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A comparison of nurses' clinical judgement and the short form-mini nutritional assessment tool in assessing the nutritional status of older patients in an acute clinical setting

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A COMPARISON OF NURSES' CLINICAL JUDGEMENT AND THE SHORT FORM-
MINI NUTRITIONAL ASSESSMENT TOOL IN ASSESSING THE NUTRITIONAL
STATUS OF OLDER PATIENTS IN AN ACUTE CLINICAL SETTING

A thesis submitted in partial fulfilment of the requirements for the degree of
Bachelor of Nursing (Honours)

Roger Shreeve

School of Nursing, Midwifery and Postgraduate Medicine

Edith Cowan University

May, 2006



ABSTRACT

Decreased nutritional status of older hospitalised patients has been identified as a significant problem. The prevalence of malnutrition in older people has been reported to be between 17% and 65% in acute hospital settings. This has led to the recognition of a need for a valid instrument to adequately assess nutritional status. Tools developed to date still require much time and expertise to implement, limiting their use within the practical setting. Nurses are in an ideal position to conduct nutritional assessments. They possess clinical knowledge which can be utilised to provide individualised and timely assessment. To date, the literature does not indicate that any specific comparison between nurses' clinical judgement and a nutritional assessment tool has been conducted to verify the reliability of nurses' clinical judgement in the assessment of nutritional status with older patients in an acute clinical setting. The purpose of this study was to compare nurses' clinical judgement with a validated assessment tool the Short Form-Mini Nutritional Assessment in assessing the nutritional status of older patients in the acute clinical setting. This was to determine whether nurses' clinical judgement can accurately assess older patients' nutritional status. The study used a descriptive comparative design. The sample consisted of 138 patients aged 65 years and over in a major teaching hospital in Perth, Western Australia. The assessment tool was used by the investigator to assess the nutritional status of the patients. Nurses were asked to assess the same patients using their clinical judgement. Assessments were rated as 0 (normal) or 1 (possible malnutrition). Eligible patients were invited to participate and consent was obtained from participants or their relative prior to commencement of any assessment. Findings from this study indicate that nurses failed to assess 33% of patients as having possible malnutrition compared with the MNA-SF (using the lower cut off score of 10 for possible malnutrition). A total of 35% ($n=48$) of patients were assessed by nurses as having a possible risk of malnutrition compared with 60% ($n=83$) of patients assessed using the MNA-SF (using the lower cut off score of 10 for possible malnutrition). Nurses agreed with the tool for just over 50% of all assessments. Analysis by the kappa statistic showed that the strength of agreement between nurses' clinical judgment and the MNA-SF, using the cut off score of 10, was fair (0.222; 95% CI, of 0.08 to 0.36). The strength of agreement for the majority of comparisons

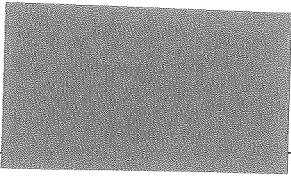
between nurses' clinical judgment and the MNA-SF by demographic variables within this study was found to be poor. The discrepancy between nurse and tool assessments within this study warrants an evaluation and development of nutritional education for nurses to assist them in their assessment of older patients' nutritional status. Additionally, the findings of this study indicate that the implementation of an assessment tool may be useful to assist nurses in assessing their patients' nutritional status. Further research is recommended to identify an appropriate nutritional assessment tool for the acute clinical setting.

DECLARATION

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

- (i) incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education.
- (ii) contain any material previously published or written by another person except where due reference is made in the text, or
- (iii) contain any defamatory material

Signed



Dated

4/9/06

Roger Shreeve

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I would like to thank my supervisors, Associate Professor Sue Nikoletti and Jeanne Young, for their professional direction, support and encouragement. I am truly indebted to their experience. This thesis is testimonial to their encouragement and professional guidance.

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This work is dedicated to my mother, Heather

‘All honours go to you mum!’

Thank you, Roger.

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CHAPTER ONE

Introduction

Background of the Study

Compromised nutritional status of older hospitalised patients has been identified as a major concern (Rubenstein, Harker, Guigoz, & Vellas, 1997). The effects of poor nutrition have been identified as leading to increased vulnerability to infections, decreased quality of life and mortality (Guigoz, Vellas, & Garry, 1996; Keller, 1993). Adequate nutrition is considered crucial to good health, immune processes, disease prevention (Silver, Morley, Strome, Jones, & Vicker, 1988) and quality of life (Curl & Warren, 1997).

Accurate assessment of nutritional status is vital to enable appropriate interventions for older patients who are at risk of undernutrition. To date such assessments have been made through extensive and somewhat invasive treatments such as blood serum tests, biochemical analysis and anthropometric measurements (Perry, 1997). These assessments, however, have proved to be time consuming, demanding on resources and require prior education/training. Recently developed nutritional assessment tools often still incorporate these measurements. The task of performing such assessments on large populations of at risk patients is considered to be impractical, emphasising issues of time, resource management and highlighting a need for a reliable alternative to assess nutritional status (Visvanathan, Penhal, & Chapman, 2004).

Nurses are in constant contact with patients and are in an ideal position to assess nutritional status (Craven & Hirnle, 2000; Soderhamn & Soderhamn, 2002). The introduction of assessment tools, however, is often viewed as burdensome and as 'just another piece of paper' in an otherwise busy schedule, resulting in inadequate data collection and analysis (Jordan, Snow, Hayes, & Williams, 2003). Furthermore, Jordan et al. (2003) showed that findings from the use of assessment tools had limited impact on ward practice, leading to the question of the usefulness of assessment tools. An alternative to using such assessment tools is the use of nurses' clinical judgement. The advantages of

using nurses' clinical judgement to assess older patients' nutritional status, relate to the effective use of resources in terms of clinical skills, time management and alleviating cost associated with using skilled professionals to perform assessments such as blood serum test and extensive anthropometric measurements.

There appears to be limited research comparing the findings of nurses' clinical judgement of nutritional status, with findings from the use of a nutritional assessment tool. Only two similar studies have been found on nurses' accuracy in assessing patients' nutritional status. A study by Abayomi and Hackett (2004), investigated the issue in a mental health setting. The study indicated that nurses overlooked 29% of at risk patients; however the tool used for comparison, which had been altered for the mental health setting, had not been validated against nutritional status criteria. Abayomi and Hackett's (2004) study found that nurses were associating malnutrition with psychosis; this was not expected to be an issue in the acute setting.

A study by Pattison et al. (1995) compared a subjective scoring system (nurses' and dieticians' subjective assessment) with objective markers (anthropometric measurements) in measuring agreement between nurses and dieticians in assessing nutritional status. No significant agreement was found between nurses and dieticians and the authors suggested that these two scoring systems may not be interchangeable. The study highlights the need to specifically investigate nurses' ability to accurately assess older patients' nutritional status. Another study comparing nurses' and dieticians' assessment of nutritional status was undertaken by Richardson and Davidson (1996, cited in Lyne, 1999). However, this study compared nurses' and dieticians' assessment using the same instrument to determine inter-rater reliability. To date, the literature does not indicate that any specific comparison between nurses' clinical judgement and a nutritional assessment tool has been conducted to verify the reliability of nurses' clinical judgement in the assessment of nutritional status with older patients in an acute clinical setting.

Significance of the Study

Concern about older patients' potential for compromised nutritional status highlights the need to develop accurate and efficient assessment criteria for assessing nutritional status. It was considered important to conduct a study to determine the ability of nurses to accurately assess nutritional status. If nurses' assessments are found to be accurate in comparison with assessment tool findings, the study's results may lead to less time and resources being spent on implementing another assessment tool, which may have limited effect in the practical setting (Holmes, 2000). Findings may also reduce unnecessary involvement of other health professionals and lead to the use of existing clinical knowledge to promptly address patients' nutritional needs. Conversely, if nurses' assessments are shown to be inaccurate, this will signify the need for further education and possibly the implementation of a validated tool to assess nutritional status.

Purpose of the Study

The purpose of this study was to compare the findings of nurses' clinical judgement with the findings of a validated nutritional assessment tool, the Short Form-Mini Nutritional Assessment (Rubenstein et al., 1997, Appendix A) in assessing the nutritional status of older patients in the acute clinical setting. This would determine whether nurses' clinical judgement can accurately assess nutritional status of older patients.

A secondary purpose of the study was to determine if factors affecting nurses' clinical judgment such as patients' age, gender and nurses' years of clinical experience affected the way in which nurses made their assessments.

Research Questions

The research questions addressed within the study were:

1. Is there a difference in the paired assessment score between nurses' clinical judgement and the Short Form-Mini Nutritional Assessment tool in assessing the nutritional status of older patients?
2. What proportion of the paired assessments disagree?
3. What are the relationships between the accuracy of nutritional assessments and demographic variables of patients (age, gender, medical diagnosis/conditions, dietetic referral, body mass index and cognitive status) and nurses (age, gender, position, type of nursing education, years of nursing experience, number of shifts they have cared for the patient and specific nutritional education)?
4. What rationales are provided by nurses for their clinical judgement of nutritional status?

Hypothesis

The hypothesis that was tested in this study was:

There will be no difference between findings of nurses' clinical judgement and the Short Form-Mini Nutritional Assessment scores for the nutritional status of older patients in the acute clinical setting.

Operational Definitions

Nutritional status

An individual's nutritional state is categorised within this study as either meeting nutrition requirements or possible malnutrition. Assessment will be based upon nurses'

clinical judgement and the Short Form-Mini Nutritional Assessment tool (Rubenstein et al., 1997).

Definition of Terms

Nutrition

The body's intake, absorption and utilisation of vital nutrients to maintain good health and system processes (Anderson, Keith, Novak, & Elliot, 2002; Dunne, 1990).

Malnutrition

Decreased nutritional status resulting from the inability to maintain body requirements within one's normal range (Chen, Schilling, & Lyder, 2001; Keller, 1993).

Anthropometric measurements

Height and weight measurements of the human body and its components, including skin fold test. Used to study and compare the body in normal and abnormal conditions (Anderson et al., 2002, p. 107).

Registered Nurse

A nurse registered with the Nurses' Board of Western Australia under Division One and able to practice nursing independently within Western Australia.

Enrolled Nurse

A nurse enrolled with the Nurses' Board of Western Australia under Division Two and able to practice nursing under the supervision of a Division One nurse registered in Western Australia.

Graduate Nurse

A Division One nurse within the first year of employment.

Definitions for nurse positions are guided by the Nurses Board of Western Australia (2004).

CHAPTER TWO

Literature Review

This literature review will introduce the relationship between aging and nutritional status in older patients. It will critique the literature on assessment tools and nurses' clinical judgement in relation to the issue of nutritional status. It will conclude with key factors presented within the review and the significance of the need for a comparison between an assessment tool and nurses' clinical judgement in the assessment of nutritional status of older patients.

Definition of Nutritional Status

Nutrition has been identified as the body's intake, absorption and utilisation of vital nutrients to maintain good health and system processes (Anderson et al., 2002; Dunne, 1990). There is a consensus among health professionals that essential nutrients such as carbohydrates, proteins, fatty acids, vitamins and minerals are necessary to achieve optimal health and disease prevention (Airola, 1982). Malnutrition on the other hand is often defined from differing perspectives; it has been viewed as an inadequate intake of nutrients (below daily requirements) or a condition of protein energy undernutrition which results in the loss of body mass (Chen et al., 2001). Alternatively, it has been described as decreased nutritional status with anthropometric measurements not within one's normal range (Keller, 1993). Chen et al. (2001) describes malnutrition in the elderly as a 'downward trajectory' in [one's] health and quality of life.

