and this somewhat distorts the fact that women were more likely to use formal health care. So while the current study found differences independent of socio-economic indicators in the overall study results, closer examination of this, particularly at district level, reveals an association between gender, literacy and formal education.

9.5.2 Literacy

The link between gender, literacy and formal education concurs with many other studies (Bharmal, 2000; Fienrich & Jellema, 2003; World Health Organization, 1998) so this speaks to the validity of the results of the current study. It also means that women may be marginalised in terms of literacy or education in these districts of Kenya, but these factors do not appear to conspire to disallow them the availability of formal health care services. Gender does not appear to affect the preferences for formal health care services, and with so many respondents already using such services, it is not unexpected that 85% to 95% of the population would use formal health care if they had the choice.

Interestingly, as the results from the current study show, those that would prefer to use formal health care services given the choice, were more likely to be illiterate and to a lesser extent have formal education. This may speak to the quality of the education in the districts, that is, many of the respondents are leaving school before they are functionally literate. Even though these findings are evident at the aggregate level, they appear to reflect more the situation in the Samburu district.

As described previously, the Samburu district, as populated predominantly by the Samburu people, has some unique cultural practices. As pastoralists their income can be sporadic, and as the main source of their income and perceived wealth comes from the livestock they tend, the care of these animals is an integral part of their lifestyle. The role of tending livestock is such an important one to the community at large that to be entrusted with this task is the pinnacle of a culture where education is valued far less. The education of women and girls is of even less priority, hence the gap between men and women on the issues of literacy and education (41% of men were literate as compared to 24% of women, and 32% of men had formal education as compared to 22% of women). People are also in general very 'hardy', and this combined with other access issues means they tend use health care services only as a matter of convenience or when seriously ill (Macintyre et al., 2003).

9.5.3 Formal education

In the current study those that had formal education were more likely to use informal health care, but prefer to use formal health care if they had the choice. One possible reason for this may be that those with formal education believe they are better able to diagnose and treat themselves. A study by Bland (2004) in South Africa found that mothers that were educated were more likely to give non-prescribed medications to their infants than mothers that had no education (Bland, Rollins, Van den Broeck, & Coovadia, 2004). Awad, Eltayeb and Capps (2006) in the Sudan, found those with higher education were more likely to self-medicate. They theorize those with higher education were perhaps better able to acquire information about common illnesses and medications and self treat.

The question still remains, however, if the *choice* of the formally educated is to use formal health care services, what is stopping them from using these services in the first place? Is it that they delay using formal health care services in favour of self-medication in an attempt to save money or time? Or is it an access issue?

Certainly in the Busia district where access would seem to be a prominent factor, formal education is negatively associated with using formal health care, but having less than 60 minutes to travel to the nearest health facility is positively associated with formal health care use and remains consistently significant for choosing formal health care services than having to travel further.

This still does not satisfactorily explain the differences between those with formal education and those without and the use of health care services, which would require more in-depth investigation. There is however an association between formal education and regular income and this will be discussed in greater detail.

9.5.4 Regular income

The results of the current study show that for the overall survey population, regular income is not a statistically significant factor to the use of formal health care services or private health care services, but is statistically significant for those that would prefer to use formal health care services if they had the choice, or prefer to use private health care services, given the choice. Respondents were statistically less likely to have regular income and choose to use formal health care services, than those that had regular income. While respondents that chose private health care services, were statistically more likely to have regular income as compared to those that did not. It would seem more logical to assume that regular income would be associated with the actual use of health care services and not the choices that people made, where respondents would be free from financial constraints. This result is unexpected and difficult to explain.

While it would appear logical that people with less income would choose formal health care services if they were public services, for example, and if they were free (Rao & Richard, 1984), the question being asked is not about less or more income, but how regular the income, with the premise that more consistent income would be a better indicator of where health care is placed in terms of priorities. Onwujekwe and Uzochukwu (2005) found that rural populations in Nigeria were less likely to pay the cost of health care treatment upfront and more likely to pay instalments, therefore the decision to use regular income as the measure is in part to take factors such as these into account. It may also avoid issues of reliability and secondary gain where people may provide inaccurate information about their income, or issues where the cost of living and affordable services vary between districts. It would not be unreasonable to find those with least likelihood of regular income would *use* formal health care services, but this does not explain the difference that becomes significant only for *preferring* treatment.

A large percentage of people from the overall population in this study already *used* formal health care services. An even larger percentage would *prefer* formal health

care if they had the choice. One possible explanation is that some respondents without the possibility of regular income did not even try to use formal health care, but if given the choice they would like to. Some individual respondents' comments on the questionnaire reflected this and the existence of financial barriers to treatment seeking which is consistent with the literature (Ensor & Cooper, 2004; Needham et al., 2004). The motivation to take action for many comes down to a trade off between illness severity and service cost among other reasons (Hjortsberg, 2003; Nyamwaya et al., 1998). It may be the choice of 'regular income' as a variable was not appropriate for this population. There was however, no obvious problem with the variable from the piloted questionnaire. It may be the variable was explained incorrectly during the interview process and caused interviewer bias. Although it should be said that interviewer bias on such a scale would tend to cancel itself out or at the very least create such anomalies in the data set that a plausible result for *using* formal health care and 'regular income' would not be expected. As the difference between use and preference for formal health care and regular income was most significant for the Busia district, a more thorough investigation of the circumstances, health care infrastructure and accessibility to health care, would be of interest specifically in Busia.

Regular income was not a factor for respondents that *used* private health care services, but it was for those that would *prefer* private health care services if they had the choice. Respondents were significantly more likely to have regular income and choose private health care than those that did not have regular income. Existing literature demonstrates that the use and preference for private health care and household income are intricately linked (Rani & Bonu, 2003; Rao & Richard, 1984). But there is some confusion with the terminology used, as Rani and Rao for example use specifically private providers, where the current study has private health services of which private providers are an option. Also, terms such as 'choice', 'preference' and 'use' for these private providers appear to be interchangeable. It was not possible to find literature specifically relating to the difference between what respondents used as compared with what the same respondents would prefer if given the choice. However, it is clear that the proportion of people that would choose a private medical practitioner as their first choice was lower in lower income groups than in higher income groups (Rao & Richard, 1984), while Rao also found that 90% of lower income respondents would prefer home treatment in the initial stages. The reason this is important to the

current study is because the definition used for private health care services also includes the option of self-medication.

The results of the current study show that people with formal education are more likely to use informal health care options. Formal education is also positively associated with regular income, and regular income is positively associated with the preference for private health care services.

9.5.5 Age

Another variable that is expected to be significant is age. Those respondents that were older were more likely to report they were sick and sought treatment. Age was not a significant factor for using a type of health care service, however, the older age group the less likely they were to prefer formal health care services over informal, and the more likely to prefer private health services over public. This was most striking in the Samburu district.

These findings from the Samburu district could represent the notion that older people, particularly in this more isolated and culturally traditional area, are more reluctant to seek formal health care and would prefer self-medication or traditional medicine. Or that perhaps older individuals find it more difficult to travel to larger formal or public health care services. If this was the case though, it would seem more logical that these realities would affect the actual use of health care services, and age was not a factor for utilization. Another possibility is the choice of facilities available. The district level hospital for the area, like so many other district and regional level hospitals in developing countries, suffers from a lack of resources and well-trained staff (Collins et al., 1996; Nordberg et al., 1993) and is very negatively perceived by the community at large. This is also confirmed by other sources such as Macintyre (2003) who comments that the general attitude of people is that they only go [to the district hospital in Maralal town] to die. People will also delay going to the hospital until they are seriously ill. The situation is unfortunate as it becomes difficult to say if the treatment in the hospital is of that poor quality, or if it is because by the time people arrive the prognosis is already less than favourable, which only serves to perpetuate the negative reputation of the hospital.

9.6 FACTORS AFFECTING ACCESSIBILITY TO HEALTH CARE SERVICES

The effect of geographical accessibility as a factor for health care seeking is well documented in the literature (Buor, 2003; Noor et al., 2003). These studies include, but are not limited to, the issues of distance to health facilities, availability of transportation, mode of transportation, the condition of the roads, and the time taken to travel there. Usually these studies are also inclusive of another variable such as gender, cost (of transport and service), education level or some other socio-economic marker. With so many studies (Hjortsberg, 2003; Peterson et al., 2004; Rani & Bonu, 2003; Stekelenburg, Kyanamina, Mukelabai, Wolffers, & van Roosmalen, 2004) widely postulating these issues as factors of health care seeking, barriers to health care and as representing inequalities in health care use, it is not surprising the current study also found similar results for the use of formal and informal, private and public health care services.

For the current study a number of variables were considered to represent some of the access issues that may have an affect on the type of health care services available to these populations. Depending on the district, different factors were significant. In the Busia district, the time taken to travel to the nearest health facility was a factor. In the Malindi district, it was the type of facility which was closest, that was significant. In the Samburu district, respondents had no access to motorized transportation. These access and utilization issues become even more important when they are considered in the context of a rural environment, such as the districts of this study, where services may be fewer and farther in between.

Again it is difficult to make direct comparisons between the results of the current study and other literature as most studies do not single out variables and uniformly define them. Variables are often discussed as a combination of factors included in a global label such as physical accessibility that may also include, cost, time taken to travel, distance and condition of roads, for example (Needham et al., 2004; Odhiambo-Mbai, 1992; Peterson et al., 2004). In the current study physical accessibility was broken down into mode of transport, closest health facility and time taken to travel to the closest health care facility. In retrospect, a global label would have been an easier choice for discussion, however, the objective for this study was to examine the specific areas of physical accessibility that enabled or hindered populations to seek health care. The results of the study showed different elements of physical

accessibility were significant for different districts, and that these elements were also associated with different socio-demographic characteristics according to the relevant population. So while the objective of the study was achieved and the information will be applicable in a real-world sense for each district, it makes overall discussion more difficult. An explanation of these factors will be presented in terms of the significance to the overall study.

Buor (2003) contends, that while the impact of distance in terms of using health care services is important, distance cannot be considered in isolation. There are other factors that are interrelated and are relative to the necessity of seeking health care for an individual and for a specific health complaint. These factors are identified as "predisposing and enabling" (p. 294) and include literacy, poverty, age, and gender. Using education as an example, Buor questions whether an individual with a high income would be discouraged by high transport costs to a health facility, if he does not see the need to travel there in the first place (p.294). In the current study, in the Busia district, travel time and education were factors significantly associated with seeking health care in the formal sector, while aggregate level results showed that education was associated with the type of health care facility and the time to travel to the nearest health care facility for those that used private health care services. Despite the discussion of predisposing and enabling factors, Buor found the primacy of distance was the factor that superseded all others in rural areas of Ghana and named other key factors as being income, service cost and education. This current study however, found that while distance, in terms of time to travel to health care facilities, was important, it did not supersede all other variables and was in fact related to other socio-demographic factors, the nature and strength of association depending upon the specific district of interest. And again raises the issue of the difficulty in making comparisons across studies in the field of health care use.

Noorali, Luby and Rahbar (1999) also discuss the difficulty in comparing study results as most studies speak in generalities about physical accessibility and overall health care facilities, not taking the different type of health care facilities into account. In the current study the most significant issue of accessibility for people in the Malindi district was the type of health facility that was closest. This was consistent for those residents using formal or informal, and public or private health care services. Noorali et al., found distance from the nearest private facility and treatment cost were the determining factors in choosing private health care facilities in a rural area of Pakistan.

The current study concurs that regular income was significant to choosing a private health care facility, while the time to travel the distance to the nearest facility was the enabling factor. As with the Noorali et al study, the current study found that although distance and type of facility were important, they were not the only factors to influence the decision of choosing a health care service.

The results of other studies conclude that access to transport is a condition for better health and more reliable treatment (Amin et al., 2003; Peterson et al., 2004). There is a body of literature highlighting the prohibition of cost for accessing transport to facilitate health care (Buor, 2003; Macintyre et al., 2003; Needham et al., 1998). In the current study, motorized transport was singled out specifically. The assumption is that to be able to afford to pay to use motor transport or to own it and be able to maintain it implies a certain level of financial well-being. (Hjortsberg, 2003). A further argument is that access to motorized transport, such as public transport, means that one area may or may not be as geographically isolated as another area where public transport is more readily available and affordable (Freeman, 1986; McCray, 2001; Mwaniki, Kabiru, & Mbugua, 2002). These arguments expand further to make reference to the rural-urban divide in terms of access to services, transport or health care (Noor et al., 2003; Onwujekwe & Uzochukwu, 2005).

The most obvious result for this current study population was how few people had access to motorized transport. The study found a significant dearth in the availability of motorized transport overall, but it was not identified as significant to the majority of study participants, as compared with other factors. No person in the Samburu district reported having access to motorized transport and very few in the Busia district. People may have used motorized transport if they were sick and given the option, but only 133 (12%) participants had that option and the other 1008 (88%) did not. The Malindi district with 125 (94%) of these was by far the best served by motorized transport, however having access to motorized transport was not significant for seeking formal or private health care services, once other factors were controlled for. The most interesting result is that it did not affect residents' perceptions of whether they had received all the treatment they needed.

For the current study population motorized transport was significant only for those that would choose private health care services, and in fact, these participants were actually less likely to have access to motorized transport. This may again reflect the

inclusion of self-treatment in private health care services as self-medication may be the easiest option for someone that does not have access to transport. The literature supports the use of self-treatment strategies when faced with the significant barriers of transport cost (Amin et al., 2003). This could also explain the consistent use and preference for private health care services in the Samburu district, a population where no-one had access to motorized transport. This assertion is supported further by the data, when it is considered that those people that would prefer private health care services were more likely to have had an experience where they had been unable to reach the nearest health care facility. Further investigation into the specific issues of accessibility would be needed at the district level with regard to private health care use and in this case, more specifically the role of self-medicating.

9.7 ARE HEALTH NEEDS BEING MET?

Two questions are being asked of the current survey population to investigate if their health needs are being met. First, is whether respondents were able to reach the closest health care facility, and the second is, once they got there, were they satisfied with the treatment they received. The current study found 66% of individuals in the survey population reported being sick, 52% actually sought health care, and 55% of these received all the treatment they needed. While 59% of household members were reported as sick, 53% sought treatment, and 67% were reported to have received all the treatment they needed.

In terms of access to health care services, 44% of individuals from the overall population had been unable to reach the nearest health facility at a time previously, with 47% of individuals from the Busia district, 34% of individuals from the Malindi district and 20% of individuals from the Samburu district. Regarding members of the household, it was reported that for 40% overall there had been a time previously when they had been unable to reach the nearest health facility, 48% from the Busia district, 32% from the Malindi district and 20% from the Samburu district. Therefore, close to half of the respondents had a time when they were unable to reach the nearest health care facility. This was not specific though to the type of service that was closest, however, the fact that preferences were significant suggests dissatisfaction in the past, most probably followed by a preference for a health service that had not been a problem to reach previously.

There are many examples in the literature of the use of multiple health care options in response to previous dissatisfaction with services (Andaleeb, 2001; Atkinson et al., 1999; Nyamwaya et al., 1998). Witter and Osiga (2004) for example in Uganda, found that 80% of clients had sought care elsewhere before attending the public health centres they were assessing. The most frequent response given for choice of health care was 'proper treatment' (p.198) followed by other considerations such as cost, time, location, and drugs among others. Interestingly, only 39% of Witter and Osiga's respondents were satisfied with health services, although this is difficult to compare with the current study which asks about the ability to reach a health facility. Then again, a comparison could be made if it is considered that a respondent that receives all the treatment needed, as in the current study, is also satisfied with this treatment. If this is to be the case the current study had a higher percentage of respondents that were satisfied their needs were met.

Between 53% and 61% of individual respondents reported receiving all the treatment they needed, while a greater number of members of the household were reported to have received all the treatment they needed, between 65% and 76%. Participants from the Samburu district reported receiving treatment to a greater extent than those from the Busia district, with participants from the Malindi district in between. For those that reported they did not receive all the treatment they needed, about half said it was too expensive, a quarter said they felt better, approximately two out of five people said the course of treatment was not available and less than 10% stated it was for another reason or that they didn't know. This can also be compared with Witter and Osiga that found the main reason given for not seeking health care was lack of money (49%) followed by lack of drugs (23%).

From multivariate analysis, the overall factors affecting whether people received all the treatment they needed included, literacy, formal education, and travel time to the nearest health facility. Lack of money was given as a reason in descriptive analysis for not seeking health care or receiving treatment.

Each of the districts of the current study had different factors that were more significant for receiving treatment. Being literate was positively associated with individuals and members of the household receiving all needed treatment in the Busia district. In the Malindi district, respondents that reported they had received all the treatment they needed were less likely to receive regular income, and had to travel less

than 60 minutes to the nearest health care facility. Those in the Samburu district that sought treatment, generally appeared satisfied.

In this current study, people are being asked about their perceptions of receiving all the treatment they needed, rather than being directly observed, and this has been a criticism of studies investigating unmet health needs, as noted by Mayer, Slifkin and Skinner (2005). Peoples' perception of what they need is influenced by a multitude of factors. In the current study for example, associations were found between literacy and education and respondents receiving treatment. Respondents from the Busia district, where the formal education level overall was reported as 53%, were more likely to state they did not receive all the treatment they needed. While those from the Samburu district, where the formal education of respondents overall was 8%, were least likely. The reasoning, according to Mayer et al, is those with less education are least likely to see the need for treatment (47% from the Busia district as compared to 15% from the Samburu district), and if they did seek treatment would have lower expectations. Respondents from the Busia district that reported receiving all the treatment they needed were less likely to have formal education. This result supports the assertion that in this population, education affects health care seeking and the perception of satisfaction with treatment.

In this study we are seeing the same process that has been described in other decision-making models for health care seeking, where factors, including education, affect the ability of the individual to perceive a health problem and take appropriate action (Shaikh & Hatcher, 2004), while education also affects the perception of the treatment received (Mayer et al., 2005). Other studies have found successful treatment-seeking associated with education, economic factors and access to services (Rao & Richard, 1984).

The current study found access variables, such as the time taken to travel to a health facility were significant for people responding they received all the treatment they needed. These findings are corroborated by Hjortsberg (2003) where the costs of health care utilisation are discussed, as compared to the perceived benefits of taking action. The Hjortsberg study found income, type of illness and access issues, such as distance and owning a vehicle, were the major factors that influenced their survey population in Zambia. Not having enough money to pay for treatment was the reason given by 46% of the population in the current study for not receiving treatment, similar

to reasons given in other studies, including Danso-Appiah et al (2004), who found that 43% of respondents from a rural area of Ghana did 'not have enough money' to take action to resolve health care problems. While another two out of every five participants in the current study said the course of treatment was not available. A lack of resources issue also common to other studies (Hjortsberg, 2003; Witter & Osiga, 2004)

A common finding from the literature has been the limiting factor of the cost of seeking health care (Atkinson et al., 1999; Onwujekwe & Uzochukwu, 2005; Peterson et al., 2004; Soucat et al., 1997), either the cost of the treatment itself (Nyamongo, 2002), the cost of physically accessing treatment (Buor, 2003), or the trade off between loss of income as a result of being ill versus seeking treatment (Nyamongo, 2002). In the current study, it was found that while regular income did not significantly affect the use of health care services, it affected the preferences for health care and it was a reason given by almost half of all respondents for not receiving all the treatment needed. The assumption would be that regular income would affect the use of health care services and not which health care services people would prefer to use. In this instance, it may be people that did not have regular income, either did not attempt to seek treatment in the first place, or are using what methods of health care they have available to them. Explanations also consistent with Witter and Osiga (2004).

In the population overall, from the descriptive analysis, more people would prefer to use formal health care services if they had the choice and less people would prefer to use private health care services, given the choice. If self-medication is taken into account, and it was an option taken by approximately a quarter of the survey population, it would appear that people would prefer to use more conventional medicine but are unable to do so. As discussed previously, this study was not designed to assess the severity of illness or question individuals about multiple disease episodes. But this result does speak of an unmet health need that would require further investigation beyond the scope of the current study.

It may also be there is another category of participants that would prefer private health care services because the perception is that this service is of better quality (Nyamongo, 2002). As Nyamongo found although the cost of using private health facilities was high, the perception is that people would get better faster and therefore minimise the overall expenditure.

An association between formal education and regular income has been discussed previously, as well as an association between education and perceived need. This may be another possible explanation for why regular income is associated with preferences for private health care. Regular income was significant for people preferring private health care services, if given the choice. Even though these were aggregate level results, they mainly reflected the situation in the Busia district, and to a lesser extent, the Malindi district, while the Samburu district was the opposite. The point has been made previously, that those with a higher level of formal education are more likely to have higher expectations of health care services than those with less formal education, and are therefore more likely to perceive their health needs as not being met. Overall, those in the Busia and Malindi districts have a higher level of education, than those in the Samburu district, which has been used to explain the results as to why the perception of satisfaction in treatment was different between these districts. Further, people with higher education levels were more likely to self-medicate and in this study self-medication falls into the private health care category.

A further interpretation of the study findings may be there are three categories of participants. There is a group of people with less education that are mostly satisfied with the formal health care services they use. There is another group with higher education that tend to self-medicate, probably for financial reasons, but they are dissatisfied overall with their health care and would prefer to use formal services. The third category, are people whose education level is not the issue, however they have regular income and would prefer to use private health care services, not to self-medicate, but to use a private hospital or health centre because their perception is that the quality is better, and they do not currently have access to the kind of service they want. The suggestion for future investigation would be to make a clear distinction between private and informal health care services, and self-medication.

9.8 CONCLUSIONS

A new finding for this study was the high proportion of people from this population that used formal health care services. People that participated in the study appear to have a good knowledge of the benefits of conventional medicine as compared with self-medication and traditional remedies. Of these, it was predominantly women overall that were the greater users of formal health care services, despite their lower literacy and educational status as compared with the males from the study.

The role of education and literacy in the use of services and the perception of receiving all the treatment needed is evident in this study. That education and literacy are factors in health seeking can be seen in the differences between the Busia and the Malindi districts, as compared to the Samburu district, which had far lower literacy and education levels, particularly among women. It was found that people with a higher level of education were more likely to use informal services, which likely meant self-medication given that around a quarter of the population sought treatment from a shop or pharmacy, while those that were illiterate were more likely to use a hospital or health centre, or some other formal health care service. If people had the choice though, most of them would use formalized or conventional medicine.

The current study also highlighted the importance of access issues to health care seeking. These factors involved costs associated with seeking treatment, distance and the time taken to travel to health care facilities. Many people had an issue with finding the funds to use health care or to purchase subsequent treatment. Although this did not stop all people from using health care services, it made a difference to people's activities, and it made a difference for those trying to follow prescribed treatments, with half saying treatment was too expensive, while others took the route of trying to save money and time by self-medicating. The study found many people would not use hospitals or health centres or other types of formal care, even though they would prefer to, because there was some access issue, either with the time taken to travel the distance or the type of facility that was closest.

Around a half to two thirds of the population that sought treatment felt their health needs were met. That still leaves a number that were sick and did not seek health care, although about a quarter said they felt better. Literacy, education, travel time and lack of money were common factors associated with unmet health needs, and are consistent with the literature. This study highlights the similarities, but more particularly the differences between each of the districts chosen, the obstacles confronted and the ways residents dealt with their health or ill-health depending upon the options available. The kind of effort people would make to get to a health care service would be mediated by the perception of the quality of the service, the likelihood of receiving treatment, and the severity of the disease. The study results show that while people did not always have the means or the motivation to use health care services, these services may also not have had the resources or the expertise to assist them. This study did not independently assess the quality of the treatment available to

people or the severity of the disease that motivated health-related activities, only the perception of satisfactorily receiving all the treatment needed. The number of disease episodes was also not assessed and people were not asked about other options, if any, they had tried first and in which order, before being motivated to use a health care service. These are limitations of the current study and areas for further investigation.

In order to develop longer term solutions to the problems of motivating people to use health care services and comply with treatment regimens, so as not to further increase problems of drug resistance and the spread of communicable disease, good quality health care services that are accessible and adequately resourced, need to be provided to the consumer. Of course, this is not a new concept and is certainly not an issue which is completely relegated to the domain of developing countries. It is tempting to self-diagnose and take medication or hope to feel better, rather than expend time and money on something that may just cure itself. However, when it comes to malaria or tuberculosis or any number of other illnesses, encouraging responsible attitudes and practices is optimal. The prioritization of scarce resources for health care in developing countries is particularly important. This requires information regarding the communities using these services and identifying where gaps exist. That has been the objective of this study.

What has been seen here is the very pragmatic nature of health care service use in the African context. In these regions of Kenya, people are generally aware of the activities/ route to be taken and would take them if they could, but are confronted with significant barriers and therefore choose what options are best available to them, which can be a rather dangerous practice for reasons explained previously. Quality health care that is comprehensible to consumers, affordable and accessible is the goal for all concerned with the health of populations. This study provides an appreciation for the importance of ‘getting to know’ the specific population before formulating health care strategies.

REFERENCES

AbouZahr, C., Vlassoff, C., & Kumar, A. (1996). Quality health care for women: a global challenge. *Health Care for Women International, 17*(5), 449-467.

Abramson, J. (1985). Cross-sectional studies. In W. W. Holland, R. Detels, G. Knox & E. Breeze (Eds.), *Oxford textbook of public health* (Vol. 3, pp. 89-100). Oxford: Oxford University Press.

Achieng, P. (1995). *The problems encountered and recommendations on the operation of a credit revolving fund for small scale fish farmers.* (No. UNDP/BSF/FAO/Project KEN/86/027). Kisumu, Kenya: Food and Agriculture Organization of the United Nations, United Nations Development Programme, Belgian Survival Fund, Lake Basin Development Authority.

Adamchak, D. J., & Ntseane, P. G. (1992). Gender, education, and fertility: a cross-national analysis of Sub-Saharan African nations. *Sociological Spectrum: The official journal of the Mid-South Sociological Association, 12*(2), 167-182.

Ager, A., & Pepper, K. (2005). Patterns of health service utilization and perceptions of needs and services in rural Orissa. *Health Policy and Planning, 20*(3), 176-184.

Agwanda, R. O., Kwamanga, D. O., & Kiugu, S. K. (1996). Essential drugs supply and usage as a reflection of outpatient morbidity in Kirinyaga District, Kenya. *East African Medical Journal., 73*(2), 120-125.

Ahmad-Nia, S. (2002). Women's work and health in Iran: a comparison of working and non-working mothers. *Social Science & Medicine, 54*(5), 753-765.

Ahmed, A., Urassa, D., Gherardi, E., & Game, N. (1996). Patients' perception of public, voluntary and private dispensaries in rural areas of Tanzania. *East African Medical Journal, 73*(6), 370-374.

Ahmed, S. (2001). Differing health and health-seeking behaviour of the indigenous population of the Chittagong Hill Tracts, Bangladesh. *Asia Pacific Journal of Public Health, 13*(2), 100-108.

Ahmed, S., Adams, A. M., Chowdhury, M., & Bhuiya, A. (2000). Gender, socioeconomic development and health-seeking behaviour in Bangladesh. *Social Science & Medicine, 51*(3), 361-371.

Ahmed, S., Tomson, G., Petzold, M., & Kabir, Z. N. (2005). Socioeconomic status overrides age and gender in determining health-seeking behaviour in rural Bangladesh. *Bulletin of the World Health Organization, 83*(2), 109-117.

Akin, J., & Hutchinson, S. (1999). Health-care facility choice and the phenomenon of bypassing. *Health Policy and Planning, 14*(2), 135-151.

Amin, A., Marsh, V., Noor, A., Ochola, S., & Snow, R. (2003). The use of formal and informal curative services in the management of paediatric fevers in four districts in Kenya. *Tropical Medicine & International Health, 8*(12), 1143-1152.

Amnesty International. (1998). Female Genital Mutilation: A human rights information package. Retrieved March 14, 2003, from http://www.amnesty.org/ailib/intcam/femgen/fgm.htm

Andaleeb, S. (2001). Service quality perceptions and patient satisfaction: A study of hospitals in a developing country. *Social Science & Medicine, 52*(9), 1359.

Andrews, G. (2001). Demographic and health issues in rural aging: a global perspective. *Journal of Rural Health (United States), 17*(4), 323-327.

Anokbonggo, W., Ogwal-Okeng, J., Obua, C., Aupont, O., & Ross-Degnan, D. (2004). Impact of decentralization on health services in Uganda: a look at facility utilization, prescribing and availability of essential drugs. *East African Medical Journal, Suppl*, S2-7.

Ansari, Z., Carson, N., Ackland, M., Vaughan, L., & Serraglio, A. (2003). A public health model of the social determinants of health. *Sozial- und Praventivmedizin, 48*(4), 242-251.

Arber, S., & Cooper, H. (1999). Gender differences in health in later life: the new paradox? *Social Science & Medicine, 48*(1), 61-76.