Nutritional Factors and Ageing

There are many dimensions of the aging process (Guigoz et al., 1996). This process entails physiological and psychological changes (Porth, 1998, p. 1317) that can impact on the maintenance of healthy nutritional status (Guigoz et al., 1996). Psychosocial issues such as socioeconomic factors and depression have been linked to undernutrition (Craven & Hirnle, 2000, p. 929; Morley & Kraenzle, 1994). Furthermore adequate nutrition is

considered crucial to good health, immune processes, disease prevention (Silver et al., 1988) and wound healing (Craven & Hirnle, 2000) and provides psychosocial benefits associated with quality of life (Curl & Warren, 1997). Dietetic intervention has been linked to better patient outcomes for nutritionally compromised patients (Litchford, 2004; Mc Ghee, Johnson, Rasmussen, & Sahyoun, 1995). The literature supports that a well nourished older person is less likely than a malnourished person to be susceptible to disease, resulting in decreased hospitalisation and thus saving health care dollars (Mc Ghee, Johnson, Rasmussen, & Sahyoun, 1995; Tucker & Miguel, 1996). On a personal level, good nutrition enhances quality of life for the individual.

A lack of interventions for nutritionally compromised individuals has been identified as leading to increased vulnerability to infections, decreased quality of life and mortality (Guigoz et al., 1996; Keller, 1993). Furthermore insufficient diet, decreased cognitive ability, the need for assistance with intake and pressure ulcers have all been associated with inadequate nutritional states (Blaum, O'Neil, Clements, Fries, & Fiatarone, 1997). One study in particular linked decreased nutritional status in older people with hospitalisation (Gazzotti et al., 2003). This finding highlights the necessity to address older peoples' nutritional status within the acute setting. Prompt assessment and identification of malnutrition will enable timely intervention to assist with individual nutritional needs (Soderhamn & Soderhamn, 2002). This assertion emphasises the importance of appropriate assessment of older patients' nutritional status by a validated tool or sound clinical judgement.

Contrary to these findings, some studies have found no direct relationship between age and risk of malnutrition (Silver et al., 1988; Keller, 1993). Other studies have found that factors such as cognitive status, physical capabilities and appetite are more indicative of nutritional status (Blaum et al., 1997; Keller, 1993). Another view is that, in many cases, minimal dietary intake is the reason for malnutrition (Rubenstein, Harker, Salva, Guigoz, & Vellas, 2001). It is apparent that, when investigating the literature, the ability to make legitimate contrasts between concepts of 'achieving good nutrition' and 'developing malnutrition,' can become clouded with semantics and terminology. Findings of these

studies highlight that any relationship between ageing and nutritional status is not easily defined. However, the potential impact of these factors on nutritional status in older patients clearly identifies the need to develop methods of assessment and early intervention.

Malnutrition in the Elderly

Statistics presented in the literature on elderly malnutrition uniformly substantiate the need to appropriately address the issue (Keller, 1993). Figures for malnutrition are reported to range from 12% to 85% in chronic nursing home patients (Keller, 1993) to 17% to 65% in acute hospital settings (Silver et al., 1988). Two recent studies conducted in Australia, one in a private and one in a public hospital, both indicated that 42% of patients within the respective settings were malnourished (Jukkola & Mac Lennan, 2005; Lazarus & Hamlyn, 2005). Two other recent Australian studies reported similar findings of malnutrition in older people, 38.4% and 43.1% to 75.4% (Visvanathan, Penhal, & Chapman, 2004; Visvanathan, Macintosh, Callary, Penhall, Horowitz, & Chapman, 2003). An earlier Australian study by Burge and Gazibarich (1999) investigated nutritional risk among community living elderly and found that 57% of participants were at risk of malnutrition. In contrast, a recent study conducted in Singapore on malnutrition screening of hospitalised patients by Raja et al. (2004), found that 14.7% of patients were malnourished. According to the Australian Bureau of Statistics (2002), by the year 2051 it is predicted that the number of older people 65 years and over will have increased to 24 to 26% of the total Australian population (6 to 6.3 million). This substantial increase combined with even conservative malnutrition estimates will have great implications for health care delivery and will possibly contribute to increased health care problems, such as morbidity, resulting in increased lengths of hospital stay and health care costs and increased mortality (Covinsky et al., 1999).

Assessment Tools for Nutritional Status

The literature search for tools to assess nutritional status was performed using electronic databases and reference lists. Key words of nutritional status, the elderly, malnutrition and assessment tools were used with CINAHL, MEDLINE, PROQUEST and PUBMED databases.

The literature indicates a need for the validation of an assessment tool to assess nutritional status and malnutrition of older people (Blaum et al., 1997; Guigoz et al., 1996; Rubenstein et al., 2001; Vellas et al., 1999). Only recently have tools been developed, however, they do not all appear to directly assess malnutrition. Rather, they assess compounding and associated aspects of nutritional states (Vellas et al., 1999). Accurate confirmation of decreased nutritional status has in the past depended upon the combined assessment of the following measurements: anthropometric measures (weight, height, arm circumference and body mass index) (Blaum et al., 1997; Guigoz et al., 1996; Vellas et al., 1999), serum blood levels (fatty acids and iron serum levels) (Gaedeke, 1996) and lengthy questionnaires (including dietary habits, cognitive and physical capability parameters) (Guigoz et al., 1996). While these assessments provide accurate diagnostic data, their demand on time and expertise renders their use problematic and presents implications for resource management.

Overview of Assessment Tools

Arriving at a consensus for an accepted tool that assesses nutrition and malnutrition is difficult, as the concepts are not so easily defined and no gold standard exists for their validation (Azad, Murphy, Amos, & Toppan, 1999). The Public Awareness Checklist of the Nutrition Screening Initiative (Guigoz et al., 1996) is a recently developed test that can be performed by individuals themselves or alternatively through interviews conducted by a health professional. The application of this test is focused towards drawing attention to nutrition rather than assessing risk of malnutrition. As it highlights risk rather than

assessing patients' individual nutritional status, its use within the tertiary environment as a monitoring tool is limited (Azad et al., 1999; Guigoz et al., 1996).

The Subjective Global Assessment tool (Guigoz et al., 1996) utilises traditional nutritional variables for assessment and classifies outcomes based upon protein energy malnutrition status (Persson, Brismar, Kalzarski, Nordenstrom, & Cederholm, 2002). It focuses on problems associated with nutritional status as opposed to being a specific screening tool for malnutrition (Guigoz et al., 1996). Therefore this tool is not appropriate for assessing a patient's nutritional status.

The Nutrition Form for the elderly (NUFFE) (Soderhamn & Soderhamn, 2002) is based upon self reporting data of the patient. Its use to date has been limited to rehabilitation patients. The tool has been validated as a reasonably reliable assessment for under-nutritional states. This tool was compared against the more widely validated tool, the Mini-Nutritional Assessment. Current literature, however, indicates it has been used with only 170 patients; therefore further research is required before it can be considered as a fully validated tool for assessment in other settings (Soderhamn & Soderhamn, 2002).

The Mini Nutritional Assessment

The initial Mini Nutritional Assessment (MNA) (Rubenstein et al., 1997) study was conducted in Toulouse, France (1991) and compared a frail elderly population (n=105) with a healthy elderly population (n=50). The MNA consists of an 18 item assessment with a maximum score of 30. Twenty-four and above is considered well nourished, 17 to 23.5 shows a risk of malnutrition and a score less than 17 is considered malnourished. Evaluation of the tool indicated 96% sensitivity, 98% specificity with a predictive value of 97%. The instrument has been validated on more than 600 elderly in three international settings: France, New Mexico and Spain (Guigoz et al., 1996; Rubenstein et al., 2001; Vellas et al., 1999).

The Short Form-Mini Nutritional Assessment (MNA- SF, Appendix A) (Rubenstein et al., 2001), is a six point assessment checklist, developed from the original MNA, to screen nutritional status. Scores are identified using a zero to 14 scale. A score of 11 and below indicates possible malnutrition, while a score of 12 and above indicates normal nutritional status (Rubenstein et al., 2001). The MNA-SF was developed due to the problems associated with the length of the MNA and the practical implications of implementing it in the clinical setting (Rubenstein et al., 2001). For predicting risk of malnutrition the MNA-SF showed 97.9% sensitivity, 100% specificity and 98.7% for diagnostic accuracy against the original MNA (Rubenstein et al., 2001). The MNA-SF appears to be more practical than the MNA for use in the clinical setting as its demand on time, expertise and resource dollars are within achievable parameters. Its use is not as imposing on patient privacy as the original MNA. This instrument is used as a screening tool to determine whether further investigations are required.

Nurses' Clinical Judgement

The literature indicates that the decision making processes used by nurses are conceptualised in different ways. Conceptualisations of these processes are: clinical judgement (Dowding & Thompson, 2003), critical thinking (Greenwood, 2000), decision making (Buckingham & Adams, 2000) and problem-solving (Taylor, 2000). While these terms are often used interchangeably, the literature presents differing definitions for each concept. In this review, it will be considered that collectively these concepts constitute nurses' clinical judgement. There is no consensus in the literature on a definition for critical thinking (Daly, 2001). However, one view proposes that critical thinking is a purposeful dynamic process of data collection and evaluation that is directed towards attaining a desired outcome (Daly, 1998). Alternatively, the concept of clinical judgement can be viewed as a mental processing of observations, assessment and data by which a health professional develops a picture of a patient's status in order to decide on appropriate action (Calkins, 2000). The cornerstone of the models for decision making comes from the concept of reasoning, which Anderson (1995) describes as progressing from existing knowledge to new knowledge. Rather than an analysis of the processes that constitute

clinical judgement, more pertinent to this review is a critique of the available literature on clinical judgment as specifically applied to nutritional status.

Nurses' Clinical Judgement of Nutritional Status

The potential of nurses to initiate sound clinical judgement and take appropriate action is vital to patient care. A study by Perry (1997), investigating attitudes and nutrition related knowledge of nurses, indicated that nurses believed that nutritional assessment is a nursing priority and duty. With nutritional care being viewed by nurses' themselves as a priority, it should be considered then, that patients would receive individually focused care that best addresses their nutritional needs. In relation to the proposed study, this further illustrates that, with the existing intention of nurses to deliver nutritional support, the foundations for validating nursing assessment or building nursing knowledge in nutritional status is indicated. Literature investigating the accuracy of nursing clinical judgement in nutritional assessment, however, is limited, emphasising the significance of this study.