Arber, S., & Khlat, M. (2002). Introduction to 'social and economic patterning of women's health in a changing world'. *Social Science & Medicine, 54*(5), 643-647.

ARK: A Rocha Kenya. (2006). A Rocha Kenya home page. Retrieved 10 June, 2006, from http://en.arocha.org/kenya/

Arozullah, A., Lee, S., Khan, T., Kurup, S., Ryan, J., Bonner, M., et al. (2005). The Roles of Low Literacy and Social Support in Predicting the Preventability of Hospital Admission. *Journal of General Internal Medicine*.

Artazcoz, L., Borrell, C., Benach, J., Cortes, I., & Rohlfs, I. (2004). Women, family demands and health: the importance of employment status and socio-economic position. *Social Science & Medicine, 59*(2), 263-274.

Astin, J. (1998). Why patients use alternative medicine: results of a national study. *Journal of the American Medical Association, 279*(19), 1548-1553.

Atkinson, S., Ngwengwe, A., Macwan'gi, M., Ngulube, T. J., Harpham, T., & O'Connell, A. (1999). The referral process and urban health care in sub-Saharan Africa: the case of Lusaka, Zambia. *Social Science & Medicine, 49*(1), 27-38.

Austin, P. (2002). A comparison of methods for analyzing health-related quality-of-life measures. *Value in Health, 5*(4), 329-337.

Awad, A., Eltayeb, I., & Capps, P. (2006). Self-medication practices in Khartoum State, Sudan. *European Journal of Clinical Pharmacology, 62*(4), 317-324.

Bashour, H., & Mamaree, F. (2003). Gender differences and tuberculosis in the Syrian Arab Republic: patients' attitudes, compliance and outcomes. *Eastern Mediterranean Health Journal, 9*(4), 757-768.

Baum, F. (1999). Social capital: is it good for your health? Issues for a public health agenda. *Journal of Epidemiology and Community Health, 53*(4), 195-196.

Baum, F., & Ziersch, A. (2003). Social capital. *Journal of Epidemiology and Community Health, 57*(5), 320-323.

Berhane, Y., Hogberg, U., Byass, P., & Wall, S. (2002). Gender, literacy, and survival among Ethiopian adults, 1987-96. *Bulletin of the World Health Organization, 80*(9), 714-720.

Bhan, G., Bhandari, N., Taneja, S., Mazumder, S., & Bahl, R. (2005). The effect of maternal education on gender bias in care-seeking for common childhood illnesses. *Social Science and Medicine, 60*(4), 715-724.

Bharmal, F. (2000). Inequity and health: Is malnutirition really caused by poor nutrition? *Journal of the Pakistan Medical Association, 50*, 273-275.

Bicknell, W., & Parks, C. (1989). As children survive: Dilemmas of aging in the developing world. *Social Science & Medicine, 28*(1), 59-67.

Bird, C., & Rieker, P. (1999). Gender matters: An integrated model for understanding men's and women's health. *Social Science & Medicine, 48*(6), 745-755.

Birungi, H., Mugisha, F., Nsabagasani, X., Okuonzi, S., & Jeppsson, A. (2001). The policy on public-private mix in the Ugandan health sector: catching up with reality. *Health Policy & Planning, 16*(Suppl 2), 80-87.

Bland, R., Rollins, N., Van den Broeck, J., & Coovadia, H. (2004). The use of non-prescribed medication in the first 3 months of life in rural South Africa. *Tropical Medicine & International Health, 9*(1), 118-124.

Bonu, S., Rani, M., & Bishai, D. (2003). Using willingness to pay to investigate regressiveness of user fees in health facilities in Tanzania. *Health Policy & Planning, 18*(4), 370-382.

Bowden, A., Fox-Rushby, J., Nyandieka, L., & Wanjau, J. (2002). Methods for pre-testing and piloting survey questions: Illustrations from the KENQOL survey of health-related quality of life. *Health Policy & Planning, 17*(3), 322-330.

British Broadcasting Commission. (2005, Tuesday, 22 November, 2005). Kenyans reject new constitution. *International News* Retrieved 23 March, 2006, from http://news.bbc.co.uk/2/hi/africa/4455538.stm

Broom, D. (1991). Necessary evils. In *Damned if we do: Contradictions in women's health care*. Sydney: Allen & Unwin.

Brown, C., & Segal, R. (1996). The effects of health and treatment perceptions on the use of prescribed medication and home remedies among African American and white American hypertensives. *Social Science & Medicine, 43*(6), 903-917.

Buckley, S. (1997, November 8). AIDS in Kenya. Wife inheritance spurs AIDS rise in Kenya. *Washington Post*.

Bulatao, R., & Ross, J. (2002). Rating maternal and neonatal health services in developing countries. *Bulletin of the World Health Organization, 80*(9), 721-727.

Bullinger, M., Alonso, J., Apolone, G., Leplege, A., Sullivan, M., Wood-Dauphinee, S., et al. (1998). Translating health status questionnaires and evaluating their quality: the IQOLA Project approach. International Quality of Life Assessment. *Journal of Clinical Epidemiology, 51*(11), 913-923.

Buor, D. (2003). Analysing the primacy of distance in the utilization of health services in the Ahafo-Ano South district, Ghana. *International Journal of Health Planning & Management., 18*(4), 293-311.

Cachelin, F., Rebeck, R., Veisel, C., & Striegel-Moore, R. (2001). Barriers to treatment for eating disorders among ethnically diverse women. *International Journal of Eating Disorders, 30*(3), 269-278.

Cashin, C., Borowitz, M., & Zuess, O. (2002). The gender gap in primary health care resource utilization in Central Asia. *Health Policy and Planning, 17*(3), 264-272.

Celik, Y., & Hotchkiss, D. (2000). The socio-economic determinants of maternal health care utilization in Turkey. *Social Science & Medicine, 50*(12), 1797-1806.

Central Bureau of Intelligence. (2006, 20 April, 2006). CIA World Factbook. Retrieved May 04, 2006, from http://www.odci.gov/cia/publications/factbook/geos/ke.html

Central Bureau of Statistics (CBS), Ministry of Health, Kenya Medical Research Institute, Centers for Disease Control and Prevention, & MEASURE DHS+. (2003). Kenya demographic and health survey 2003: Preliminary report. Retrieved 11 February, 2004, from http://www.cbs.gov.ke

Central Bureau of Statistics Kenya. (2002). Retrieved March 12, 2004, from http://www.cbs.go.ke

Chege, J., Askew, I., & Liku, J. (2001). *An assessment of the alternative rites approach for encouraging the abandonment of female genital mutilation in Kenya*. Nairobi: United States Agency for International Development (USAID).

Cohen, S., & Burger, M. (2000). Partnering: A new approach to sexual and reproductive health. Technical paper # 3. Retrieved May 5, 2003, from http://www.unfpa.org/upload/lib_pub_file/170_filename_partnering.pdf

Coldren, R., Ofula, V., Prosser, T., Ogolla, F., Adungo, F., Gaydos, S., et al. (2005). Arboviral IgG antibody prevalence in three Kenyan districts, *Poster presented at the Annual Meeting of the American Society of Tropical Medicine and Hygiene*. Washington, D.C.

Coldren, R., Prosser, T., Ogolla, F., Ofula, V., & Adungo, N. (2005). Malaria parasitemia rates and individual predictors of parasitemia among adults residing in three Kenyan Districts, *Poster presented at the Annual Meeting of the American Society of Tropical Medicine and Hygiene*. Washington, D.C.

Coldren, R., Prosser, T., Ogolla, F., Ofula, V., & Adungo, N. (2006). Literacy and recent history of diarrhoea are predictive of *Plasmodium falciparum* parasitaemia in Kenyan adults. *Malaria Journal, 5*(96).

Colin, B., A., Adair, L. S., & Popkin, B. M. (2004). Understanding the role of mediating risk factors and proxy effects in the association between socio-economic status and untreated hypertension. *Social Science & Medicine, 59*(2), 275-283.

Collins, D., Njeru, G., & Merne, J. (1996). *Hospital autonomy in Kenya: The experience of Kenyatta National Hospital*. Nairobi: United States Agency for International Development (USAID).

Cooper, H. (2002). Investigating socio-economic explanations for gender and ethnic inequalities in health. *Social Science & Medicine, 54*(5), 693-706.

Correa-Rotter, R., Naicker, S., Katz, I. J., Agarwal, S. K., Herrera Valdes, R., Kaseje, D., et al. (2004). Demographic and epidemiologic transition in the developing world: role of albuminuria in the early diagnosis and prevention of renal and cardiovascular disease. *Kidney International Supplement*(92), S32-37.

Currie, D., & Wiesenberg, S. (2003). Promoting women's health-seeking behavior: research and the empowerment of women. *Health Care Women International, 24*(10), 880-899.

Danso-Appiah, A., De Vlas, S., Bosompem, K., & Habbema, J. (2004). Determinants of health-seeking behaviour for schistosomiasis-related symptoms in the context of integrating schistosomiasis control within the regular health services in Ghana. *Tropical Medicine & International Health, 9*(7), 784-794.

de-Graft Aikins, A. (2005). Healer shopping in Africa: new evidence from rural-urban qualitative study of Ghanaian diabetes experiences. *Bristish Medical Journal, 331*(7519), 737.

Dean, K., & Kickbusch, I. (1995). Health related behavior in health promotion: Utilizing the concept of self-care. *Health Promotion International, 10*(1), 35-40.

Detels, R., & Breslow, L. (1991). Current scope and concerns of public health. In W. W. Holland, R. Detels & G. Knox (Eds.), *Oxford textbook of public health* (2nd ed., pp. 49-65). Oxford: Oxford University Press.

Dhingra, V., Rajpal, S., Taneja, D., Kalra, D., & Malhotra, R. (2002). Health care seeking pattern of tuberculosis patients attending an urban TB clinic in Delhi. *Journal of Communicable Disease, 34*(3), 185-192.

Dressler, W., Balieiro, M., & dos Santos, J. (1998). Culture, socioeconomic status, and physical and mental health in Brazil. *Medical Anthropology Quarterly, 12*(4), 424-446.

Eisenberg, D., Davis, R., Ettner, S., Appel, S., Wilkey, S., Van Rompay, M., et al. (1998). Trends in alternative medicine use in the United States, 1990-1997: results of a follow-up national survey. *Journal of the American Medical Association, 280*(18), 1569-1575.

Embassy of Kenya. (2006, 2006). General information. Retrieved 04 May, 2006, from http://www.kenyaembassy.com/geninfo.html

Emslie, C., Hunt, K., & Macintyre, S. (1999). Problematizing gender, work and health: the relationship between gender, occupational grade, working conditions and minor morbidity in full-time bank employees. *Social Science & Medicine, 48*(1), 33-48.

Ensor, T., & Cooper, S. (2004). Overcoming barriers to health service access: influencing the demand side. *Health Policy & Planning, 19*(2), 69-79.

EQUINET Steering Committee. (1998). Equity in health in Southern Africa: Overview and issues from an annotated bibliography. *Equinet Policy Series* 2. Retrieved 5 Jan, 2004, from http://www.equinet.org.zw

Evans, C., & Lambert, H. (1997). Health-seeking strategies and sexual health among female sex workers in urban India: Implications for research and service provision. *Social Science & Medicine, 44*(12), 1791-1803.

Fallon, K. (1999). Education and perceptions of social status and power among women in Larteh, Ghana. *Africa Today, 46*(2), 67-91.

Family Planning Association of Kenya. (n.d.). FPAK. Retrieved September 29, 2003, from http://www.fpak.org/

Fei-ling Go, V., Quan, V., Chung, A., Zenilman, J., & Hanh, V. (2002). Gender gaps, gender traps: Sexual identity and vulnerability to sexually transmitted diseases among women in Vietnam. *Social Science & Medicine, 55*(3), 467-481.

Fienrich, M., & Jellema, A. (2003). Literacy, gender and social agency: Adventures in empowerment. A research report for ActionAid UK. In N. Haq, J. Nalwoga & F. Nessa (Eds.) (pp. pp224). Sevenoaks: Department for International Development: Educational Papers.

Filmer, D. (2005). Fever and its treatment among the more and less poor in sub-Saharan Africa. *Health Policy and Planning, 20*(6), 337-346.

Foddy, W. (1993). *Constructing questions for interviews and questionnaires: Theory and practice in social research*. Cambridge: Cambridge University Press.

Fonck, K., Mwai, C., Ndinya-Achola, J., Bwayo, J., & Temmerman, M. (2002). Health-seeking and sexual behaviors among primary healthcare patients in Nairobi, Kenya. *Sexually Transmitted Diseases, 29*(2), 106-111.

Fonck, K., Mwai, C., Rakwar, J., Kirui, P., Ndinya-Achola, J. O., & Temmerman, M. (2001). Healthcare-seeking behavior and sexual behavior of patients with sexually transmitted diseases in Nairobi, Kenya. *Sexually Transmitted Diseases, 28*(7), 367-371.

Foreit, J., & Foreit, K. (2003). The reliability and validity of willingness to pay surveys for reproductive health pricing decisions in developing countries. *Health Policy, 63*(1), 37-47.

Freeman, M. (1986). *The decentralization of an ambulatory health care services network: Spatial accessibility of prenatnal care services in selected areas of Boston (Massachusetts).* Unpublished Ph.D., University of Michigan, United States -- Michigan.

Galdas, P., Cheater, F., & Marshall, P. (2005). Men and health help-seeking behaviour: Literature review. *Journal of Advanced Nursing, 49*(6), 616-623.

Gandek, B., & Ware, J. E., Jr. (1998). Methods for validating and norming translations of health status questionnaires: the IQOLA Project approach. International Quality of Life Assessment. *Journal of Clinical Epidemiology, 51*(11), 953-959.

Geissler, P., Nokes, K., Prince, R., Achieng' Odhiambo, R., Aagaard-Hansen, J., & Ouma, J. (2000). Children and medicines: self-treatment of common illnesses among Luo schoolchildren in western Kenya. *Social Science & Medicine, 50*(12), 1771-1783.

Gender and Development Group. (2003). Gender equality and the Millennium development goals. Retrieved 10 March, 2004, from http://www.worldbank.org/gender/resources/gendermdg.pdf

Giang, K., & Allebeck, P. (2003). Self-reported illness and use of health services in a rural district of Vietnam: findings from an epidemiological field laboratory. *Scandanavian Journal of Public Health, Suppl 62*, 52-58.

Gibbon, M. (1998). The use of formal and informal health care by female adolescents in eastern Nepal. *Health Care for Women International, 19*(4), 343-360.