Charalambous (1993) described the implementation of a nutritional assessment programme that indicated the potential of focused clinical judgement. The programme assigned a nutrition score in the assessment of patients to provide individually focused care. The nutrition score was derived from five questions on mental state, diet, swallowing, condition of mouth and condition of skin. Responses to questions were rated from one to four. Patients were considered nutritionally at risk if they obtained a score of 14 or below. The results indicated a reduction in hospital induced infections, pressure ulcers and reported savings in health cost (Charalambous, 1993). This programme demonstrates that nutritionally focused care will improve or at least maintain patient health. The programme illustrates that nurses are able to make appropriate clinical judgements regarding nutritional care, a basis from which this study intends to further investigate the accuracy of nurses' clinical judgment. The programme outlined by Charalambous (1993) does not validate nurses' clinical judgement in assessing nutritional status. Instead, it evaluates the care and outcome from the use of a nutrition assessment tool. This is indicative of most of the types of studies available surrounding this issue in the literature, highlighting the need to validate

nurses' assessments against a valid tool. If it was found that nurses' assessments are as accurate as a validated nutritional assessment tool, then such a tool, as used in this study, may be considered unnecessary.

A study similar to the current study was conducted by Abayomi and Hackett (2004) in a mental health setting. The study found no significant association between nurse and tool assessment of patients who were at medium and high risk. Nurses assessed 45 patients as having some risk compared with the tool which scored 54 patients. Agreement between the nurses and the tool by the tool categories was 58%. This was stated as being a slight improvement over random categorisation (50%). The study found that, in the comparison between nurses' and the tools' assessment of at risk patients, nurses failed to identify 29% of patients who were at risk of malnutrition. A limitation of this study was that the tool used for comparison with nurses' clinical judgment was not validated against criteria for malnutrition. The tool was altered to specifically address patients with psychiatric conditions, leaving some question about its validity. It was also noted that nurses were identifying malnutrition with psychosis and therefore this study is limited in its generalisation to alternative diagnoses and clinical settings. This study indicates that further investigation, particularly in a general setting, is required. The fact that nurses were found to be under-scoring malnutrition overall warrants further investigation.

Another study by Pattison et al. (1995) investigating nurses' ability to accurately assess older patients' (n=65) nutritional status, measured the agreement of nurses with dieticians and anthropometric markers. The study found no significant correlation between nurses' assessment scores and anthropometric measures. Furthermore no significant agreement was found between nurses' and dieticians' assessment scores of patients' nutritional status.

The researcher's clinical observations indicate that nurses utilise the processes of decision making to constantly assess patients' nutritional status and initiate referrals to best assist their patients' needs, however, empirical data are needed to determine the accuracy of

nurses' clinical judgment in nutritional assessment and subsequent support of older patients.

Conclusion

Nutritional status of older patients is associated with many factors. The implications of compromised nutritional status have serious ramifications on older patients' health and well being, which can result in mortality. With the increasing aging population, the number of older people entering the acute clinical setting will also increase. The acute setting provides an opportunity for health professionals, in particular nurses, to address clients' needs promptly and effectively. This emphasises the need for accurate assessment of nutritional status to identify malnutrition or the risk for malnutrition and thus allow for prompt intervention. Despite recent developments, the use of nutritional assessment tools is time consuming and demanding of resources. In the acute setting, nurses are in constant contact with patients, placing them in a unique position to assess nutritional status. The question that needs to be addressed, however, is whether nurses' clinical judgement provides accurate assessment of nutritional status.

CHAPTER THREE

Conceptual Framework

Figure 1 illustrates the conceptual framework on which this study was based. The premise of this study was that there was a need to verify the accuracy of nurses' clinical judgement in assessing nutritional status of older patients. Variables related to the patient impact upon their nutritional status. These variables are age, gender, medical diagnosis/conditions, whether a dietetic referral had been made, living arrangements and cognitive status. Variables related to the nurse contribute to what directs them in making their clinical judgment. These variables are age, gender, position, type of nursing education, years of nursing experience, number of shifts they have cared for the patient and whether they have had specific nutritional education. The inclusion of these specific demographics (Appendices B and C) allowed testing of relationships between demographic variables and accuracy of assessments. Identification of two separate scores, one from a validated instrument and another from clinical judgement, allowed for the comparison and analysis of the results to determine the accuracy of nurse assessment. Accurate assessments of patient variables by nurses will ultimately lead back to benefits to the patient, resulting in quality of care that individually addresses nutritional needs.

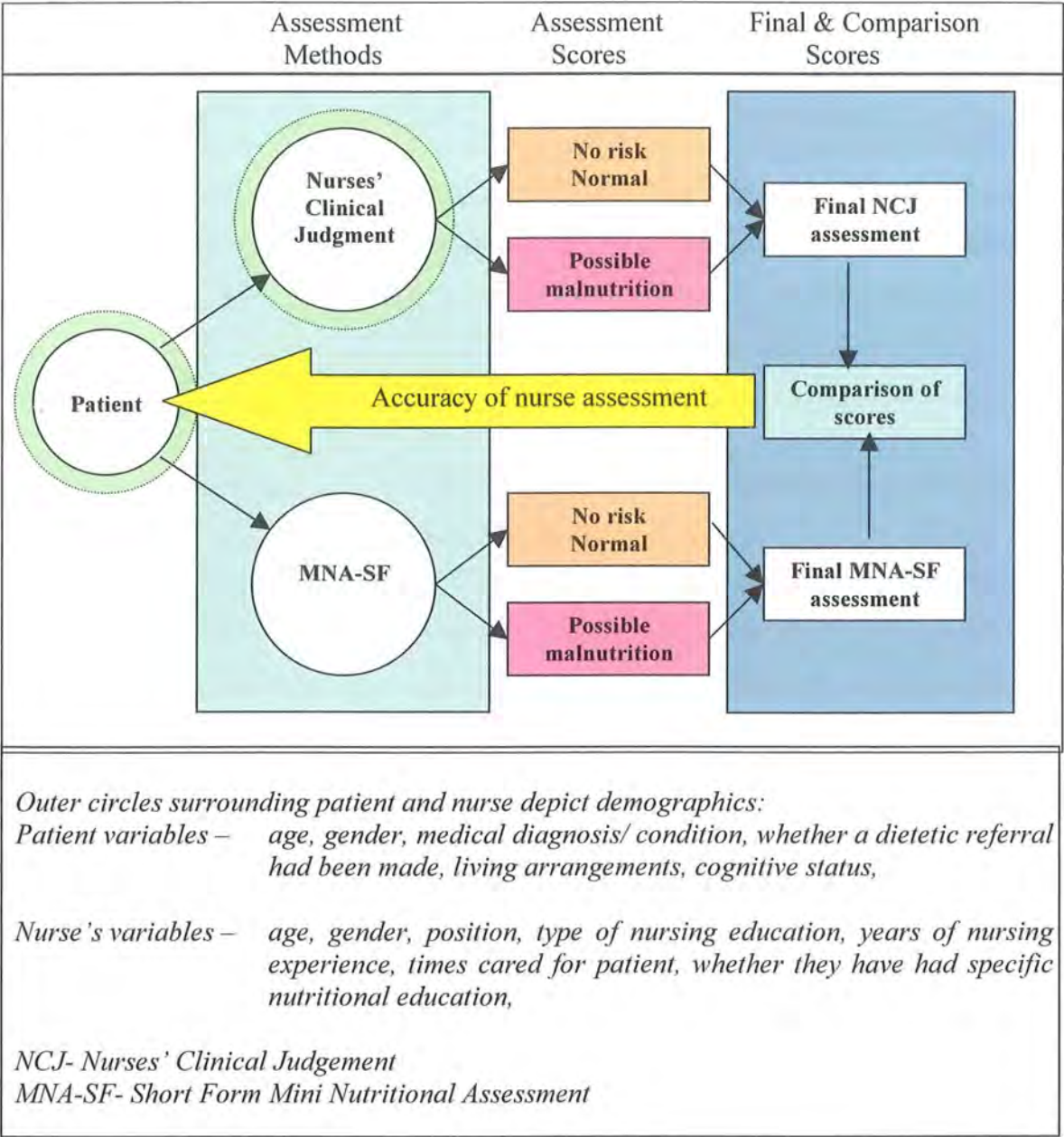


Figure 1. Conceptual framework: Relationship of variables under investigation.

CHAPTER FOUR

Methods

Design

A descriptive comparative study was used to compare nurses' clinical judgement with the Short Form-Mini Nutritional Assessment tool in assessing the nutritional status of older patients.

Sample

The sample comprised 138 patients aged 65 years and over, in a major teaching hospital in Perth, Western Australia. The sample included patients admitted to medical and orthopaedic wards within the hospital who had agreed to participate in the study. Patients or next of kin had to be able to read and understand English. It was recognised that decreased nutritional status often occurs with impaired cognitive status; therefore it was important to include cognitively impaired patients in the study sample. To determine cognitive status, patients were asked to identify time, place and person. For patients' who were not oriented to person, place or time, his/her relative was approached for consent.

Based on a power analysis for using the kappa statistic, the sample size required was 138 paired assessments. The sample size was based upon the following assumptions:

- For 90% of patients, the assessments performed using nurses' clinical judgment and MNA-SF would agree
- Thirty-three percent of patients would be classified as at risk of being malnourished
- Nurses would classify half the patients as at risk of being malnourished
- Precision with which kappa is estimated is 0.2. Thus, if kappa was 0.8 the error would be 0.1 in either direction and the true value would be somewhere between 0.7 and 0.9 (Altman, 1991).

It was estimated that there were 120 nurses working on the previously mentioned wards. Nurses who were caring for consenting patients were approached and asked to participate, with verbal consent obtained. It was anticipated that only one to two assessments per nurse would be obtained, however, no more than five assessments were permitted by the same nurse. If the nurse chose not to participate, then the nurse from the next shift caring for the consenting patient was approached.

Setting

The study was conducted within Sir Charles Gairdner Hospital (SCGH), a 570 bed, acute care, teaching hospital in Western Australia. Two medical wards, G61 and C16 and two orthopaedic wards, G51 and G53, were used to provide the required sample.

Instruments

Short Form-Mini Nutritional Assessment

(®Société des Produits Nestlé S.A., Vervy, Switzerland, Trademark Owners).

The MNA-SF is a shortened version of the original Mini Nutritional Assessment (Rubenstein et al., 2001). The MNA-SF was used by the researcher to assess the nutritional status of the sample group. The instrument is a six item assessment, with scores ranging from zero to 14 points. Twelve points or higher indicate normal: no need for intervention. Eleven points and below indicate possible malnutrition: continue assessment. The authors of the MNA-SF (Rubenstein et al., 2001) indicate that if greater specificity is desired, then the cut off score of 10 should be used to indicate possible malnutrition. Results for both cut off points have been presented for comparison between nurses' clinical judgment and the MNA-SF because it was not only necessary to assess nurses accuracy against a specific measure but also against the standard tool cut of score. For subsequent analyses of nutritional status based on nurses' and patients' demographics, only the cut off of 10 score was used. Data were then analysed on a binary scale, zero equalled normal nutritional status and one equalled possible malnutrition. The instrument items included assessment of food

intake, weight loss, mobility, psychological stress or disease, neuropsychological problems and body mass index- weight in kg, height in m². Included were directions for assessing body mass index for amputee patients. The instrument can be used with hospitalised patients and takes approximately three minutes to implement (Rubenstein et al., 2001).

The MNA-SF has been tested for reliability against the original MNA. A strong correlation with the MNA total score was evidenced ($r= 0.945$) with 97.9% sensitivity, 100% specificity and 98.7% for diagnostic accuracy in predicting undernutrition. The advantages of using the MNA-SF are that it is shorter than the original MNA yet retains validity, it requires less expertise to implement the instrument and it is less intrusive to the patient.

Final scoring of nurses' clinical judgement was determined on a binary scale, relating to the final score obtained by the MNA-SF, zero indicating normal: no need for intervention or one indicating possible malnutrition: continue assessment. Assessments were conducted once per patient: that is, one MNA-SF assessment and one nurse's clinical judgement assessment per patient. Nutritional assessments of patients using MNA-SF and nurses' clinical judgement were conducted on the same day. Questions to the nurse regarding nutritional assessment and demographics were asked verbally and documented by the researcher onto data collection sheets (Appendix C).

Demographic questions were included in both assessments (Appendices B and C). The MNA-SF demographics section obtained data on the patient including: age, gender, medical diagnosis/conditions and whether a referral had been made to a dietician. Demographics obtained on nurses included: age, gender, type of education, specific education on nutrition, nurse position-Registered Nurse, Enrolled Nurse, Graduate Nurse or Agency Nurse, years of clinical experience and how often she/he had cared for the patient. The inclusion of these specific demographics was to allow for testing of relationships between demographic variables and accuracy of assessments.

Procedure

Setting contact

Contact was made with Nurse Managers and Shift Coordinators of all selected wards at SCGH to obtain access to suitable patients. Information sheets (Appendices D, E and F) for patients, next of kin and ward nurses were distributed by the principal researcher, indicating the nature of the research and inviting subjects to participate. The principal researcher verbally explained the study to patients and staff and revisited the ward within one to two days to follow up on consent. This provided time for both patients and staff to contemplate whether or not they wanted to participate in the study and to think of any questions they may have had.

Data Collection

During September 2004, the principal researcher visited the allocated wards at SCGH to assess the nutritional status of the subjects using the MNA-SF as well as collect demographic data. Patients were assessed with the tool within their rooms. The patient's allocated nurse was not present to reduce bias in their nurse's clinical judgment. Prior to assessment, informed consent was obtained (see ethics section). Patients' notes were accessed to obtain weight and height data to construct body mass index (BMI), as well as to collect data on diagnoses and comorbidities. This was estimated to take approximately 10 to 15 minutes per subject. If weight and height were not documented in patients' progress notes, they were obtained at time of assessment with patients' consent.

Following the MNA-SF assessment, the patient's allocated nurse was asked to assess the nutritional status of the same patient using his/her own clinical judgment. This information was used to draw a comparison between the two scores of nutritional assessment of the patient. The nurse was also asked to explain the reasoning behind making his/her decision. This was firstly to gain a preliminary understanding of the way in which

nurses make clinical judgments about the patient's nutritional status and secondly to enable recommendations to be made about education required to improve nurses' skills in nutritional assessment. Demographic data from the nurse were also obtained, with data collection taking approximately five minutes per nurse.

Data collection sheets for patients and nurses were identified with matching codes to ensure that the patient and nurse's assessments were linked. Data collection sheets indicated whether patient data were provided by the patients themselves or by their next of kin. Also, to ensure that nursing assessments overall were not biased by a large number of assessments from a few nurses, the maximum number of assessments per nurse was limited to five. Nurses were asked to remember a separate code that was used to keep record of frequency of assessments. Nurses were asked to recall their mother's maiden name initial and last three digits of their phone number.

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) for Windows Version 12 software package. All data were summarised using descriptive statistics. Agreement between the two groups was analysed using two methods, percent agreement and the kappa statistic. The method used for calculating the kappa statistic and confidence intervals is described by Altman (1991). Any open-ended responses were documented and categorised. Relationships between accuracy of assessments and demographic variables were analysed by the kappa statistic and chi-square.

Ethical Implications

Permission was sought from both the Edith Cowan University Faculty Ethics Committee (Appendix H) and the SCGH Nursing Research Scientific Sub-Committee (Appendix I) prior to the study being implemented. Permission from the MNA-SF copyright holders was obtained for use of the tool within this study (Appendix J). All eligible patients were invited to participate and written informed consent was obtained from

patients (Appendix D). In cases where patients were unable to give consent due to impaired cognitive status, the family or next of kin were asked on behalf of those patients to provide formal consent (Appendix E). Verbal consent was sought from all cognitively impaired patients prior to their involvement. Nurses were provided with written and verbal information regarding the study and were asked to provide verbal consent to take part (Appendix F).

As the MNA-SF instrument uses only six short questions and as body mass index in many cases could be obtained from the patient notes (weight and height), patient interaction was kept to a minimum. Every effort was made by the researcher to respect patients' privacy, comfort and confidentiality. Both patients and nurses were able to withdraw their participation at any time (refer to consent form). Data collection sheets were coded with a number to protect patient privacy. At the end of the study, all data collected were stored in a locked cabinet in the Postgraduate Room at the School of Nursing, Midwifery and Postgraduate Medicine, Edith Cowan University. The Postgraduate Administrative Assistant will be responsible for destroying (shredding) the documents after five years from publication; all electronic files will be erased at the same time.

CHAPTER FIVE

Results

Beginning with an overview of nurse and patient demographics, this chapter will present the results of the comparison of nurses’ clinical judgment and the MNA-SF in assessing patients’ nutritional status. The primary aim of this study was to determine whether nurses’ clinical judgments were as accurate as the MNA-SF tool in assessing nutritional status. Comparisons of nurses’ assessments with the MNA-SF tool were analysed through calculation of observed agreement and the kappa statistic. Relationships between accuracy of assessments and demographic variables were also analysed using the kappa statistic. Results will be presented in tables and figures.

Nurse Demographics

A total of 72 nurses participated to assess their patients’ nutritional status. Of the total sample 30.6% (n=22) were within the age bracket of 20 to 29 years (Figure 2) and the majority of the sample were female (94%, n=68).

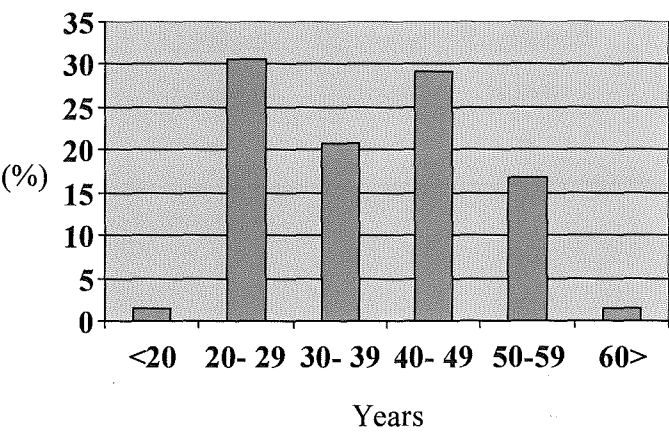


Figure 2. Age distribution of nurses.

Registered Nurses comprised 75% (n=54) of the sample and the remainder were Enrolled Nurses. Thirty-nine percent (n=28) of the sample had a university education as

their primary nursing qualification and 32% (n=23) had hospital based training as their primary nursing qualification. Eleven percent (n=8) had a combination of hospital based training and a university education while the remainder of the sample (18%, n=13) had a TAFE or TAFE equivalent education. The majority of nurses (75%, n=54) stated that they had no specific nutritional education. Of the 18 nurses who said they had received nutritional education, 56% (n=10) stated that it was a component of their university or hospital based education.

Years of clinical nursing experience ranged greatly in this group of nurses, from less than one month to 40 years. Table 1 shows that as RN nursing experience in years increased so did the number of nurses within that group. A range from 19% (n=14) of graduate nurses having one year or less clinical experience to 29% (n=21) of nurses having 20 to 40 years of clinical experience was observed. The number of shifts nurses had cared for the patient, ranged from one to 10. However, 43% (n=60) of all assessments were undertaken during the first shift. In total, 50% of nurses conducted only one patient assessment, followed by 29% of nurses conducting only two patient assessments.

Table 1
Nurses Classified by Level of Qualification and Years of Experience

Years of nursing experience	Enrolled Nurses n	Graduate Nurses n	Registered Nurses n	Clinical Nurses n	Total n	(%)
0-1 year	5	9	0	0	14	(19)
>1-9 years	4	0	13	1	17	(24)
10-19 years	6	0	12	1	20	(28)
20-40 years	3	0	15	3	21	(29)
Total	18	9	40	5	72	(100)

Patient Demographics

The study involved the assessment of 138 older patients’ nutritional status. Each patient received one nurses’ clinical judgement assessment and one assessment using the MNA-SF tool. The mean age of patients in the sample was 79 years (SD=6.99) with a minimum age of 65 years and a maximum of 93 years. Mean weights were 69kg for males and 63kg females. Mean BMIs were 24kg/m² for males and 25kg/m² for females. A significance value of 0.36 was obtained by Kolmogorov-Smirnov analysis indicating a normal sample distribution as shown in Figure 3. Females comprised 59% (n=82) of the patient sample.

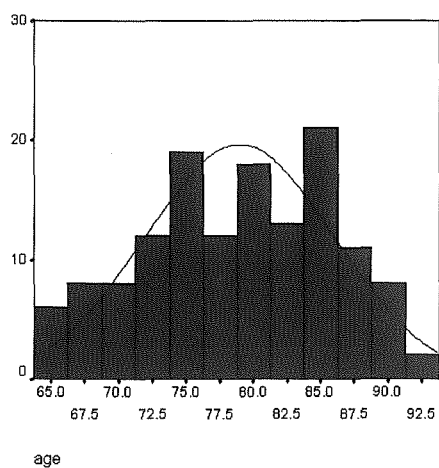


Figure 3. Patient age distribution in years.

Forty-three percent of patients (n=60) stated that they lived with a partner or family member prior to admission. A slightly smaller percentage stated that they had lived alone (39%; n=54) while the remaining patients (18%; n=24) stated that they lived within an aged care setting. The majority of patients were deemed oriented (96%; n=132), allowing the researcher to obtain most of the patient demographic data from the patients themselves. Of all patients included within the study, only a small portion (17%; n=23) had a dietetic referral documented within their progress notes. Although the principal medical diagnosis

varied greatly in this group, the most frequently observed diagnosis was orthopaedic (Table 2).

Table 2

Principal Medical Diagnosis for this Admission

Medical Diagnosis	n	%
Orthopaedic	55	40.0
Respiratory	23	16.7
Cardiovascular	16	11.6
Gastrointestinal	11	8.0
Cerebral/neurovascular	9	6.5
Renal	7	5.1
Diabetes mellitus	5	3.6
Pain	3	2.2
Cellulitis	2	1.4
Hepatic	2	1.4
Psychiatric	2	1.4
Anaemia	1	0.7
Auto-immune disease	1	0.7
Musculoskeletal	1	0.7
Total	138	100

Results of Nutritional Assessments by Nurses and the MNA-SF

The study aimed to compare the nutritional assessment results of nurses’ clinical judgement with the MNA-SF. Both assessment methods were designed to rate the patient as either normal or possibly malnourished. The assessment results of nurses’ clinical judgement are shown in Figure 4. Nurses assessed 35% (n= 48) of patients as possibly malnourished. A slightly higher proportion of males than females were assessed by nurses as possibly malnourished.