Gibbs, S. (1996). Skin disease and socioeconomic conditions in rural Africa: Tanzania. *International Journal of Dermatology, 35*(9), 633-639.

Go 2 Africa. (2006). Lake Victoria region: Kenya. Retrieved June 14, 2006

Goding, M., & Howie, L. (1990). Women's despair, women's lot? A feminist overview of depression. In *Healthsharing women. The healthsharing reader: Women speak about health*. Sydney: Pandora Press.

Good, C., & Kimani, V. (1980). Urban traditional medicine: A Nairobi case study. *East African Medical Journal, 57*, 301-316.

Gordan, P., & Crehan, K. (n.d.). Dying of sadness: Gender, sexual violence and the HIV epidemic. *SEPED Conference Paper Series* Retrieved March 26, 2003, from www.undp.org/seped/publications/conf_pub.htm

Gotsadze, G., Bennet, S., Ranson, K., & Gzirishvili, D. (2005). Health care-seeking behaviour and out-of-pocket payments in Tbilisi, Georgia. *Health Policy and Planning, 20*(4), 232-242.

Gott, M., & Hinchliff, S. (2003). Barriers to seeking treatment for sexual problems in primary care: a qualitative study with older people. *Family Practice, 20*(6), 690-695.

Graham, H. (2004). Social determinants and their unequal distribution: clarifying policy understandings. *Milbank Q, 82*(1), 101-124.

Green, A., & Collins, C. (2003). Health systems in developing countries: Public sector managers and the management of contradictions and change. *International Journal of Health Planning & Management, 18*(Suppl 1), S67-78.

Green, M. (2000). Public reform and the privatisation of poverty: Some institutional determinants of health seeking behaviour in southern Tanzania. *Cultural Medical Psychiatry, 24*, 403-430.

Greenberg, B., Daniels, S., Flanders, W., Eley, J., & Boring, J. (2001). *Medical epidemiology* (Third ed.). New York: Lange Medical Books/McGraw-Hill.

Greig, F., & Koopman, C. (2003). Multilevel analysis of women's empowerment and HIV prevention: quantitative survey. Results from a preliminary study in Botswana. *AIDS Behavior, 7*(2), 195-208.

Gwatkin, D. (2000). Health inequalities and the health of the poor: What do we know? What can we do? *Bulletin of the World Health Organization, 78*(1), 3-18.

Gwatkin, D. (2002). Reducing health inequalities in developing countries. In *Oxford Textbook of Public Health* (Fouth Edition ed.). Oxford: Oxford University Press.

Gwatkin, D., Rustein, S., Johnson, K., Pande, R., & Wagstaff, A. (2000). *Socio-economic differences in health, nutrition, and population in Kenya*. Washington: HNP/Poverty Thematic Group of The World Bank.

Ha, N., Berman, P., & Larsen, U. (2002). Household utilization and expenditure on private and public health services in Vietnam. *Health Policy & Planning, 17*(1), 61-70.

Harpham, T., & Grant, E. (2002). Measuring social capital within health surveys: Key issues. *Health Policy and Planning, 17*(1), 106-111.

Hartigan, P. (2001). The importance of gender in defining and improving quality of care: some conceptual issues. *Health Policy & Planning, 16*(Suppl.1), 7-12.

Haynes, R., Bentham, G., Lovett, A., & Gale, S. (1999). Effects of distances to hospital and GP surgery on hospital inpatient episodes, controlling for needs and provision. *Social Science & Medicine, 49*(3), 425-433.

Health Communication Network. (2002). Health communication network providing innovative e-health solutions. Retrieved 11 April, 2003, from http://www.hcn.com.au/index.html

Heiberg, A. (1996). Access to the world's resources: women's health. *Bulletin of the Medical Library Association, 84*(1), 91-95.

Heise, L. (1994). Gender-based violence and women's reproductive health. *International Journal of Gynaecology and Obstetrics, 46*(2), 221-229.

Heise, L., Ellsberg, M., & Gottmoeller, M. (2002). A global overview of gender-based violence. *International Journal of Gynaecology and Obstetrics, 78 Suppl 1,* S5-S14.

Henrard, J. (1996). Cultural problems of ageing especially regarding gender and intergenerational equity. *Social Science and Medcine, 43*(5), 667-680.

Hill, Z., Kendall, C., Arthur, P., Kirkwood, B., & Adjei, E. (2003). Recognizing childhood illnesses and their traditional explanations: exploring options for care-seeking interventions in the context of the IMCI strategy in rural Ghana. *Tropical Medicine & International Health, 8*(7), 668-676.

Hjortsberg, C. (2003). Why do the sick not utilise health care? The case of Zambia. *Health Economics, 12*(9), 755-770.

Hoyt, B. (2005). Commentary. Public versus private: The medical resident perspective. *Canadian Medical Association Journal, 173*(8).

Hunt, L. (1994). The women's health movement: One solution. In C. Waddell & A. R. Petersen (Eds.), *Just health* (pp. 387-395). Melbourne: Churchill Livingstone.

Hussein, A., & Mpembeni, R. (2005). Recognition of high risk pregnancies and referral practices among traditional birth attendants in Mkuranga District, Coast Region, Tanzania. *African Journal of Reproductive Health, 9*(1), 113-122.

Institute for Statistics. (2002). *World Education Indicators*. Paris: United Nations Educational Scientific and Cultural Organization (UNESCO).

Institute for Statistics Literacy and Non Formal Education Sector. (2002). *Special Estimates and Projections of Adult Illiteracy for Population Aged 15 Years Old and Above, By Country and By Gender*. Paris: United Nations Educational Scientific, and Cultural Organization (UNESCO).

Institute of Medicine. (1996). *In her lifetime: Female morbidity and mortality in Sub-Saharan Africa*. Wasington, D.C.: National Academy Press.

Jagdish, B., & Cleland, J. (2004). Health care of female outpatients in south-central India: Comparing public and private sector provision. *Health Policy and Planning, 19*(6), 402-409.

Johansson, E., Long, N. H., Diwan, V. K., & Winkvist, A. (2000). Gender and tuberculosis control: perspectives on health seeking behaviour among men and women in Vietnam. *Health Policy, 52*(1), 33-51.

Joshi, H., Paci, P., & Wagstaff, A. (2001). *Inequalities in health: Who you are? Where you live? Or who your parents were?* Washington DC: The World Bank.

Kahakani, D. B. (1996, August 19). Find solutions against witchcraft. *East African,* p. 8.

Kambi, J. (2005). Malindi site overview. *GEIS Gazette,* 1-6.

Kapiriri, L., & Norheim, O. F. (2004). Criteria for priority-setting in health care in Uganda: exploration of stakeholders' values. *Bulletin of the World Health Organization, 82*(3), 172-179.

Kaplan, M., Newsom, J., McFarland, B., & Lu, L. (2001). Demographic and psychosocial correlates of physical activity in late life. *Am J Prev Med., 21*(4), 306-312.

Kapoor, S. (2000, May). Domestic violence against women and girls. *UNICEF: Innocenti Digest, 6*.

Kekovole, J., Kiragu, K., Muruli, L., & Josiah, P. (1997). *Reproductive health communication in Kenya: Results of a national IEC situation survey. Country report*. Baltimore: Johns Hopkins Center for Communication Programs.

Keller, S., Bayliss, M., Ware, J., Hsu, M., Damiano, A., & Goss, T. (1997). Comparison of responses to SF-36 Health Survey questions with one-week and four-week recall periods. 367-384.

Kengeya-Kayondo, J., Seeley, J., Kajura-Bajenja, E., Kabunga, E., Mubiru, E., Sembajja, F., et al. (1994). Recognition, treatment seeking behaviour and perception of cause of malaria among rural women in Uganda. *Acta Tropica, 58*(3-4), 267-273.

Kenya National Council for Population and Development, & Ministry of Home Affairs and National Heritage. (1991). Kenya demographic and health survey, 1988-1989 (DHS I). Retrieved September 29, 2004, from http://www.ciser.cornell.edu/ASPs/search_athena.asp?CODEBOOK=SIB-2017&IDTITLE=1558

Ketting, E. (1994). Global unmet need: present and future. *Planned Parenthood Challenges: International Planned Paretnhood Federation*(1), 31-34.

Khan, M., & Baillie, P. (2003). An integrated approach through health, education and community development for the developing countries: the Baqai model. *Education and Health (Abingdon), 16*(1), 75-78.

Kickbusch, I. (2001). Health literacy: addressing the health and education divide. *Health Promotion International, 16*(3), 289-297.

Kroeger, A. (1983). Anthropological and socio-medical health care research in developing countries. *Social Science & Medicine, 17*(3), 147-161.

Kumar, R., Singhasivanon, P., Sherchand, J. B., Mahaisavariya, P., Kaewkungwal, J., Peerapakorn, S., et al. (2004). Gender difference in socio-epidemiological factors for leprosy in the most hyper-endemic district of Nepal. *Nepal Med Coll J, 6*(2), 98-105.

Kuo, G., Hawley, S., Weiss, L., Balkrishnan, R., & Volk, R. (2004). Factors associated with herbal use among urban multiethnic primary care patients: a cross-sectional survey. *BioMedicalCentral: Complementary and Alternative Medicine, 4*(1), 18.

Kurbat, M., Shevell, S., & Rips, L. (1998). A year's memories: The calendar effect in autobiographical recall. *Memory and Cognition, 26*, 532-552.

Kyaddondo, D., & Whyte, S. R. (2003). Working in a decentralized system: a threat to health workers' respect and survival in Uganda. *International Journal of Health Planning & Management, 18*(4), 329-342.

Labonte, R. (1997). Participation in health promotion: The 'hardware' and the 'software'. In *Power, participation and partnerships for health promotion.* Victoria: Victoria Health Promotion Foundation.

Lagarde, E., Carael, M., Glynn, J., Kanhonou, L., Abega, S., Kahindo, M., et al. (2001). Educational level is associated with condom use within non-spousal partnerships in four cities of sub-Saharan Africa. *AIDS, 15*(11), 1399-1408.

Lee, S., Arozullah, A., & Cho, Y. (2004). Health literacy, social support, and health: a research agenda. *Social Science & Medicine, 58*(7), 1309-1321.

Levin, A., Caldwell, B., & Khuda, B.-e. (1999). Effect of price and access on contraceptive use. *Social Science & Medicine, 49*(1), 1-16.

Levy, P., & Lemeshow, S. (1999). *Sampling of populations: Methods and applications*. New York: John Wiley & Sons, Inc.

Lindbladh, E., Lyttkens, C. H., Hanson, B. S., Ostergren, P., Isacsson, S.-O., & Lindgren, B. (1996). An economic and sociological interpretation of social differences in health-related behaviour: An encounter as a guide to social epidemiology. *Social Science & Medicine, 43*(12), 1817-1827.

Low, A., & Ithindi, T. (2003). A step too far? Making health equity interventions in Namibia more sufficient. *International Journal of Equity in Health, 2*(1).

Macintyre, K., Lochigan, M., & Letipila, F. (2003). Understanding referral from primary care clinics in rural Kenya: Using health information systems to prioritize health services. *International Journal of Health Planning & Management, 18*, 23-39.

Macintyre, S., Ford, G., & Hunt, K. (1999). Do women 'over-report' morbidity? Men's and women's responses to structured prompting on a standard question on long standing illness. *Social Science & Medicine, 48*(1), 89-98.

Mackenbach, J., & Howden-Chapman, P. (2003). New perspectives on socioeconomic inequalties in health. *Perspectives in Biology and Medicine, 46*(3), 428-444.

Mackian, S., Bedri, N., & Lovel, H. (2004). Up the garden path and over the edge: where might health-seeking behaviour take us? *Health Policy & Planning, 19*(3), 137-146.

Macro International Inc., M. (n.d.). Demographic and health surveys program. Retrieved September 29, 2003, from http://www.medibix.com/Index.jsp?mnu=products

Magadi, M., & Curtis, S. (2003). Trends and determinants of contraceptive method choice in Kenya. *Studies in Family Planning, 34*, 149-160.

Maher, J., & Kur, C. E. (1983). Constructing good questionnaires. *Training and Development Journal, 37*(6), 100.

Marmot, M. (1999). Epidemiology of socioeconomic status and health: are determinants within countries the same as between countries? *Annals of the New York Academy of Science, 896*, 16-29.

Mathers, C., Vos, T., & Stevenson, C. (1999). The burden of disease and injury in Australia. Retrieved April 22, 2003, from http://www.aihw.gov.au/publications/health/bdia/bdia.pdf

Mattes, R., Bratton, M., & Davids, Y. D. (2002). *Poverty, survival and democracy in Southern Africa* (No. 23). Cape Town: Afrobarometer.

Matthews, S., Manor, O., & Power, C. (1999). Social inequalities in health: are there gender differences? *Social Science & Medicine, 48*(1), 49-60.

Matthews, S., & Power, C. (2002). Socio-economic gradients in psychological distress: a focus on women, social roles and work-home characteristics. *Social Science & Medicine, 54*(5), 799-810.

Mayer, M. L., Slifkin, R. T., & Skinner, A. C. (2005). The effects of rural residence and other social vulnerabilities on subjective measures of unmet need. *Medical Care Research and Review, 62*(5), 617-628.

McColl, E., Jacoby, A., Thomas, L., Soutter, J., & al, e. (2002). Design and use of questionnaires: A review of best practice applicable to surveys of Health Service staff and patients. *British Journal of Clinical Governance, 7*(3), 206.

McCombie, S. C. (2002). Self-treatment for malaria: the evidence and methodological issues. *Health Policy & Planning, 17*(4), 333-344.

McCray, T. M. (2001). *Promoting the journey to health: Healthcare access and transportation in rural South Africa.* Unpublished Ph.D., University of Michigan, United States -- Michigan.

McDonough, P., Walters, V., & Strohschein, L. (2002). Chronic stress and the social patterning of women's health in Canada. *Social Science & Medicine, 54*(5), 767-782.

Mehrotra, S., & Jarrett, S. W. (2002). Improving basic health service delivery in low-income countries: 'voice' to the poor. *Social Science & Medicine, 54*(11), 1685-1690.

Ministry of Health [Kenya], National Council for Population and Development [NCPD Kenya], & Macro, O. (2000). *Kenya service provision assessment survey 1999.* Calverton, Maryland: Ministry of Health, National Council for Population and Development, and ORC Macro.

Mishra, G. D., Ball, K., Dobson, A. J., Byles, J. E., & Warner-Smith, P. (2002). Which aspects of socio-economic status are related to health in mid-aged and older women? *International Journal of Behavioral Medicine, 9*(3), 263-285.