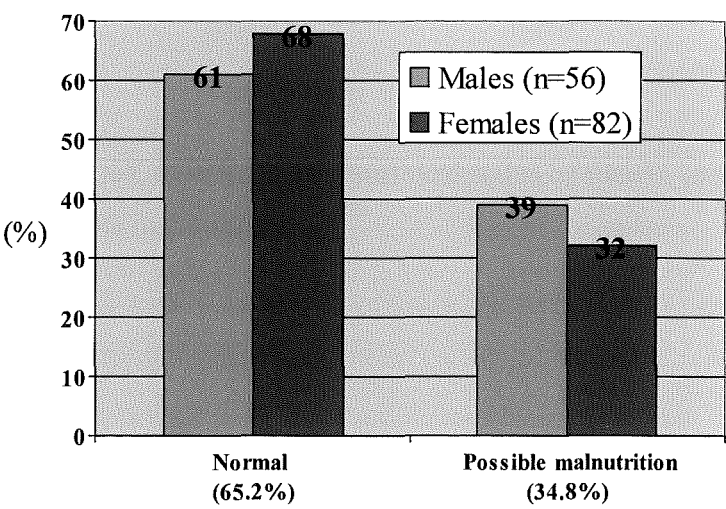


Figure 4. Nurses’ assessment of nutritional status by patient gender.

Figures 5 and 6 present results for the MNA-SF assessment using two alternative cut off scores for determining the possibility of malnutrition. The explanation for the use of alternative cut off scores is provided within the Methods section. Using 10 (Figure 5) as the cut off score for possible malnutrition, 60% (n=83) of patients were rated as possibly malnourished. The percentage of males and females rated as possibly malnourished were similar. Using the less stringent score of 11 (Figure 6) as the cut off score for possible malnutrition, 72% (n=100) of patients were assessed as possibly malnourished, with a similar gender distribution.

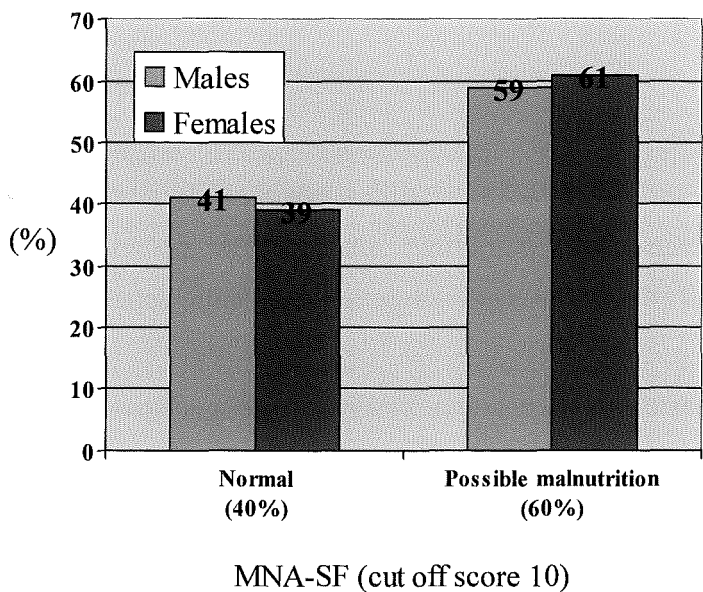


Figure 5. MNA-SF assessment of nutritional status by patient gender using 10 as the cut off score for possible malnutrition.

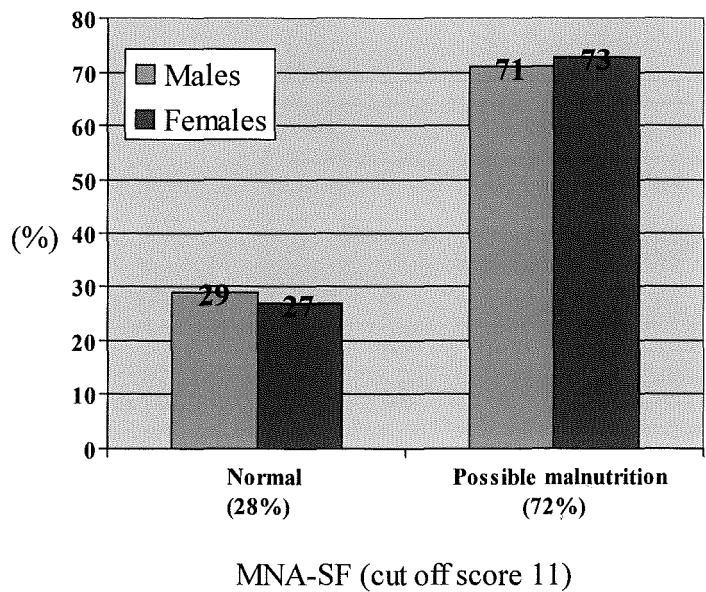


Figure 6. MNA-SF assessment of nutritional status by patient gender using 11 as the cut off score for possible malnutrition.

Measures of Agreement Between Nurses' Clinical Judgment and the MNA-SF

Observed Agreement

To determine if there was a difference between nurses' clinical judgement and the MNA-SF in assessing older patients' nutritional status, agreement was analysed in two ways; firstly by calculating observed agreement and secondly using the kappa statistic (κ).

When comparing the 138 paired assessments of nurses' clinical judgment and the MNA-SF scores, using 10 as the cut off score, 81 (59%) agreements were observed (Table 3). Nurses assessed 11 (8%) patients as having possible malnutrition when the tool scored these patients as normal. More importantly, nurses did not assess 46 (33%) patients as having possible malnutrition when compared with the assessment obtained by using the tool.

Table 3
Comparison between Nurses' Clinical Judgment and the MNA-SF (using 10 as the cut off score for possible malnutrition)

	Nurses' clinical judgment		
	Possible		Total
	Normal	malnutrition	
MNA score	n	n	n (%)
Normal	44	11	55 (40)
Possible malnutrition	46	37	83 (60)
Total	90	48	138 (100)

When comparing the paired assessments of nurses' clinical judgment and MNA-SF scores using 11 as the cut off score, 70 (51%) agreements were observed (Table 4). Nurses assessed eight (6%) patients as having possible malnutrition when the tool scored these

patients as normal. In this analysis, nurses did not assess 60 (43%) patients as having possible malnutrition when compared with the tool. In summary, nurses agreed with the tool for 59% of assessments when the cut off score of 10 was used and 51% of assessments when the cut off score of 11 was used. In other words, the discrepancy between nurse and tool assessments of at risk patients was greater with the standard cut off score of 11, than with the more stringent cut off score of 10 (49% and 41% disagreements respectively).

Table 4
Comparison between Nurses' Clinical Judgement and the MNA-SF (using 11 as the cut off score for possible malnutrition)

MNA score	Nurses' clinical judgement			
	Possible		Total	
	Normal n	malnutrition n	n	(%)
Normal	30	8	38	(27.5)
Possible malnutrition	60	40	100	(72.5)
Total	90	48	138	(100)

Expected Agreement

In order to compare agreement between nurse and MNA-SF assessments using the kappa statistic, the number of agreements expected by chance was calculated first. This was achieved using the method described by Altman (1991, p. 403), for inter-rater agreement. From Tables 3 and 4, expected agreement was calculated by multiplying the total of the relevant column and the total of the relevant row and dividing it by the grand total of 138 assessments. Calculation of the expected number of agreements and the total proportion of agreements is as follows:

MNA-SF cut off score 10:

Expected agreements for ‘normal’	$55 \times 90 / 138 = 35.87$
Expected agreements for ‘possible malnutrition’	$83 \times 48 / 138 = 28.87$
Total number of agreements expected by chance	64.74
Total proportion of agreements expected by chance	$64.74 / 138$ $= 0.47 \text{ (47\%)}$

MNA-SF cut off score 11:

Expected agreements for ‘normal’	$38 \times 90 / 138 = 24.78$
Expected agreements for ‘possible malnutrition’	$100 \times 48 / 138 = 34.78$
Total number of agreements expected by chance	59.56
Total proportion of agreements expected by chance	$59.56 / 138$ $= 0.43 \text{ (43\%)}$

Findings for observed agreement (Tables 3 and 4) and expected agreement by chance are summarised in Tables 5 and 6. Nurse agreements with the tool are slightly above what was expected for each of the cut off scores.

Table 5
Summary of Observed and Expected Agreement for the Comparison Between Nurses’ Clinical Judgement and the MNA-SF (using 10 as the cut off score for possible malnutrition)

	Normal	Possible malnutrition	Total
Agreement	n	n	n
Observed agreement	44	37	81
Expected agreement	36	29	65

Table 6
Summary of Observed and Expected Agreement for the Comparison Between Nurses' Clinical Judgement and the MNA-SF (using 11 as the cut off score for possible malnutrition

	Normal	Possible malnutrition	Total
Agreement	n	n	n
Observed agreement	30	40	70
Expected agreement	25	35	60

It was necessary to determine how much better nurses' assessments were than expected agreement by chance. This was calculated using the kappa statistic.

Kappa Statistic

As nurses were given only two possible response categories to assess their patient's nutritional status, the risk of chance agreement by guessing would have been high. The kappa statistic is a measure of agreement expressed as a proportion of the possible scope for doing better than chance (Altman, 1991). The maximum value possible is 1.00 indicating exact agreement (i.e. all paired assessments agree). A value of zero indicates no agreement at all and a negative value would indicate worse than chance agreement (Altman, 1991). Interpretation of kappa values is shown in Table 7.

Table 7

Interpretation of Values for kappa

Value of kappa	Strength of agreement
< 0.2	Poor
0.21-0.4	Fair
0.41-0.6	Moderate
0.61-0.80	Good
0.81-1.0	Very good

Note. Altman, 1991 (adapted from Landis & Koch, 1977)

The value of kappa for the agreement between nurses’ clinical judgement and the MNA-SF (cut off score 10), in assessing older patients’ nutritional status was calculated to be 0.222, with a 95% confidence interval of 0.08 to 0.36. The strength of this agreement is considered fair based on criteria for measuring kappa values (Table 7). When using 11 as the MNA-SF cut off score, the value of kappa was 0.133, with a 95% confidence interval of 0.02 to 0.25. This strength of agreement is considered to be poor (Table 7).

Relationship Between Accuracy of Nutritional Assessments and Patient Demographic Variables

In determining the accuracy of nurses’ assessments in assessing the nutritional status of older patients by demographic variables, only the MNA-SF cut off score 10 will be used when comparing results within this section. The cut off score of 10 has been chosen for the comparison in this section due to its greater specificity (Rubenstein et al., 2001).

The comparison between nurses’ clinical judgement and the MNA-SF by age are shown in Table 8. For the age group 65 to 79 years, 38 (57%) agreements were observed whereas for the age group 80 to 93 years observed agreement increased slightly to 43 (60%) agreements. Results of the kappa statistic for the comparison between nurses’ and MNA-SF nutritional assessments by age indicated that for patients aged 65 to 79 years, a poor strength of agreement was obtained ($\kappa=0.176$; 95% confidence interval of 0.47 to

0.95) whereas for patients aged 80 to 93 years a fair strength of agreement was obtained ($\kappa=0.259$; 95% confidence interval= -1.66 to 2.18).