Moore, D., Castillo, E., Richardson, C., & Reid, R. J. (2003). Determinants of health status and the influence of primary health care services in Latin America, 1990-98. *International Journal of Health Planning & Management, 18*(4), 279-292.

Mosota, M., & Ayodo, H. (2007, April 17). Kenya: Women left out in fight against AIDS, says UN. *The East African Standard*.

Moss, N. (2002). Gender equity and socioeconomic inequality: a framework for the patterning of women's health. *Social Science & Medicine, 54*(5), 649-661.

Msiska, R., Nangawe, E., Mulenga, D., Sichone, M., Kamanga, J., & Kwapa, P. (1997). Understanding lay perspectives: care options for STD treatment in Lusaka, Zambia. *Health Policy & Planning, 12*(3), 248-252.

Muller, O., Traore, C., Becher, H., & Kouyate, B. (2003). Malaria morbidity, treatment-seeking behaviour, and mortality in a cohort of young children in rural Burkina Faso. *Tropical Medicine & International Health, 8*(4), 290-296.

Munguti, K. (1998). Community perceptions and treatment seeking for malaria in Baringo District, Kenya: Implications for disease control. *East African Medical Journal, 75*(12), 687-691.

Murray, S. F., & Pearson, S. C. (2005). Maternity referral systems in developing countries: Current knowledge and future research needs. *Social Science and Medicine, Ahead of print*.

Mwabu, G. (1986). Health care decisions at the household level: Results of a rural health survey in Kenya. *Social Science & Medicine, 22*(3), 315-319.

Mwaniki, P. K., Kabiru, E. W., & Mbugua, G. G. (2002). Utilisation of antenatal and maternity services by mothers seeking child welfare services in Mbeere District, Eastern Province, Kenya. *East African Medical Journal, 79*(4), 184-187.

Mwenesi, H., Harpham, T., & Snow, R. W. (1995). Child malaria treatment practices among mothers in Kenya. *Social Science & Medicine, 40*(9), 1271-1277.

Naicker, S. (2003). End-stage renal disease in sub-Saharan and South Africa. *Kidney International Suppliment*(83), S119-122.

Nanda, P. (2002). Gender dimensions of user fees: implications for women's utilization of health care. *Reproductive Health Matters, 10*(20), 127-134.

Nare, C., Katz, K., & Tolley, E. (1997). Adolescents' access to reproductive health and family planning services in Dakar (Senegal). *Working Paper Series* Retrieved 1 April, 2004, from http://www.hsph.harvard.edu/hcpds/wpweb/97_04.pdf

Nash Ojanuga, D., & Gilbert, C. (1992). Women's access to health care in developing countries. *Social Science & Medicine, 35*(4), 613-617.

National Council for Population and Development (NCPD), Central Bureau of Statistics (CBS), Office of the Vice President and Ministry of Planning and National Development (Kenya), & Macro International Inc., M. (1999). Kenya demographic and health survey 1998. Retrieved 23 February, 2004, from http://www.measuredhs.com/pubs/pdf/FR102/00FrontMatter.pdf

Ndiaye, P., Dia, A., Diediou, A., Dieye, E., & Dione, D. (2005). [Socio-cultural determinants of the lateness of the first prenatal consultation in a health district in Senegal]. *Sante Publique, 17*(4), 531-538.

Nduru, M. (1999). *Educating girls "reduces poverty in Africa". An education conference in Harare is told that the social returns on educating girls in Africa are the highest in the world.* Paper presented at the Daily Mail Guardian.

Ndyomugyenyi, R., Neema, S., & Magnussen, P. (1998). The use of formal and informal services for antenatal care and malaria treatment in rural Uganda. *Health Policy & Planning, 13*(1), 94-102.

Needham, D. M., Bowman, D., Foster, S. D., & Godfrey-Faussett, P. (2004). Patient care seeking barriers and tuberculosis programme reform: a qualitative study. *Health Policy, 67*(1), 93-106.

Needham, D. M., Foster, S. D., Tomlinson, G., & Godfrey-Faussett, P. (2001). Socio-economic, gender and health services factors affecting diagnostic delay for tuberculosis patients in urban Zambia. *Tropical Medicine & International Health, 6*(4), 256-259.

Needham, D. M., Godfrey-Faussett, P., & Foster, S. D. (1998). Barriers to tuberculosis control in urban Zambia: the economic impact and burden on patients prior to diagnosis. *International Journal of Tuberculosis & Lung Disease, 2*(10), 811-817.

No author. (1994). *Understanding the roles of men and women in fertility decisions.* Paper presented at the Conference for Progress on Human Reproductive Research.

No author listed. (1997). Report examines links among women's equality, smaller families, healthier children. *Population Today, 25*(6), 1-2.

Noor, A. M. (2005). *Developing spatial models of health service access and utilisation to define health equity in Kenya.* Unpublished Ph.D., Open University (United Kingdom), England.

Noor, A. M., Zurovac, D., Hay, S. I., Ochola, S. A., & Snow, R. W. (2003). Defining equity in physical access to clinical services using geographical information systems as part of malaria planning and monitoring in Kenya. *Tropical Medicine & International Health, 8*(10), 917-926.

Noorali, R., Luby, S., & Rahbar, M. (1999). Research report: Does use of a government service depend on distance from the health facility? *Health Policy and Planning, 14*(2), 191-197.

Nordberg, E., Oganga, H., Kazibwe, S., & Onyango, J. (1993). Rapid assessment of an African district health system. Test of a planning tool. *International Journal of Health Planning & Management, 8*(3), 219-233.

Nordberg, E., & Oranga, H. (1996). Health information for district level planning: a cross-sectional household survey in rural Kenya. *East African Medical Journal, 73*(6), 364-369.

Nyamongo, I. K. (1999). Home case management of malaria: an ethnographic study of lay people's classification of drugs in Suneka division, Kenya. *Tropical Medicine & International Health, 4*(11), 736-743.

Nyamongo, I. K. (2002). Health care switching behaviour of malaria patients in a Kenyan rural community. *Social Science & Medicine, 54*(3), 377-386.

Nyamwaya, D. (2003). Health promotion in Africa: Strategies, players, challenges and prospects. *Health Promotion International, 18*(2), 85-87.

Nyamwaya, D., Nordberg, E., & Oduol, E. (1998). Socio-cultural information in support of local health planning: Conclusions from a survey in rural Kenya. *International Journal of Health Planning & Management, 13*(1), 27-45.

Nzioka, S. (2005). Health information generation and utilization for informed decision-making in equitable health service management: the case of Kenya Partnership for Health program. *International Journal of Equity in Health, 4*, 8.

Oberlander, L., & Elverdan, B. (2000). Malaria in the United Republic of Tanzania: Cultural considerations and health-seeking behaviour. *Bulletin of the World Health Organization, 78*(11), 1352-1357.

Odhiambo-Mbai, C. (1992). *The implementation and management of health care programmes in Kenya: The case of the expanded programme on immunization.* Unpublished Ph.D., University of Toronto (Canada), Canada.

Okojie, C. E. E. (1994). Gender inequalities of health in the third world. *Social Science & Medicine, 39*(9), 1237-1247.

Olenja, J. (2003). Editorial: Health seeking behaviour in context. *East African Medical Journal, 75*(12), 61-62.

Oliveira-Cruz, V., Hanson, K., & Mills, A. (2003). Approaches to overcoming constraints to effective health service delivery: A review of the evidence. *Journal of International Development, 15*, 41-65.

Onwujekwe, O. (2005). Inequities in healthcare seeking in the treatment of communicable endemic diseases in Southeast Nigeria. *Social Science and Medicine, 61*(2), 455-463.

Onwujekwe, O., & Uzochukwu, B. (2005). Socio-economic and geographic differentials in costs and payment strategies for primary healthcare services in Southeast Nigeria. *Health Policy, 71*(3), 383-397.

Oranga, H., & Nordberg, E. (1995). A longitudinal health interview survey in rural Kenya: Potential and limitations for local planning. *East African Medical Journal, 72*(4), 241-247.

Panford, S., Nyaney, M. O., Amoah, S. O., & Aidoo, N. G. (2001). Using folk media in hiv/aids prevention in rural ghana. *American Journal of Public Health [NLM - MEDLINE], 91*(10), 1559.

PATH. (1997). The facts: Female genital cutting. Retrieved 14 March, 2003

Pauly, M. V. (2003). What if technology never stops improving? Medicare's future under continuous cost increases. *Washington Lee Law Review, 60*(4), 1233-1250.

Pavlova, M., Groot, W., & van Merode, G. (2003). The importance of quality, access and price to health care consumers in Bulgaria: a self-explicated approach. *International Journal of Health Planning & Management, 18*(4), 343-361.

People & the Planet 2000 - 2006. (n.d.). Peopleandplanet.net. People and cities. Retrieved September 18, 2006, from http://www.peopleandplanet.net/doc.php?id=1054&section=5

Perrin, B. (1998). 1.2 The links between health and literacy. *Background document of literacy and health* Retrieved Oct 27, 2003

Peterson, S., Nsungwa-Sabiiti, J., Were, W., Nsabagasani, X., Magumba, G., Nambooze, J., et al. (2004). Coping with paediatric referral: Ugandan parents' experience. *Lancet [NLM - MEDLINE], 363*(9425), 1955.

Phillips, K. A., Morrison, K. R., Andersen, R., & Aday, L. A. (1998). Understanding the context of healthcare utilization: assessing environmental and provider-related variables in the behavioral model of utilization. *Health Services Research, 33*(3 Pt 1), 571-596.

Pillai, R. K., Williams, S. V., Glick, H. A., Polsky, D., Berlin, J. A., & Lowe, R. A. (2003). Factors affecting decisions to seek treatment for sick children in Kerala, India. *Social Science & Medicine, 57*(5), 783-790.

Pokhrel, S., & Sauerborn, R. (2004). Household decision-making on child health care in developing countries: the case of Nepal. *Health Policy & Planning, 19*(4), 218-233.

Pokhrel, S., Snow, R., Dong, H., Hidayat, B., Flessa, S., & Sauerborn, R. (2005). Gender role and child health care utilization in Nepal. *Health Policy, 74*(1), 100-109.

Population Action International. (n.d., 4 March, 2003). Expanding and improving family planning and related reproductive health services. Retrieved 1 April, 2004, from http://www.populationaction.org/resources/publications/africa_challenge/afc_exec_pt2.htm

Puentes-Markides, C. (1992). Women and access to health care. *Social Science & Medicine, 35*(4), 619-626.

Radyowijati, A., & Haak, H. (2003). Improving antibiotic use in low-income countries: an overview of evidence on determinants. *Social Science & Medicine, 57*(4), 733-744.

Rajeswari, R., Chandrasekaran, V., Suhadev, M., Sivasubramaniam, S., Sudha, G., & Renu, G. (2002). Factors associated with patient and health system delays in the diagnosis of tuberculosis in South India. *International Journal of Tuberculosis & Lung Disease, 6*(9), 789-795.

Ramachandran, H., & Shastri, G. S. (1983). Movement for medical treatment : A study in contact patterns of a rural population. *Social Science & Medicine, 17*(3), 177-187.

Rani, M., & Bonu, S. (2003). Rural Indian women's care-seeking behavior and choice of provider for gynecological symptoms. *Studies in Family Planning, 34*(3), 173-185.

Rani, M., & Lule, E. (2004). Exploring the socioeconomic dimension of adolescent reproductive health: A multicountry analysis. *International Family Planning Perspectives, 30,* 110-117.

Rao, P., & Richard, J. (1984). Socioeconomic and demographic correlates of medical care and health practices. *Journal of Biosocial Science, 16*(3), 343-355.

Rea, L., & Parker, R. (1997). *Designing and conducting survey research: A comprehensive guide* (Second Edition ed.). San Francisco: John Wiley & Sons, Inc.

Rosenberg, M. W., & Hanlon, N. T. (1996). Access and utilization: A continuum of health service environments. *Social Science & Medicine, 43*(6), 975-983.

Ryan, G. W. (1998). What do sequential behavioral patterns suggest about the medical decision-making process?: Modeling home case management of acute illnesses in a rural Cameroonian village. *Social Science & Medicine, 46*(2), 209-225.

Sainsbury, P., & Harris, E. (2002). Understanding the causes of health inequalities: incorporating personal, local, national, and global perspectives. *New South Wales Public Health Bulletin, 13*(6), 121-123.

Sandhu, D. S., & Heinrich, M. (2005). The use of health foods, spices and other botanicals in the Sikh community in London. *Phytotherapy Research, 19*(7), 633-642.

Sarin, A., Gough, N., Grezo, C., Coyle, D., Waverman, L., Meschi, M., et al. (2005). *Moving the debate forward. Africa: The impact of mobile phones* (No. 2).

Sarkar, D. (1995). A chain reaction: the fourth world conference on women and beyond. *ZPG Report,, 27*(6).

Schulpen, T., & Swinkels, W. (1980). Machakos project studies. Agents affecting health of mother and child in a rural area of Kenya. XIX. The utilization of health services in a rural area of Kenya. *Tropical Geography and Medicine, 32*(4), 340-349.

Sepehri, A., & Chernomas, R. (2001). Are user charges efficiency- and equity-ehancing? A critical review of economic literature with particular reference to experience from developing countries. *Journal of International Development, 13,* 183-209.

Shaikh, B. T., & Rabbani, F. (2004). The district health system: a challenge that remains. *East Mediterranean Health Journal, 10*(1-2), 208-214.

Shaikh, T., & Hatcher, J. (2004). Health seeking behaviour and health service utilization in Pakistan: Challengin the policy makers. *Journal of Public Health 27*(1), 49-54.

Shandra, J. M., Nobles, J., London, B., & Williamson, J. B. J. B. (2004). Dependency, democracy, and infant mortality: a quantitative, cross-national analysis of less developed countries. *Social Science & Medicine, 59*(2), 321-333.

Shimouchi, A., Ozasa, K., & Hayashi, K. (1994). Immunization coverage and infant mortality rate in developing countries. *Asia Pacific Journal of Public Health, 7*, 228-232.

Silman, A. (1995). The association between risk factors and disease: Which measure? In *Epidemiological studies: A practical guide*. Cambridge: Cambridge University Press.

Smith, F. (2004). Community pharmacy in Ghana: enhancing the contribution to primary health care. *Health Policy & Planning, 19*(4), 234-241.

Solomon, N. M. (2005). Health information generation and utilization for informed decision-making in equitable health service management: the case of Kenya Partnership for Health program. *International Journal of Equity in Health, 4*, 8.

Sonaike, S. A. (1988). Communication and Third World development: A dead end? *Gazette, 41*(2), 85-108.

Sood, S., Singh, P. K., & Sarwal, R. (2004). Reaching the underserved: Measuring the impact of a community media intervention, Uttar Pradesh, India. *International Quarterly of Community Health Education, 23*(2), 117.

Soucat, A., Gandaho, T., Levy-Bruhl, D., De Bethune, X., Alihonou, E., Ortiz, C., et al. (1997). Health seeking behaviour and household health expenditures in Benin and Guinea: The equity implications of the Bamako Initiative. *International Journal of Health Planning & Management, 12*(Suppl 1), S137-S163.

South African Press Association. (2006). Rival herdsmen clash about cattle in Kenya. Retrieved June 22, 2006, from www.iol.co.za

Sowell, R. L., Seals, B., Moneyham, L., Guillory, J., Demi, A., & Cohen, L. (1996). Barriers to health-seeking behaviors for women infected with HIV. *Nursing Connections, 9*(3), 5-17.

SSC Protocol No 831. (2003). Serosurvey of arboviral illnesses, socioeconomic determinants of arboviral infection, and determination of in vivo antimalarial resistance in three distinct districts of Kenya. In N. Adungo, F. Ogolla, T. Prosser, R. Coldren, C. Onyango & V. Otieno (Eds.). Kenya: Kenya Medical Research Institute.

St. Leger, L. (2001). Schools, health literacy and public health: possibilities and challenges. *Health Promotion International, 16*(2), 197-205.

Stata Corporation. (n.d.). STATA: Statistics/data analysis. College Station,Texas: Stata Corporation.

Stekelenburg, J., Kyanamina, S., Mukelabai, M., Wolffers, I., & van Roosmalen, J. (2004). Waiting too long: low use of maternal health services in Kalabo, Zambia. *Tropical Medicine & International Health, 9*(3), 390-398.

Sudha, G., Nirupa, C., Rajasakthivel, M., Sivasusbramanian, S., Sundaram, V., Bhatt, S., et al. (2003). Factors influencing the care-seeking behaviour of chest symptomatics: a community-based study involving rural and urban population in

Tamil Nadu, South India. *Tropical Medicine & International Health, 8*(4), 336-341.

Swinkels, W. J., & Schulpen, T. W. (1980). Machakos Project Studies. Agents affecting health of mother and child in a rural area of Kenya. XX. A dynamic approach to the utilization of health services in a rural area of Machakos, Kenya. *Trop Geogr Med, 32*(4), 350-357.

Synodinos, N. E. (2003). The "art" of questionnaire construction: Some important considerations for manufacturing studies. *Integrated Manufacturing Systems, 14*(3), 221.

Szklo, M., & Nieto, F. J. (2000). *Epidemiology: Beyond the basics*. Gaithersburg: Aspen Publishers, Inc.

Taffa, N., & Chepngeno, G. (2005). Determinants of health care seeking for childhood illnesses in Nairobi slums. *Tropical Medicine & International Health, 10*(3), 240-245.

Taffa, N., Chepngeno, G., & Amuyunzu-Nyamongo, M. (2005). Child morbidity and healthcare utilization in the slums of Nairobi, Kenya. *Journal of Tropical Pediatrics, 51*(5), 279-284.

Tanner, M., & Vlassoff, C. (1998). Treatment-seeking behaviour for malaria: a typology based on endemicity and gender. *Social Science & Medicine, 46*(4), 523-532.

Thapa, M. (1997). An integrated approach to help Nepal's rural poor. *Planned Parenthood Challenges / International Planned Parenthood Federation*(1-2), 31-33.

The Center for Disease Control. (2004). EpiInfo (Version 3.2.2, April 14). Atlanta: The Center for Disease Control/National Institutes of Health.

The Center for Reproductive Law and Policy, & International Federation of Women Lawyers(Kenya Chapter). (1997). Women of the world: Laws and policies affecting their reproductive lives. Anglophone Africa. Retrieved March 29, 2003, from http://www.crlp.org/pub_bo_wowafrica.html#online

The Economist. (2005, July 7). Mobile telecommunications: Mobile-phone firms have found a profitable way to help the poor help themselves. *The Economist*.

The Working Group on Priority Setting. (2000). Priority setting for health research: lessons from developing countries. *Health Policy & Planning, 15*(2), 130-136.

Thisted, R. A. (2003). Are there social determinants of health and disease?. [Review] [11 refs]. *Perspectives in Biology & Medicine, 46*(3 Suppl), S65-73.

Thumbi, P. (n.d.). Kenya country report on reproductive health and reproductive rights. Retrieved 30 October, 2003, from http://www.uneca.org/eca_resources/Major_ECA_Websites/icpd/fourth/Kenya.htm

Tomlinson, L. (2003). Patient and practitioner literacy and women's health: A global view from the closing decade 1990-2000. *Ethnicity and Disease, 13*, 248-258.

Tourangeau, R., Rips, L., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge, England: Cambridge University Press.

Tuan, T., Dung, V. T. M., Neu, I., & Dibley, M. (2005). Comparative quality of private and public health services in rural Vietnam. *Health Policy and Planning, 20*(5), 319-327.

Tuoane, M., Diamond, I., & Madise, N. (n.d.). Use of family planning in Lesotho: The importance of quality of care and access. *African Population Studies, 18*(2), 105-132.

U.S. Central Intelligence Agency. (n.d., August, 2003). The World Factbook: Kenya. Retrieved August 3, 2003, from http://www.cia.gov/cia/publications/factbook/geos/ke.html

Ubaidur, R., Hossain, S., Khan, M., Al-Sabir, A., & Alam, M. (2004). *Integration of reproductive health services for men in health and family welfare centers in Bangladesh, FRONTIERS Final Report*. Washington, D.C.: Population Council.

UK Department for International Development. (2004). *DFID Rural and urban development case study-Kenya*. Oxford: Oxford Policy Management.

UNAIDS. (2001, 29 November - 1 December, 2001). Improving access to care in developing countries: Lessons from practice, research, resources and partnerships. Report from a meeting: Advocating for access to care and sharing experiences.

UNAIDS. (2002). Report on the Global HIV/AIDS Epidemic 2002. Retrieved September 8, 2003, from http://www.unaids.org/html/pub/Global-Reports/Barcelona/BRcover_en_pdf.htm

UNFPA. (2003). *Education is empowerment: Promoting goals in population, reproductive health and gender. Report of a technical consultation on UNFPA's role in education. 8-10 December.* New York: United Nations Population Fund.

United Nations Development Programme. (2001). Human development report. Retrieved 23 May, 2003, from http://www.undp.org/hdr2001/back.pdf

United Nations General Assembly. (2000). United Nations Millennium Declaration A/RES/55/2. 2005, from http://www.un.org/millennium/declaration/ares552e.pdf

United Nations Population Fund. (n.d.). International conference on population and development. Retrieved 31 March, 2004, from http://www.unfpa.org/icpd/overview.htm

United Nations Statistics Division. (2000). Millennium indicators developing countries. Retrieved August 5, 2003, from http://unstats.un.org/unsd/mi/mi_resultsd.asp?crID=404&fID=r15&action=print

United States Agency for International Development. (2006). Horn of Africa (Djibouti, Ethiopia, Kenya, & Somalia) - Complex Emergency Situation Report #16 (FY 2006). Retrieved May 23, 2006, from http://www.reliefweb.int/rw/dbc.nsf/doc100?OpenForm

USAID. (2002). *Kenya: Urban profile*: U.S. Agency for International Development (USAID).

USAID: Bureau for Global Health. (2003). Country profile: Kenya. Retrieved July 9, 2003, from http://www.usaid.gov/pop_health/aids/Countries/africa/kenya.html

van Wijk, C. M. T. G., van Vliet, K. P., & Kolk, A. M. (1996). Gender perspectives and quality of care: Towards appropriate and adequate health care for women. *Social Science & Medicine, 43*(5), 707-720.

Vlassoff, C. (1994). Gender inequalities in health in the third world: Uncharted ground. *Social Science & Medicine, 39*(9), 1249-1259.

Vlassoff, C., & Garcia Moreno, C. (2002). Placing gender at the centre of health programming: challenges and limitations. *Social Science & Medicine, 54,* 1713-1723.

Wagner, A. K., Gandek, B., Aaronson, N. K., Acquadro, C., Alonso, J., Apolone, G., et al. (1998). Cross-cultural comparisons of the content of SF-36 translations across 10 countries: results from the IQOLA Project. International Quality of Life Assessment. *Journal of Clinical Epidemiology, 51*(11), 925-932.

Walters, V., McDonough, P., & Strohschein, L. (2002). The influence of work, household structure, and social, personal and material resources on gender differences in health: an analysis of the 1994 Canadian National Population Health Survey. *Social Science & Medicine, 54*(5), 677-692.

Ward, J. (2002). *If not now, when? Addressing gender-based violence in refugee, internally displaced, and post-conflict settings. A global overview.* New York: The Reproductive Health for Refugees Consortium.

Waweru, L., Kabiru, J., Mbithi, J., & Some, E. (2003). Health status and health seeking behaviour of the elderly persons in Dagoretti Division, Nairobi. *East African Medical Journal, 80*(2), 63-68.

Welbourn, A. (1999). Gender, sex and HIV: How to address issues that no-one wants to hear about (Y. Preiswerk, Trans.). In *Tant qu'on a la sante: les determinants socio-economiques et culturels de la sante dans les relations sociales entre les femmes et les hommes* (pp. 195-227). Geneva: UNESCO: Berne.

Wellstood, K., Wilson, K., & Eyles, J. (2006). 'Reasonable access' to primary care: assessing the role of individual and system characteristics. *Health Place, 12*(2), 121-130.

Whitaker, E. D. (2003). The idea of health: history, medical pluralism, and the management of the body in Emilia-Romagna, Italy. *Medical Anthropology Quarterly, 17*(3), 348-375.

Wiet, S. G. (2005). Future of caring for an aging population: trends, technology, and caregiving. *Studies in Health Technology and Informatics, 118,* 220-230.

Wikipedia. (n.d., August 10, 2003). Wikipedia: The free encyclopedia. Retrieved September 8, 2003, from http://www.wikipedia.org/wiki/Demographics_of_Kenya

Williams, H. A., & Jones, C. (2004). A critical review of behavioral issues related to malaria control in sub-Saharan Africa: what contributions have social scientists made? *Social Science & Medicine, 59*(3), 501-523.

Witter, S., & Osiga, G. (2004). Health service quality and users' perceptions in West Nile, Uganda. *International Journal of Health Planning & Management, 19,* 195-207.

Wolffers, I. (1997). Culture, media, and HIV/AIDS in Asia. *The Lancet, 349*(9044), 52.

Woolf, A. D., & Pfleger, B. (2005). Burden of osteoporosis and fractures in developing countries. *Current Osteoporosis Reports, 3*(3), 84-91.

World Bank. (1994). *World Development Report 1994*. Washington, D.C.: The World Bank.

World Health Organization. (1997). The Jakarta declaration on leading health promotion into the 21st century. HPR/HEP/41CHP/BR/97.4. Retrieved January 10, 2005

World Health Organization. (1998). Gender and Health Technical Paper[WHO/FRH/WHD/98.16]. Retrieved 4 March, 2003, from www.who.int/reproductive_health/publications/WHD…/WHD_98_16.en.htm

World Health Organization. (2000, June 2000). Female genital mutilation: Fact sheet no. 241. Retrieved 14 March, 2003, from http://www.who.int/inf-fs/en/fact241.html

World Health Organization. (2003). WHO proposes strategy on women's health. Retrieved 29 March, 2004, from http://www.afro.who.int/press/2003/regionalcommittee/pr2003090305.html

World Health Organization. (2004, 2004). Measles deaths drops dramatically as vaccine reaches world's poorest children. Retrieved 29 April, 2004, from http://www.who.int/mediacentre/releases/2004/pr30/en/

Wyss, K., Whiting, D., & Kilima, P. (1996). Utilisation of government and private health services in Dar es Salaam. *East African Medical Journal, 73*, 357-363.

Yamasaki-Nakagawa, M., Ozasa, K., Yamada, N., Osuga, K., Shimouchi, A., Ishikawa, N., et al. (2001). Gender difference in diganosis and health care seeking behaviour in a rural area of Nepal. *The International Journal of Tuberculosis and Lung Disease, 5*(1), 24-31.

Zwi, A. B., & Yach, D. (2002). International health in the 21st Century: trends and challenges. *Social Science & Medicine, 54*(11), 1615-1620.

APPENDICES

APPENDIX A
QUESTIONNAIRE TOOL

Demographic, Socio-Economic and Health Information

STUDY NO_____ Date: _____[*dd-mm-yy*]

Interviewer_____Start time:_____

I would like to ask some questions about where and how you live and about your health. I would ask you to please answer them as honestly as you can.