Table 8
Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Age (using 10 as the cut off score for possible malnutrition)

		Nurses’ clinical judgement			
		Possible			
		Normal	malnutrition	Total	
Age (years)	MNA-SF	n	n	n	(%)
65-79	Normal	23	6	29	(43)
	Possible malnutrition	23	15	38	(57)
	Total	46	21	67	(100)
80-93	Normal	21	5	26	(37)
	Possible malnutrition	23	22	45	(63)
	Total	44	27	71	(100)

Table 9 shows the results of the comparison between nurses’ clinical judgement and the MNA-SF by gender. Observed agreement between nurses and MNA-SF nutritional assessments of female patients was higher, with 52 (65%) agreements, than that for male patients’ nutritional assessments, where 29 (52%) agreements were observed.

The kappa statistic for the comparison between nurses’ clinical judgement and the MNA-SF in assessing older patients’ nutritional status by gender was calculated for females and males separately. Agreement between nurses’ clinical judgement and the MNA-SF for females was 0.323 with a 95% confidence interval of 0.16 to 0.49, which is considered a fair strength of agreement. Agreement for male patients was 0.071 with a 95% confidence interval of 0.47 to 0.95, which is considered poor strength of agreement. These results indicate that nurses more correctly assessed the nutritional status of females as opposed to males.

Table 9
Comparison Between Nurses' Clinical Judgement and the MNA-SF by Gender (using 10 as the cut off score for possible malnutrition)

		Nurses' clinical judgement			
		Possible			
Gender	MNA-SF	Normal	malnutrition	Total	
		n	n	n	(%)
Male	Normal	15	8	23	(41)
	Possible malnutrition	19	14	33	(59)
	Total	34	22	56	(100)
Female	Normal	29	3	32	(39)
	Possible malnutrition	27	23	50	(61)
	Total	56	26	82	(100)

Body mass index (BMI) is a well known indicator for rating nutritional status. A comparison between nurses' clinical judgement and the MNA-SF by BMI is useful to assess if nurses scored patients as possibly malnourished when the tool and the patients' BMI indicated so. The National Heart, Lung and Blood Institute (1998) indicate a BMI of below 18.5kg/m² as underweight and 18.5kg/m² as normal. The value of 18.5kg/m² has been used as the cut off value for BMI analysis within this study. Table 10 shows that in the comparison of nurses' clinical judgement and the MNA-SF for patients with a BMI of less than 18.5kg/m², nurses agreed with the MNA-SF for seven (50%) patients in their assessment of possible malnutrition. More importantly however, nurses assessed seven (50%) patients as normal when the tool assessed those same patients as possibly malnourished. Observed agreement between nurses' clinical judgment and the MNA-SF for patients with a BMI of 18.5kg/m² or more was 70 (60%) agreements, therefore disagreeing on 46 (40%) assessments.

Table 10
Comparison Between Nurses' Clinical Judgement and the MNA-SF by Body Mass Index (using 10 as the cut off score for possible malnutrition)

		Nurses' clinical judgement			
		Possible			
		Normal	malnutrition	Total	
BMI kg/m ²	MNA-SF	n	n	n	(%)
<18.5	Normal	0	0	0	(0)
	Possible malnutrition	7	7	14	(100)
	Total	7	7	14	(100)
≥18.5	Normal	44	11	55	(47)
	Possible malnutrition	35	26	61	(53)
	Total	79	37	116	(100)

Note. BMI=Body Mass Index.

A comparison between nurses' clinical judgement and the MNA-SF by living arrangements is shown in Table 11. A total of 81 (58%) agreements were observed. For the category of 'living alone,' nurses agreed with the MNA-SF for 29 (54%) assessments and disagreed for 25 (46%) assessments. For the category of 'living with a partner,' nurses agreed with the MNA-SF for 35 (58%) assessments and disagreed for 25 (42%) assessments. For the category of 'living within an aged care setting,' nurses agreed with the MNA-SF for 17 (71%) assessments and disagreed with the tool for seven (29%) assessments.

Agreement between nurses' clinical judgement and the MNA-SF for the category of living alone was poor with a kappa of 0.12 and a 95% confidence interval of -0.11 to 0.36. Agreement for the category of living with a partner was calculated at 0.20 with a 95% confidence interval of zero to 0.41, which is also considered a poor strength of agreement. Agreement for the category of living within an aged care setting was calculated at 0.42 with a 95% confidence interval of 0.09 to 0.75, which is considered a moderate strength of agreement.

Table 11
Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Patient Living Arrangement (using 10 as the cut off score for possible malnutrition)

		Nurses’ clinical judgement			
Living arrangements	MNA-SF	Possible		Total	
		Normal n	malnutrition n	n	(%)
Alone	Normal	15	6	21	(39)
	Possible malnutrition	19	14	33	(61)
	Total	34	20	54	(100)
Partner	Normal	23	4	27	(45)
	Possible malnutrition	21	12	33	(55)
	Total	44	16	60	(100)
Aged care	Normal	6	1	7	(29)
	Possible malnutrition	6	11	17	(71)
	Total	12	12	24	(100)

As mentioned previously, the principal medical diagnosis for patients within the patient sample varied greatly. A comparison of nurses’ clinical judgment and the MNA-SF by patients’ medical diagnosis is shown in Table 12. The kappa value for nurses’ clinical judgement and the MNA-SF for the most frequently observed medical diagnosis of orthopaedic was 0.26 with a 95% CI of 0.05 to 0.48. This is considered a fair strength of agreement. The strongest agreement between nurses’ clinical judgement and the MNA-SF for medical diagnosis was obtained with cerebral/neurovascular diagnoses where nurses obtained a moderate strength of agreement ($\kappa=0.571$, CI=0.1 to 1) followed by gastrointestinal diagnoses where strength of agreement was also moderate.

Table 12

Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Patient Medical Diagnosis (using 10 as the cut off score for possible malnutrition)

Medical diagnosis	n	kappa	Strength of agreement
Cerebral/neurovascular	9	0.571	Moderate
Gastrointestinal	11	0.441	Moderate
Orthopaedic	55	0.266	Fair
Other ^a	17	0.160	Poor
Renal	7	0.087	Poor
Cardiovascular	16	0.053	Poor
Respiratory	23	0.007	Poor

a. Other medical diagnoses includes: diabetes mellitus, pain, cellulitis, hepatic, psychiatric, anaemia, auto-immune disease, musculoskeletal.

It was found within this study that only a small proportion of patients had a dietetic referral documented within their patient progress notes. Table 13 shows that agreement between nurses’ clinical judgment and the MNA-SF for those patients who had a dietetic referral or had been seen by a dietician was slightly lower than that for patients who had no dietetic referral or hadn’t been seen by a dietician. Kappa analysis indicates that a poor strength of agreement was demonstrated for the category of having a dietetic referral. Unexpectedly, agreement was higher however, for the category of not having a dietetic referral; here a fair strength of agreement was demonstrated.

Table 13

Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Dietetic Referral (using 10 as the cut off score for possible malnutrition)

Dietetic referral	n	kappa value
Yes	23	0.146
No	115	0.232

Relationship Between Accuracy of Nutritional Assessments and Nurse Demographic Variables

Table 14 shows the comparison between nurses' clinical judgment and the MNA-SF by nurse position. It was found that Enrolled Nurses' agreement with the tool was slightly higher (53%) than that for Registered Nurses or Graduate Nurses (49% and 44% agreement respectively). Kappa analysis for Enrolled Nurses ($\kappa=0.04$, CI=-0.04 to 0.88), Registered Nurses ($\kappa=0.05$, CI=0.19 to 0.29) and Graduate Nurses ($\kappa=0.12$, CI=0.12 to 0.36) indicates that strength of agreement is poor in all groups of nurses.

Table 14

Comparison Between Nurses' Clinical Judgement and the MNA-SF by Nurse Position (using 10 as the cut off score for possible malnutrition)

Position	MNA-SF	Nurses' clinical judgement			
		Normal	Possible malnutrition	Total	
		n	n	n	(%)
Registered nurse	Normal	13	5	18	(40)
	Possible malnutrition	18	9	27	(60)
	Total	31	14	45	(100)
Enrolled nurse	Normal	6	5	11	(65)
	Possible malnutrition	3	3	6	(35)
	Total	9	8	17	(100)
Graduate nurse	Normal	1	0	1	(11)
	Possible malnutrition	5	3	8	(89)
	Total	6	3	9	(100)

When comparing nurses' clinical judgment and the MNA-SF by years of nursing experience (Table 15), it was found that the category of two to nine years of nursing experience was associated with the highest agreement (65%). The lowest agreement was

associated with the category of 10 to 19 years of nursing experience (27% agreement). Agreement for categories zero to 1.9 years and 20 to 40 years of nursing experience was 47% and 52% respectively.

Table 15
Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Years of Nursing Experience (using 10 as the cut off score for possible malnutrition)

		Nurses’ clinical judgement			
Years of experience	MNA-SF	Possible		Total	
		Normal n	malnutrition n	n	(%)
0-1.9	Normal	7	1	8	(42)
	Possible malnutrition	8	3	11	(58)
	Total	15	4	19	(100)
2-9	Normal	6	2	8	(47)
	Possible malnutrition	4	5	9	(53)
	Total	10	7	17	(100)
10-19	Normal	2	6	8	(53)
	Possible malnutrition	5	2	7	(47)
	Total	7	8	15	(100)
20-40	Normal	5	1	6	(29)
	Possible malnutrition	9	6	15	(71)
	Total	14	7	21	(100)

Kappa analysis calculations show a fair strength of agreement between nurses and the tool in the category of two to nine years nursing experience ($\kappa=0.301$, $CI=0.14$ to 0.74). For the categories of zero to 1.9 years and 20 to 40 years of nursing experience kappa analysis shows a poor strength of agreement with the tool ($\kappa=0.132$, $CI=0.11$ to 0.16 ; $\kappa=0.167$, $CI=0.13$ to 0.46 respectively). For the category of 10 to 19 years of nursing experience, the κ value was -0.460 ($CI=-0.91$ to -0.01). This is worse than chance

agreement. This decline in agreement between nursing clinical judgment and the MNA-SF in the category of 10 to 19 years of nursing experience was investigated further and will be detailed after presenting the results for the variable of ‘number of shifts cared for the patient.’

The comparison between nurses’ clinical judgment and the MNA-SF by number of shifts cared for the patient is shown in Table 16. Agreement was slightly higher for the category of one (or during the first) shift cared for the patient (62% agreement) as opposed to two or more shifts cared for the patient (56% agreement). Kappa analysis indicates that when nurses cared for the patient for one (or during the first) shift they obtained a fair strength of agreement ($\kappa=0.256$, $CI=0.04$ to 0.47). This strength of agreement is greater than that demonstrated when nurses cared for the patient with two or more shifts where strength of agreement was poor ($\kappa=0.181$, $CI=-0.005$ to 0.37).

Table 16
Comparison Between Nurses’ Clinical Judgement and the MNA-SF by Number of Shifts Cared for Patient (using 10 as the cut off score for possible malnutrition)

		Nurses’ clinical judgement			
		Possible			
Number of shifts	MNA-SF	Normal n	malnutrition n	Total n	(%)
≤1	Normal	24	4	47	(28)
	Possible malnutrition	19	13	53	(32)
	Total	43	17	60	(100)
2 ≥	Normal	20	7	35	(27)
	Possible malnutrition	27	24	65	(51)
	Total	47	31	78	(100)

Kappa analysis of the variable ‘years of nursing experience’ showed a marked decrease in the agreement between nurses’ clinical judgment and the MNA-SF for the

category of 10 to 19 years of nursing experience. In attempting to investigate this discrepancy further, the variable ‘years of nursing experience’ was analysed firstly against the variable ‘nurse position’ (Table 17). This was to explore the possibility that there was a significant relationship between years of nursing experience and nurse position which therefore might account for the “worse than chance” agreement of nurses’ clinical judgment in this category. However, the results showed that there was no significant relationship between years of nursing experience and nurse position ($\chi^2=1.531$, $df=2$, $p=0.465$).

Table 17
Comparison between years of nursing experience and nurse position

Nurse position	Years of nursing experience			Total
	0-9	10-19	20-40	
Registered nurse	26	10	18	45
Enrolled nurse	10	4	3	17
Total	36	14	21	71

Note. 1 cell (16.7%) has an expected count less than five. The minimum expected count is 3.35.

To investigate the discrepancy further, the variable ‘years of nursing experience’ was analysed against the variable ‘number of shifts the nurse had cared for the patient’ (Table 18). This was to explore the possibility that there was a significant relationship between years of nursing experience and number of shifts cared for the patient which therefore might account for the “worse than chance” agreement of nurses’ clinical judgment in this category. However, the results showed there was no significant relationship between years of nursing experience and number of shifts the nurse had cared for the patient ($\chi^2=1.023$, $df=3$, $p=0.796$).

Table 18
Comparison between years of nursing experience and number of shifts cared for patient

Number of shifts cared for patient	Years of nursing experience				Total
	0-1.9	2-9	10-19	20-40	
≤1	9	7	7	12	35
2≥	10	10	8	9	37
Total	19	17	15	21	72

Note. 0 cells (0%) have an expected count less than five. The minimum expected count is 7.29.

Rationale for Nurses' Clinical Judgment

When assessing nurses' rationales for judgments that were made about patients' nutritional status, a wide range of responses was given. Many nurses gave more than one rationale; the total number of responses was 260. Using a multiple response format responses were grouped into six categories (see Table 19).

The most frequently observed rationale was based upon 'diet' (40.4%, n=105). This category includes responses such as '*patient refuses to eat*,' '*patient eats and drinks well*' and '*patient is aware of diet and nutritional needs*.' Appearance was the second highest response category (18.8%, n=49). Responses include, '*patient has fairly good BMI*,' '*patient's colour is good*,' '*patient has decreased weight*' and '*patient has a reasonable weight*.' Cognitive status was the third highest response category (13.8%, n=36) with responses such as '*patient is alert and orientated*' and '*patient has lack of insight*.' A considerable number of rationales were categorised as 'Other' (12.7%, n=33), which comprised the fourth highest response category. This category includes responses such as '*dietetic, speech pathologist and medical opinion*,' '*nurses intuition*,' '*patient has an electrolyte imbalance*' and '*patient is on intravenous antibiotics*.' Ability to self care (8.1%, n=21) was the fifth highest response category and included responses such as, '*patient is motivated to self care*,' '*patient requires assistance and prompting*' and '*patient is independent and self caring*.' The least frequently stated responses were categorised as

‘Physical Condition’ (6.2%, n=16). Responses in this category include ‘*patient is mobile,*’ and conversely ‘*patient is immobile*’ and ‘*patient has no swallowing problems.*’

Table 19
Rationales Provided by Nurses for their Clinical Judgment of Nutritional Status

Rationale Category	n*	%
Diet	105	40.4
Appearance	49	18.8
Cognitive status	36	13.8
Ability to self care	21	8.1
Physical Condition	16	6.2
Other	33	12.7
Total	260	100

Note. Rationales were obtained from all 72 nurses.

Summary

The purpose of this study was to compare nurses’ clinical judgement with a validated assessment tool the MNA-SF in assessing the nutritional status of older patients in the acute clinical setting. This was to determine whether nurses’ clinical judgement can accurately assess older patients’ nutritional status. A total of 72 nurses and 138 patients participated within the study.

Findings from the study indicate that nurses assessed 35% (n=48) of patients as having possible malnutrition compared with 60% (n=83) of patients who were assessed as having possible malnutrition using the MNA-SF, when using the cut off score of 10 (72%, n=100 with cut off score of 11). In the comparison between nurses’ clinical judgment and the MNA-SF, nurses agreed with the tool for just over 50% of all assessments. More importantly nurses failed to assess 33% of patients as having a possible malnutrition (43% with cut off score of 11).

It was essential to determine how much better than chance, were nurses' assessments when compared with the MNA-SF. The study has shown that nurses demonstrated almost 12% more agreements with the MNA-SF than expected by chance. The kappa statistic showed that the strength of agreement between nurses' clinical judgment and the MNA-SF using the cut off score of 10, was fair (0.222; 95% CI=0.08 to 0.36). Table 20 summarises the key findings of strength of agreement between nurses' clinical judgment and the MNA-SF by key variables for this study. It indicates that for the majority of comparisons, strength of agreement between nurses' clinical judgment and the MNA-SF was poor.

Table 20
Summary of the Comparisons Between Nurses' Clinical Judgement and the MNA-SF by Key Variables (using 10 as the cut off score for possibility of malnutrition)

Variable	Variable category	n	Strength of agreement
Age	65-79 yrs	67	Poor
	80-93 yrs	71	Fair
Gender	Male	56	Poor
	Female	82	Fair
Living arrangement	Alone	54	Poor
	Partner	60	Poor
	Aged care	24	Moderate
Dietetic referral	Yes	23	Poor
	No	115	Fair
Nurse position	RN	45	Poor
	EN	17	Poor
	Graduate	9	Poor
Years of nursing experience	0-1.9 yrs	19	Poor
	2-9 yrs	17	Fair
	10-19 yrs	15	Poor
	20-40 yrs	21	Poor
Number of shifts cared for the patient	≤1	60	Fair
	2 ≥	78	Poor

CHAPTER SIX

Discussion

This chapter will begin with a brief review of the study's aim and draws attention to how the conceptual framework influences discussion of the study's results. It will then discuss the key findings of the study with reference to current literature. It will discuss the study limitations and highlight the implications of the findings of this study for clinical practice, leading to and concluding with recommendations for future research.

Compromised nutritional status of older hospitalised patients has been identified as a major concern (Rubenstein et al., 1997). This has led to developments of nutritional assessment tools which, to date, still require much time and expertise to implement, limiting their use within clinical practice. As nurses are in constant contact with patients and are in an ideal position to assess nutritional status, they present a potential alternative for prompt and individualised nutritional assessment based on their own clinical judgment rather than an assessment tool (Craven & Hirnle, 2000; Soderhamn & Soderhamn, 2002). The question that needed to be addressed, however, was whether nurses' clinical judgement provides accurate assessment of nutritional status. This study aimed to investigate if nurses' clinical judgment was a reliable alternative to a validated tool, the MNA-SF, in assessing older patients' nutritional status.

As stated within the literature review, the MNA has been validated in more than 600 elderly people in three international settings: France, New Mexico and Spain (Guigoz et al., 1996; Rubenstein et al., 2001; Vellas et al., 1999). Hence, for the purpose of this study, the MNA-SF was used as the gold standard and therefore, nurses' assessments were tested against the tool for accuracy. In order to assess patients most at risk of possible malnutrition, the cut off score of 10 is used for the main comparison; this has been indicated by the authors (Rubenstein et al., 2001) as having greater specificity than the standard cut off score of 11.

The premise of this study is that there is a need to verify the accuracy of nurses' clinical judgement in assessing older patients' nutritional status. The conceptual framework shows the relationship between the assessment methods, study variables and patient outcomes. Patients received one nursing clinical judgment assessment and one assessment using the MNA-SF. Patient variables such as *age, gender, medical diagnosis/ condition, dietetic referral, living arrangements* and *cognitive status* and nurse variables such as *age, gender, position, type of nursing education, years of nursing experience, times cared for patient* and *specific nutritional education* were all potential contributing factors affecting the final assessments of nutritional status. The assessments obtained from nurses' clinical judgement and the MNA-SF were compared to determine the accuracy of nurses in assessing older patients' nutritional status. The schematics of the conceptual framework indicate that assessment of patient variables leads to the judgment and final assessment score of a patient's nutritional status, which ultimately leads back to the patient and impacts on the quality of care that individually addresses their nutritional needs.

In this study it was found that 60% of patients were classified as having possible malnutrition when assessed using the MNA-SF. These results are comparable to a study by Visvanathan, Penhal and Chapman (2004), which found that, depending upon the tool used for assessment, the prevalence of malnutrition in older people in a subacute setting was between 43.1% and 75.4% (Standard Nutritional Assessment and MNA respectively). An earlier study by Visvanathan, Macintosh, Callary, Penhall, Horowitz and, Chapman (2003) found that 38.4% of Domiciliary Care Recipients were at risk of malnutrition determined by using the full MNA. Other reports in the literature of malnutrition in older people are substantially varied. Silver et al. (1988) and Vellas et al. (1998) indicate that malnutrition in older people can range from 17% to 65% in acute hospital settings and 15% to 60% in hospitalised elderly respectively. Assessment methods have not been identified in these later reports therefore comparison of results should be viewed with caution, however, they do indicate that results from this study are similar to findings within the literature.

When assessing the results of this study on accuracy of nurses' clinical judgment of nutritional status, it was found that nurses demonstrated almost 12% more observed

agreement with the MNA-SF than was expected to occur by chance. One must consider, however, that key nursing roles are observation and assessment of patients' health status. Assistance and observation during activities of daily living (for example during meal times or showering) provides nurses with opportunities to assess their patients' health status. It would be expected that nurses would be able to perform health assessments including patients' ability to self care, assessment of physical characteristics such as skin integrity as well as psychosocial capabilities. These assessments, as illustrated by the conceptual framework, should lead to the accurate assessment of patients' nutritional status. Thus, when considering the close proximity of nurses to their patients and the fact that 'assessment' is a central nursing role, it would be expected that nurses would perform substantially better than expected by chance.

Despite expectations derived from these considerations of assessment and evaluation of nursing care, results from this study show a large discrepancy between assessments obtained using nurses' clinical judgment and the MNA-SF in assessing older patients' nutritional status. Of the 138 older patients who participated in this study, nurses assessed 35% of patients as possibly malnourished whereas the MNA-SF rated at least 60% of patients as possibly malnourished. In other words, nurses have identified only slightly more than 50% of at risk patients compared with assessments obtained using the MNA-SF. This discrepancy between nurse and tool assessment of the same sample, leads to queries about nurses' ability to accurately assess older patients' nutritional status.

To determine the accuracy of nurses' clinical judgment, results within this study were analysed using the kappa statistic. The kappa statistic is a measure of agreement which is expressed as a proportion of the maximum scope for performing better than chance (Altman, 1991). In the context of the current study, the kappa statistic is used to determine the strength of agreement between nurses' clinical judgment and the MNA-SF to assess how much better than chance nurses' were at rating their patients' nutritional status. In turn, this indicated nurses' accuracy in assessing their patients' nutritional status. In the comparison between nurses' clinical judgment and the MNA-SF (using the cut off score 10) for assessing possible malnutrition, it was found that the strength of agreement was fair.