Demographic Information

1. Village_____ Sub-location_____

2. Location _____Division_____

3. District_____ Province_____

4. How long have you lived in this district?_____

5. Have you lived away from this district for more than 6 months?

Answer	Code
Yes	1
No	2

6. If yes, where have you lived? _____

   (List all major locations and durations)

7. Sex:

Sex	Code
Female	1
Male	2

8. How old are you?

Age	Code
18 – 25 years	1
26 – 35 years	2
36 – 45 years	3
46 + years	4

9. Have you ever attended school and which level did you achieve?

Education	Code
None	1
Primary incomplete	2
Primary complete	3
Secondary and above	4
Don't know	5

10. If none, can you read or write a simple line?

Answer	Code
Yes	1
No	2

11. Can you read and understand a letter or newspaper easily, with difficulty, or not at all?

Level	Code
Easily	1
With difficulty	2
Not at all	3

12. Do you have a religion?

Religion	Code
Catholic	1
Protestant	2
Muslim	3
Hindu	4
African traditional religion	5
No religion	6

13. What is your marital status? (For training specify: "married through ceremony")

Status	Code
Never married	1
Married (monogamous)	2
Married (polygamous 2 wives)	3
Married (polygamous 3 wives)	4
Married (polygamous more than 3 wives)	5
Widowed	6
Separated	7
Divorced	8
Living together	9

14. Do you have any children?

Answer	Code
Yes	1
No	2

15. What is the age and sex of your children who live with you?

Ages	Female	Male	Total
0-5			
6-15			
16-25			
26-35			
36-45			
Above 46			

16. Do you have any other children that do not live with you?

Answer	Code
Yes	1
No	2

17. What is the age and sex of your children who do not live with you?

Ages	Female	Male	Total
0-5			
6-15			
16-25			
26-35			
36-45			
Above 46			

18. Do you have any other dependants that live with you?

Answer	Code
Yes	1
No	2

19. What is the age and sex of the dependents that live with you?

Ages	Female	Male	Total
0-5			
6-15			
16-25			
26-35			
36-45			
Above 46			

20. Do you have any other dependants that do not live with you?

Answer	Code
Yes	1
No	2

21. What is the age and sex of the dependents that do not live with you?

Ages	Female	Male	Total
0-5			
6-15			
16-25			
26-35			
36-45			
Above 46			

22. Are you the head of a household?

Answer	Code
Yes	1
No	2
Shared	3

23. What is your main occupation?

Occupation	Code
Subsistence farmer	1
Commercial farmer	2
Small-scale business	3
Large-scale business	4
Pastoralist	5
Formal employment	6
Civil service	7
Transport industry	8
Tourist industry	9
Casual labourer	10
Home duties	11
Unemployed	12

24. Is this work paid?

Answer	Code
Yes	1
No	2

25. If you are not the head of your household, what is the occupation of that person?

Occupation	Code
Subsistence farmer	1
Commercial farmer	2
Small-scale business	3
Large-scale business	4
Pastoralist	5
Formal employment	6
Civil service	7
Transport industry	8
Tourist industry	9
Casual labourer	10
Home duties	11
Unemployed	12

26. Is this work paid?

Answer	Code
Yes	1
No	2

27. Who provides sources of income to your household?
Please tick as appropriate.

Source of income	**Regular income** (Each month)	**Not regular income** (Some months)	**Infrequent** (rarely)
Husband			
Wife			
Children			
Others in household			
Others from outside the household			
Another source (specify):			

28. What activities provide sources of income to your household?
Please tick as appropriate.

Source of income	**Regular income** (Each month)	**Not regular income** (Some months)	**Infrequent** (rarely)
Formal occupation			
Crops from household			
Livestock from household			
Small scale business (jua kali)			
Larger business			
Assets owned			
Other sources [specify]:			

29. Who does the unpaid work that needs to be done for the household?

Person	**Most of the time**	**Sometimes**	**Rarely**
You			
Partner			
Children			
Other member of the household			
Shared by all household members			
Female household members			
Male household members			
A paid worker			

30. What do you normally spend the most money on?
Please rank in order of most money spent .

Area	**Rank Expenditure**
Food	
Clothing	
Housing/rent	
Healthcare	
Education/training	
Transport	
Labourers	
Leisure	
Others	

31. What is the main source of drinking water for members of your household?

Source	Code
Covered source [Well/piped/roof catchments]	1
Uncovered source [River/spring/stream/lake/pond]	2

32. Please describe the main material used for your home:

House	Material used
Roof	
Walls	
Floor	

[Interviewer to use codes below in the table]
Codes:
1=Mud 4=Thatch
2=Wood 5=Concrete/stone/bricks
3=Mabati (corrugated iron)

33. What kind of toilet facility does your household have?

Amenity	Code
Own flush toilet	1
Shared flush toilet	2
Traditional pit toilet	3
Ventilated improved pit	4
Latrine	5
No facility/bush/field	6

34. Does any member of your household own?

Transport	Code
A bicycle	1
A motorcycle	2
A car	3

35. Does your household have?
If yes, please circle which:

Amenity	Code
Electricity	1
A radio	2
A television	3
A telephone or mobile	4
A refrigerator	5
Running water	6

36. How many rooms in your household are used for sleeping?

Rooms	Code
1	1
2	2
3	3
More than 3	4

37. Where you live, do you?

Housing	Code
Own your house	1
Rent your house	2
Don't own house, but don't pay rent	3
Other: specify	4

Health Information

38. How would you rate your current health?

Rating	Code
Poor	1
Fair	2
Good	3
Excellent	4

39. How would you rate your health in the past year?

Rating	Code
Poor	1
Fair	2
Good	3
Excellent	4

40. Have you been ill in the past 3 months?

Answer	Code
Yes	1
No	2

41. Do you know what was making you ill?
(If multiple causes, circle each)

Illness	Code
Don't know	1
Malaria	2
Diarrhoea	3
Common cold	4
Skin infections	5
HIV/AIDs	6
Sexually transmitted infection	7
Respiratory infection	8
Other: specify 1	9
Specify 2	10
Specify 3	11

42. How did you know what was making you ill?

Diagnosis	Code
Self-diagnosis	1
Friend, neighbour or household member	2
Person in the duka la dawa or a shop	3
Clinic/hospital/medical person	4
Traditional healer	5
Other:specify	6

43. Did you seek any treatment?

Answer	Code
Yes	1
No	2

44. If yes, where did you seek treatment?

Place	Code
Treated self	1
Shop	2
Duka la dawa	3
Government Hospital or health centre	4
Private hospital or health centre	5
Government clinic or dispensary	6
Private clinic or dispensary	7
Traditional healer	8
Other (specify):	9

45. Were you able to get all the treatment you needed?

Answer	Code
Yes	1
No	2

46. If no, why not?

Reason	Code
Felt better	1
Too expensive	2
The entire course of treatment was not available	3
Other: specify	4
Don't know	5

47. Has anyone else in your household been ill in the past 3 months?

Answer	Code
Yes	1
No	2

48. If yes, do you know what was making them ill?
(If multiple causes, circle each)

Illness	Code
Don't know	1
Malaria	2
Diarrhoea	3
Common cold	4
Skin infections	5
HIV/AIDs	6
Sexually transmitted infection	7
Respiratory infection	8
Other: specify 1	9
Specify 2	10
Specify 3	11

49. How did you know what was making them ill?

Diagnosis	Code
Self-diagnosis	1
Friend, neighbour or household member	2
Person in the duka la dawa or shop	3
Clinic/hospital/medical person	4
Traditional healer	5
Other(specify):	6

50. Did this member of the household seek any treatment?

Answer	Code
Yes	1
No	2

51. If yes, where did they seek treatment?

Place	Code
Treated self	1
Shop	2
Duka la dawa	3
Government Hospital or health centre	4
Private hospital or health centre	5
Government clinic or dispensary	6
Private clinic or dispensary	7
Traditional healer	8
Other (specify):	9

52. Was this person able to get all the treatment they needed?

Answer	Code
Yes	1
No	2

53. If no, why not?

Reason	Code
Felt better	1
Too expensive	2
The entire course of treatment was not available	3
Other: specify	4
Don’t know	5

54. What was the cost of the treatment altogether?

Amount [Ksh]	Code
Free	1
100 and below	2
101 - 250	3
251 - 500	4
501-1000	5
1001-1500	6
1501-2000	7
2001-2500	8
2501-3000	9
3001 and above	10

55. Who paid for this?

Payment	Code
You	1
Someone else in your household	2
Borrowed money	3
Given money by another outside household or relative	4
Other: Specify	5

56. What kind of health facility is the nearest to your house?

Health facility	Code
Hospital	1
Health centre	2
Clinic	3
Dispensary	4

57. Which is the way you would normally get to this health facility?

Mode	Code
Foot	1
Bicycle/Boda boda	2
Motorbike	3
Vehicle	4
Camel/donkey	5
Other: specify	6

58. Using the way you would normally, how long does it take to get to this health facility?

Time	Code
Less than 15 minutes	1
Between 15 and 30 minutes	2
Between 30 minutes and 1 hour	3
Between 1 and 2 hours	4
More than 2 hours	5

59. Has there been a time when you needed to get to this health facility but was not able?

Answer	Code
Yes	1
No	2

60. Has there been a time when a member of your household needed to get to this health facility but was not able?

Answer	Code
Yes	1
No	2

61. If you had a choice, where would you seek treatment for yourself?

Place	Code
Shop	1
Duka la dawa	2
Government hospital	3
Private/mission hospital	4
Government health centre	5
Private/mission health centre	6
Government clinic/dispensary	7
Private clinic/dispensary	8
Traditional healer	9
Other, specify:	10

62. If you had a choice, where would you seek treatment for a member of your household who falls sick?

Place	Code
Shop	1
Duka la dawa	2
Government hospital	3
Private/mission hospital	4
Government health centre	5
Private/mission health centre	6
Government clinic/dispensary	7
Private clinic/dispensary	8
Traditional healer	9
Other, specify:	10

63. Who normally makes the decisions about the healthcare of members of your household?

Person	Code
You	1
Your partner	2
Shared	3
Another person in the household	4
An outside person	5

64. What do you think are the most common illnesses in this area [Rank in ascending order]?

Illness	Rank	Code
Don’t know		1
Malaria		2
Diarrhoea		3
Common cold		4
Skin infections		5
HIV/AIDs		6
Sexually transmitted infection		7
Respiratory infection		8
Other: specify 1		8
Specify 2		9
Specify 3		10

65. Which is the most common source of supply of medicines to your household?

Source	Code
Hospital/health centre/clinic	1
Shop/kiosk/market	2
Friends	3
Private doctor/nurse	4
Pharmacy/chemist	5
Outreach/Community health worker	6
At work	7
Traditional remedies	8
Other[specify]	9

66. When a child is sick with diarrhoea, what signs of illness would tell you that he or she should be taken to a health facility or health worker?

Record all mentioned.

Symptoms	Code
Repeated watery stool	1
Any watery stools	2
Watery stools with stomach pain	3
Repeated vomiting	4
Any vomiting	5
Blood in stools	6
Fever	7
Very thirsty	8
Not eating/not drinking well	9
Getting sicker/very sick	10
Not getting any better	11
Other: specify	12
Don’t know	13

67. When a child is sick with a fever, what signs of illness would tell you that he or she should be taken to a health facility or health worker?

Record all mentioned.

Symptoms	Code
Fever increasing/very high	1
Fever recurrent	2
Difficult breathing	3
Noisy breathing	4
Convulsions	5
Shivering	6
Unable to drink	7
Not eating/not drinking well	8
Not getting any better	9
Other: specify	10
Don’t know	11

68. Have you been diagnosed with malaria at a health facility in the past 4 weeks?

Answer	Code
Yes	1
No	2

69. Was a malaria smear done?

Answer	Code
Yes	1
No	2

70. What medication did you take?

Medication	Code
Chloroquine	1
Camoquine	2
Fansidar	3
Metakelfin	4
Quinine	5
Amodiaqine	6
Other, specify:	7

71. Do you use any family planning/contraceptive method?
(This is for both males and females ie. males using condoms as well as females using the oral contraceptive pill.)

Answer	Code
Yes	1
No	2

72. Who makes the decisions about family planning/contraception?

Person	Code
You	1
Your partner	2
Shared	3

73. If you use a family planning or contraceptive method, which kind do you use?

Modern method	Code	Non modern method	Code
Pill	1	Natural family planning	1
Injectibles	2	Periodic abstinence	2
Condoms	3	Withdrawal	3
IUCD	4	Folk/herbal methods	4
Tubal ligation	5	Others[specify]	5
Vasectomy	6		
Foaming tablets	7		
Diaphragm	8		
Implants	9		

74. If you had the choice which type of family planning or contraceptive method would you use?

Modern method	Code	Non modern method	Code
Pill	1	Natural family planning	1
Injectibles	2	Periodic abstinence	2
Condoms	3	Withdrawal	3
IUCD	4	Folk/herbal methods	4
Tubal ligation	5	Total abstinence	5
Vasectomy	6	Others[specify]	6
Foaming tablets	7		
Diaphragm	8		
Implants	9		

75. If you don't currently use a family planning or contraceptive method would you like to?

Answer	Code
Yes	1
No	2

76. What is the main reason you are not using a method of family planning or contraception?

Reason	Code
Not married	1
Not intending to marry	2
Not having sex	3
Menopausal/hysterectomy/infertile	4
Postpartum/breastfeeding	5
Want more children	6
Health concerns	7
Respondent opposed	8
Partner opposed	9
Other opposed	10
Religious prohibition	11
Cost	12
Lack of access	13
Don't know where to go	14
Lack of knowledge about methods	15
Other: specify	16
Don't know	17

77. What is your biggest concern about your health and the health of those in your household?

78. Are there any other comments you would like to make?

We would like to thank you for your time.

End time:_____

APPENDIX B
CONSENT FORM ENGLISH/KISWAHILI

Informed Consent Agreement – English

TITLE OF STUDY: Serosurvey of Arboviral Illnesses, Socioeconomic Determinants of Arboviral Infection, and Determination of in vivo Antimalarial Resistance in Three Distinct Districts of Kenya.

INSTITUTIONS: Kenya Medical Research Institute, Busia and Nairobi, Kenya; United States Army Medical Research Unit – Kenya, Nairobi, Kenya.

PRINCIPAL INVESTIGATORS: Nicholas Adungo, PhD; Fredrick Ogolla, BSoc; Trish Prosser, BPsych; Rodney Coldren, MD, MPH.

PARTICIPATION: Participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue your participation at any time without penalty or loss of benefits. The principal investigator may decide to withdraw you from the study if we are unable to obtain a blood sample.

INTRODUCTION: We are interested in finding out how many people in your community currently have malaria or have had a viral illness in the past. We will test your blood sample for the presence of malaria. Your blood will also be tested in Nairobi for germs, such as alpha-, arena-, bunya-, filo-, flavi-, nairo-, and phleboviruses. These are viruses that are commonly found in East Africa.

PROCEDURES TO BE FOLLOWED:

Questionnaire: If you agree to participate, we will ask you some questions about your age, sex, occupation, residence, income, and health questions.

Lab tests: Approximately ½ teaspoon of blood (3 milliliters) will be drawn from your arm. The blood will then be examined for malaria. You will be informed of the results of this test and offered treatment if you have malaria. Some of the blood will then be sent to laboratories in Nairobi to test for a history of infection with certain viruses. HIV testing is not a part of this study. However, if one of the people performing this study suffers a needle-stick injury, you may be asked to give an additional ½ teaspoon of blood for an HIV test, to guide treatment of the study personnel injured. An HIV test will only be performed if someone performing the study has a needlestick injury and if you agree to this test. No HIV testing will be performed unless you tell us we can do this testing.

Check here if you are willing to undergo this testing if one of our staff accidentally sticks themselves with a needle after drawing your blood.

RISKS: The risk from participation in this study is minimal. There is the possibility of mild discomfort, bruising and very rarely infection at the site where the blood is obtained. The technician will use care to cause as little pain as possible during the blood draw. If the site should become infected, we can treat that with medication.

BENEFITS: If you have malaria, the study will ensure that you receive treatment at no cost to you.

COMPENSATION: There is no compensation to volunteers for their participation.

DURATION OF PARTICIPTION: This study only requires one blood draw and the questionnaire. There is no follow-up or further information needed.

WHO CAN PARTICIPATE IN THIS STUDY: All adults (those older than 17 years old) in your village are eligible for enrollment, provided they agree to be part of the study and must have lived in this district for at least 5 years.

ASSURANCE OF CONFIDENTIALITY OF VOLUNTEER'S IDENTITY: Records relating to your participation in the study will remain confidential. Your name will not be used in any report resulting from this study. All questionnaires, computerized records, and laboratory specimens will contain only a unique study number, not your name. You will receive a signed copy of this consent form.

USE OF BLOOD SAMPLES: Your malaria smears may be kept and used for training of laboratory technicians and other laboratory personnel. However, your name will not appear on these slides. The remainder of the blood samples obtained in this study will be discarded. This blood will not be tested for HIV in the future. If your malaria smear is positive, the results of your malaria smears will be shared with a medical or clinical officer at the local district hospital so that medication can be prescribed.

REVIEW OF RESEARCH RECORDS: It should be noted that representatives of the US Army Medical Research and Materiel Command are eligible to review research records as a part of their responsibility to protect human subjects in research. Interview and consent forms will be kept in a locked file at KEMRI or a designated storage facility for not less than 10 years following completion of the study. These data sheets will be made available only to the Principal Investigators, clinical personnel who require this information to treat the patient, or to members of the Ministry of Health who require this information for legal reasons or to investigate an outbreak.

MEDICAL CARE FOR RESEARCH RELATED INJURY: Should you be injured as a direct result of participating in this research project, you will be provided medical care, at no cost to you, for that injury. You will also be referred to the nearest medical facility for further management. You will not receive any injury compensation, only medical care. You should also understand that this is not a waiver or release of your legal rights. You should discuss this issue thoroughly with the principal investigator before you enroll in this study.

PERSONS AND PLACES FOR ANSWERS IN THE EVENT OF RESEARCH RELATED INJURY: If you think you have a medical problem related to this study, please report to Dr. Rodney Coldren, Medical Research Unit, Box 606, Village Market, 00621 Nairobi, Phone: 254-20-2713689.

PERSONS AND PLACES FOR ANSWERS REGARDING YOUR RIGHTS AS A RESEARCH SUBJECT: If during the course of this study, you have questions concerning the nature of the research or you believe you have sustained a research-related injury, you should contact Dr. Coldren at PO Box 606, Village Market, 00621 Nairobi, Kenya, tel 254-20-2713689. The Chairman of the Kenya National Ethical Review Committee, c/o Kenya Medical Research Institute, P.O. Box 54840, Nairobi, Kenya, tel. 254-20-272251 or Deputy for Regulatory Compliance and Quality, Human Subject Protection, MRMC-RCQ-HR, 504 Scott St., Fort Detrick, MD 21702, USA, Phone: 0001-301-619-2165 can also be contacted concerning your rights as a research volunteer.

IF THERE IS ANY PORTION OF THIS CONSENT AGREEMENT THAT YOU DO NOT UNDERSTAND, ASK THE FIELD WORKER OR INVESTIGATOR BEFORE SIGNING.

I, _____(Name) having full capacity to consent for myself and having attained my ____birthday, do hereby consent to my participation in the research study: "Serosurvey of Arboviral Illnesses, Socioeconomic Determinants of Arboviral Infection, and Determination of in vivo Antimalarial Sensitivity in Three Distinct Districts of Kenya" under the direction of Dr. Nicholas Adungo, Fredrick Ogolla, Trish Prosser, and Dr. Rodney Coldren. The methods and means by which the study will be conducted and the risks which may be reasonably expected have been explained to me by _____. I have been given the opportunity to ask questions concerning this investigational study, and any such questions have been answered to my full and complete satisfaction.

I understand that I may at any time during the course of this study revoke this consent and withdraw myself from the study without prejudice.

Subject's Signature: _____ Date: _____

Permanent Address: _____

Witness's Name: _____

Witness's Signature: _____ Date: _____

Study Number: _____

Informed Consent Agreement – Kiswahili

FOMU YA MAELEZO NA MAKUBALIANO

KICHWA CHA UTAFITI: Uchunguzi wa ugonjwa wa homa kali(Arboviral illness), na sababu za kiuchumi na kijamii zinazosababisha maumbukizo ya homa kali, na uchunguzi wa uwezo wa madawa ya malaria kukabiliana na ugonjwa wa malaria katika wilaya tatu za Kenya.

VITUO
Kenya Medical Research Insitute, Busia na Nairobi, Kenya (KEMRI) ; United States Army Medical Research Unit-Kenya,Nairobi,Kenya(USAMRU-K)

WATAFITI WAKUU
Nicholas Adungo, PHD;Fredrick Ogolla, Bsoc;Trish Prosser BPsych ;Rodney Coldren, MD MPH

WATU NA MAHALI PA MAJIBU KWA MASWALI KUHUSU HAKI ZAKO KAMA MSHIRIKI KATIKA UTAFITI: Iwapo utakuwa na maswali kulingana na utafiti huu au ukipata majeraha kutokana na utafiti huu, tafadhali wasiliana na daktari Rodney Coldren SLP, 606 Village Market 00621, Nairobi, Kenya,nambari ya simu 02-2713689, au daktari Nicholas Adungo SLP 3, Busia, Kenya, nambari ya simu 055-22410. Waweza pia kuwasiliana na mwenye kiti wa kamati ya kuzingatia maadili ya utafiti(kituo cha utafiti cha Kenya) C/o KEMRI ,SLP 54840, Nairobi,Kenya, nambari ya simu 02-272251 .
Iwapo usaidizi zaidi utahitajika, wasiliana na :

Wilaya ya Malindi Bwana Jeremiah Kambe , Clinical Officer. Malindi District Hospital simu,
042-20491

Wilaya ya Samburu Bwana Elias Muhidin Mumin, Clinical Officer, Isiolo District Hospital simu 0733-496974
Wilaya ya Busia Bwana Cornel Okello, Clinical Officer, KEMRI, simu 0733-689814

KUSHIRIKI
Kushiriki kwako ni kwa hiari .Kutoshiriki kwako kwenye utafiti huu hakutasababisha madhara yoyote kwako.
Una uhuru wa kujitoa kwenye utafiti huu wakati wowote upendao bila kuadhibiwa au kunyimwa faida ambazo ni haki yako. Mtafiti mkuu anaweza kuamua kukuondoa katika utafiti huu iwapo watashindwa kukutoa damu .Unatakikana kusoma maelezo katika fomu hii na kuuliza maswali iwapo utakosa kuelewa jambo lolote kabla kuamua kushiriki au kutoshiriki.

UAMUZI WA KUSHIRIKI: Unao uwezo wa kutoshiriki kwenye utafiti huu.
UTANGULIZI
Madhumuni ya utafiti huu ni kujua ni wagonjwa wangapi wanaugua malaria au waliugua maradhi mengine mbeleni. Tutachunguza kuwepo vijidudu vya

malaria kwenye damu yako.Damu yako itatumwa Nairobi kuchunguza kuwepo kwa viini kama alpha, bunya,filo na flavi.Hivi ni viini vinavyopatikana sana Afrika ya mashariki. Tutachunguza idadi ya watu kati ya 204 na wasiozidi 1000 katika kila wilaya.

MAENEO YA UTAFITI: Wilaya za Malindi , Samburu na Busia.

TARATIBU ZITAKAZOFWATWA

FOMU YA MASWALI: Kama umekubali kuhusishwa utaulizwa maswali kama vile umri wako, jinsia yako yaani mume/mke,kazi,mahali unapoishi, mapato yako na maswali ya kiafya.

UCHUNGUZI WA KIMAABARA: Tutatoa damu kiasi cha nusu kijiko cha chai kutoka kwa mkono. Damu hiyo itachunguzwa ugonjwa wa malaria.Utajulishwa matokeo ya damu na utatibiwa iwapo utakuwa na malaria.Baadhi ya damu itatumwa katika maabara kule Nairobi kusudi kufanyiwa uchunguzi zaidi kama kumetokea maambukizi yoyote ya virusi kwa siku zilizopita.Kuchunguza ukimwi sio lengo la utafiti huu, isipokuwa kama mwenye kukutoa damu atajidunga kwa sindano kimakosa,basi huwenda ukaulizwa kutolewa damu kiasi cha nusu kijiko cha chai kusudi kufanyiwa uchunguzi wa ukimwi ili, mwenye kujeruhiwa apate matibabu.Hakuna uchunguzi wa ukimwi utakaofanywa bila ya mtafiti yoyote kujeruhiwa kimakosa kwa sindano na bila wewe kupeana idhini ya kufanyiwa uchunguzi wa ukimwi.
Weka alama hapa kama utakubali uchunguzi huu ufanywe iwapo mfanyikazi wetu atajidunga kwa sindano kimakosa waka□anapokutoa damu.

MADHARA: Hatutarajii madhara yoyote isipokuwa kuna uwezekano wa kujihisi kidogo vibaya, kutokwa chubuko, au maambukizo ambayo ni nadra sana, mahala utakapotolewa damu.Mwenye kukutoa damu atakuwa na uangalifu mwingi atakapokuwa akikutoa damu.Iwapo mahali utakapotolewa damu patapata maambukizo tutakupa matibabu.

FAIDA: Iwapo utapatikana na malaria, utaelezwa matokeo na kupewa matibabu ya bure.Hautapewa majibu ya magonjwa mengine ambayo uliugua na kupona mbeleni.

RIDHAA: Hakuna ridhaa yoyote itakayotokana na kushiriki kwenye utafiti huu.

MUDA UTAKAOHUSIKA: Utafiti utahitaji damu mara moja tu na kujaza fomu ya maswali. Hakuna mafatilio ama habari zaidi zitakazohitajika. Muda utakaohusika ni kama muda wa saa nzima kwa jumla.

WATAKAOSHIRIKI KWENYE UTAFITI: Watu wazima (miaka 18 na zaidi) katika kijiji chenu wanaweza kushiriki mradi wamekubali kushiriki na wameishi wilayani humo kwa muda usiopungua miaka mitano.

HAKIKISHO LA USIRI KWA MWENYE KUHUSIKA: Rekodi zinazohusiana na kushiriki kwako katika utafiti huu itakuwa siri .Majina yako hayatatumika katika ripoti yoyote itakayotokana na utafiti huu.Rekodi zote katika fomu ya maswali, komputa na damu kwenya maabara zitapewa nambari za kipekee wala

hazitatumia majina ya mshiriki. Utapata nakili ya fomu ya makubaliano baada ya kutia sahihi.

MATUMIZI YA DAMU: Damu yako itakayopatikana na malaria huenda ikawekwa na kutumika kuwafunza wafanyikazi wa maabara.Hata hivyo majina yako hayatatumika kwenye damu hii. Mabaki ya damu yatatupwa na haitatumika kuchunguza ukimwi kwa siku zijazo.Iwapo damu yako itakuwa na malaria, matokeo ya uchunguzi huu watapewa muuguzi au daktari wako ili yakusaidie kimatibabu.

UCHUNGUZI WA REKODI ZA UTAFITI: Ni muhimu kuzingatia ya kwamba waakilishi wa kituo cha utafiti cha jeshi la marekani(US Army Medical research and Material Command) wana wajibu wa kuchunguza rekodi za utafiti kama jukumu lao la kuhakikisha utafiti unafanywa kwa njia ipasayo na kulinda wanadamu wanaohusika katika utafiti.Fomu za makubaliano na maswali zitawekwa mahala penye usalama huko KEMRI (NRB) kwa muda usiopungua miaka kumi baada ya utafiti huu. Rekodi hizi zitapatikana tu kwa watafiti wakuu na wasaidizi wao ambao watahitaji ripoti fulani ili kutibu mgonjwa. Zitapatikana pia kwa wafanyikazi wa idara ya afya ambao watahitaji ripoti hizi kwa matumizi ya kisheria au kuchunguza kutokea na kuenea kwa ugonjwa wowote.

MATIBABU YA MAJERAHA YATAKAYOTOKANA NA UTAFITI: Ikiwa utapata majeraha kwa kuhusika katika utafiti huu utapata matibabu bila gharama yoyote kwako.Hautalipwa ridhawa kwa majeraha hayo lakini utapewa matibabu ya bure. Usione hapa umenyimwa haki yako, unatakikana kuzungumza mambo haya na mkuu wa utafiti kabla ya kujiandikisha katika utafiti huu.

WATU NA MAHALI PA MAJIBU KWA MASWALI IWAPO UTAPATA MAJERAHA KATIKA UTAFITI HUU: Ikiwa utakuwa na shida ya kiafya kutokana na utafiti huu, tafadhali wasiliana na daktari Rodney Coldren, Medical Research Unit, SLP 606 Village market,00621 Nairobi, Kenya. Nambari ya simu:02-2713

KAMA KUNA SEHEMU FULANI KATIKA FOMU HII AMBAYO HUELEWI, ULIZA MTAFITI MKUU AU MSAIDIZI WAKE KABLA YA KUTIA SAHIHI.

Mimi,_____(jina), nikiwa na fursa zote za kujiamulia kama mtu mzima na kama nilivyohitimu miaka(umri)_____, najitolea kushiriki katika utafiti huu:"Uchunguzi wa homa kali na sababu za kiuchumi na kijamii zinazosababisha kuambukizwa homa kali, na uchunguzi wa uwezo wa wa madawa ya malaria kukabiliana na malaria katika wilaya tatu za Kenya" chini ya maongozi ya daktari Nicholas Adungo, Fredrick Ogolla ,Trish Prosser, na daktari Rodney Coldren. Taratibu zitakazofwatwa katika utafiti huu na madhara yanayoweza kutokana yameelezwa kwangu na

. Nimepewa fursa ya kuuliza maswali kuhusu utafiti huu na nimeridhika na majibu niliyopewa. Naelewa ya kwamba wakati wowote katika utafiti huu ninaweza kubadili makubaliano haya na kujiondoa katika utafiti huu na wala sitapoteza haki zangu.

Sahihi ya mshiriki_____ Tarehe:

Anwani:

Jina la shahidi:

Sahihi la shahidi: Tarehe:

Nambari ya utafiti:

APPENDIX C
WITNESS TO CONSENT

Witness to Consent

I, _____, certifiy that I witnessed the consent interview as above. The subject has stated that they fully understand the purpose of the study and the risks and benefits involved and that they agree to participate in the study.

Witness to interview:_____

Date:_____

Contact:_____