It must be considered however, that this strength of agreement is the second lowest category for the kappa analysis agreement. When viewing the comparison between nurses' clinical judgment and the MNA-SF (using the standard cut off score 11) in assessing possible risk of malnutrition, the strength of agreement between nurse and tool decreased to poor. Therefore, regardless of which MNA-SF cut off score is used for a comparison, the difference between assessments obtained using nurses' clinical judgment and the MNA-SF is substantial.

This discrepancy between nurse and tool assessment indicates that a significant number of at risk patients are being overlooked by nurses and therefore these patients are potentially not receiving the nutritional support they require. Research comparing nurses' and dieticians' ratings of patients' nutritional status (Pattison et al., 1995) indicates that nurses do not perform as well as dieticians when assessing nutritional status. In the study (n=65), nurses and dieticians failed to recognise 42% and 15%, respectively, of undernourished patients compared with objective markers (anthropometric measures). Although nurses are not expected to have extensive dietetic expertise, nurses should have the ability to make accurate nutritional assessments and referrals to dieticians when necessary, thereby allowing patients to receive the necessary nutritional support they require. In this study, nurses assessed at least 35% of patients as being possibly malnutrition, however, only a small number of dietetic referrals (17%) were documented within patient progress notes. This highlights that even when nurses are assessing their patients as possibly malnourished they are still not necessarily referring these patients for further nutritional assessment or support. A similar finding of lack of referrals was found in a study by Lazarus and Hamlyn (2005), which looked at prevalence and documentation of malnutrition in hospitals. The study found that only 15.3% out of 137 patients who were rated as malnourished by the 'Subjective Global Assessment' had a referral. While this study used alternative assessment methods, the finding that patients are not receiving appropriate nutritional care supports the need to investigate why those patients assessed as having possible malnutrition are not receiving referrals. This lack of referral needs to be addressed by further research.

It should be noted that using the MNA-SF as a guide for referral for further nutritional assessment could lead to large amounts of referrals being required. According to Visvanathan, Penhal, and Chapman (2004) this would be overwhelming to the extent of being impractical and not cost effective. However, the potential of overlooking at 'risk patients' and therefore the lack of appropriate interventions for those patients' would create additional problems. If early detection of nutritional problems leads to early nutritional intervention then there should be decreased problems associated with compromised nutritional status. This has implications on cost containment for health care facilities. Nutritional intervention has been associated with cost containment (Mc Ghee, Johnson, Rasmussen, & Sahyoun, 1995; Tucker & Miguel, 1996). In a study by Tucker and Miguel (1996) it was found that patients who received early nutritional intervention had a decreased length of hospital stay. This obviously results in benefits for the patient, but more importantly the study indicated potential day and annual savings for the health care facility.

Collaboration of nurses within the multidisciplinary team is vital for optimal patient outcomes (Tichawa, 2002). Dietetic expertise has been linked to better patient outcomes in nutritional status and signifies the importance of referrals for nutritionally compromised patients (Litchford, 2004; Mc Ghee, Johnson, Rasmussen, & Sahyoun, 1995). A study by Gazzotti et al. (2003) which investigated the effect of nutritional support in older patients indicated that oral supplementation improved nutritional status. This emphasises how important it is to accurately assess patients' nutritional status for prompt intervention.

The lack of intervention for nutritionally compromised patients can lead to increased vulnerability to infections and decreased quality of life (Guigoz et al., 1996; & Keller, 1993). Overlooking such patients could potentially result in increased psychological and social distress for patients and significant others and ultimately physical deterioration for patients. Undernourishment of older patients has not only been linked to affecting patients' quality of life but more seriously leads to increased risk of mortality (Visvanathan, 2003). It is therefore imperative that nurses are able to identify at risk patients accurately and promptly for further immediate nutritional assessment and support and avoid problems associated with compromised nutritional status.

In considering a scenario of problems associated with compromised nutritional status, it has been found that poor nutritional status is one of the contributing factors linked to the development of pressure ulcers (Blaum, O'Neil, Clements, Fries, & Fiatarone, 1997). In order to resolve the problem, a range of expensive and time consuming interventions are potentially required to be implemented and continually evaluated. Antibiotic therapy, appropriate and expensive wound dressings, wound specialist consultation and potentially surgical debridement are some example of interventions and treatments that may be required (Collins, 2004). These interventions could have been avoided if the patient's nutritional status had been accurately assessed and addressed earlier. If nurses are to deliver care as illustrated by the conceptual framework it would be expected that accurate assessment of patient variables would lead to accuracy in nurses' assessment of patients' nutritional status, thus providing prompt intervention and nutritional support, ensuring better patient outcomes. This would avoid such problems as discussed above and prevent increase in cost expenditure.

The potential of nurses to overlook patients at risk of malnutrition has been highlighted by the results of this study. Here, nurses failed to recognise 33 to 43% of patients as being possibly malnourished when compared with the assessments obtained using the MNA-SF. When comparing the results of nurses' ability to accurately assess patients' nutritional status with similar studies, it is evident that nurses have consistently underrated patients' nutritional status (Abayomi & Hackett, 2004; Pattison et al., 1995). The findings from this study that nurses failed to recognise a considerable number of at risk patients are comparable to the findings from Abayomi and Hackett (2004), which found nurses overlooked 29% of at risk patients when compared with the 'Nutritional Risk Score.' Abayomi and Hackett's study was conducted in a mental health setting and it was considered that nurses were associating psychotic behaviour with malnutrition whereas depressive patients, being withdrawn, were being overlooked by nurses. The current study was conducted within an acute setting and therefore, incorrect assessment related to psychosis, which potentially misled nurses during their assessment in Abayomi and Hackett's study, was not an issue as the majority of patients in this study did not have a

mental health history. Consequently, the higher percentage of patients that failed to be recognised as possibly malnourished within this study, compared to Abayomi and Hackett's, is unexpected. It should be noted that Abayomi and Hackett's study used an alternative tool which had been altered for the particular setting and so comparison of results should be viewed with caution.

It appears that nurses in this study have been somewhat influenced by patients' age as an indicator of increased risk of malnutrition. In the comparison between nurses' clinical judgment and the MNA-SF by age, the strength of agreement for patients aged 80 to 93 years was fair, however, for patients aged 65 to 79 years the strength of agreement was poor. Overall, nurses in this study assessed a slightly higher percentage (60%) of older patients aged 80 to 93 years as being at risk of malnutrition compared with younger patients aged 65 to 79 years (57%). This finding on how nurses have rated patients' nutritional status by age is consistent with the results of a study by Forster and Gariballa (2005). This study looked at the effect of aging on nutritional status and found that patients aged 75 years and over had poorer nutritional status compared with patients younger than 75 years of age. What is important, however, from this comparison between nurses' clinical judgement and the MNA-SF by age is that agreement of nurses with the tool was lower for patients aged 65 to 79 years and indicates that these patients who have been overlooked would potentially not be receiving the nutritional support they require.

When assessing the accuracy of nurses' clinical judgment by patients' gender it was found that nurses were assessing the nutritional status of female patients (65% agreement) more accurately compared with male patients (52% agreement). The strength of agreement between nurses' clinical judgement and the MNA-SF by gender for female patients was fair, compared with poor for male patients. Assessments obtained using the MNA-SF revealed that a higher percentage of female patients were possibly malnourished as opposed to male patients. This is consistent with a study conducted by Griep, Mets, Collys, Ponjaert-Kristoffersen and Massart (2000) which found that females had slightly lower MNA scores compared to males. The World Health Organisation stated within its 'Nutrition for Health and Development Progress Report (2000),' that older females would

be more at risk of malnutrition due to the effects of aging relating to hormonal changes and the effects of illness such as osteoporosis. Contrary to expectations based on the literature, however, nurses rated more males as possibly malnourished as opposed to females. Reasons for this are unclear and further research is warranted.

When assessing the comparison between nurses' clinical judgment and the MNA-SF by BMI, it was found that nurses agreed with the tool for 50% of assessments in assessing patients with a BMI of less than 18.5kg/m². When patients' BMI was 18.5 kg/m² or over, agreement between nurses' clinical judgment and the MNA-SF increased to 60%. The National Heart, Lung and Blood Institute (1998) indicates BMI ranges of <18.5kg/m² as underweight, 18.5kg/m² to 24.9kg/m² as normal and 25kg/m² to 29.9kg/m² as overweight. In this study mean BMIs were found to be 24kg/m² for males and 25kg/m² for females. Initially, it may appear inconsistent that assessments obtained using the tool have rated a high proportion of patients as being possibly malnourished where BMIs appear to be within the normal range. It is imperative, however, that assessment for possible malnutrition includes a range of factors, that must be considered in the context of the patient, as opposed to individual factors observed in isolation. Furthermore, the literature indicates that there is controversy regarding the actual cut off values for what is most favourable in older people and that a revision of cut off values is required (Saletti, Lindgren, Johansson & Cederholm, 2000; WHO (2000), Visvanathan et al., 2004). What is important in the comparison of nurses' clinical judgment and the MNA by BMI is that nurses have failed to recognise 50% of at risk patients of possible malnutrition with a BMI less than 18.5kg/m². These patients would obviously be observable as underweight and at risk of possible malnutrition. Further research comparing more extensive anthropometric measures with a tool and nurses' clinical judgment would be valuable to explore this discrepancy.

When assessing nurses' accuracy by medical diagnosis, it was found that the strength of agreement between nurses' clinical judgment and the MNA-SF was highest (moderate agreement) for the diagnosis of cerebral/neurovascular and gastrointestinal disorders. It could be viewed that nurses may potentially be more perceptive with patients

who have a medical diagnosis of a cerebral/ neurovascular or a gastrointestinal disorder or simply that nurses are influenced by the patients' diagnostic label. However, with reference to agreement between nurses' clinical judgment and the MNA-SF thus far within the study, this moderate strength of agreement for these two medical diagnoses could be attributed to the fact that patients with cerebral/ neurovascular diagnoses may be more clearly observable as possibly malnourished, such as being cognitively impaired or bed-bound. Similarly patients with gastrointestinal diagnoses related to altered absorption and elimination such as diarrhoea would also inevitably be at risk of malnutrition. Only one other comparison in this study showed a moderate strength of agreement between nurses' clinical judgement and the tool; this was related to patients living in aged care. In this case, nurses could have been basing their judgements on the frailty of aged care residents. Further research would be required to investigate these assumptions.

When assessing nurses' accuracy based on their position, it would be expected that more senior nurses would more accurately assess patients' nutritional status. It was found in this study, however, that the strength of agreement between all levels of nurses and the MNA-SF in assessing older patients' nutritional status was similar. Enrolled Nurses demonstrated a higher percentage agreement (53%) with the MNA-SF as opposed to Registered Nurses (49%), and Graduate Nurses (44%); these differences were not statistically significant. This indicates that nurse position does not necessarily relate to an increase in nurses' ability to correctly assess older patients' nutritional status.

When comparing nurses' accuracy by years of nursing experience all categories were similar with the exception of the category of 10 to 19 years of nursing experience, where agreement was only 27%. Strength of agreement between nurses' clinical judgment and the MNA-SF in assessing older patients' nutritional status by level of experience was highest (65%) for nurses categorised between two to nine years of nursing experience and strength of agreement between novice nurses (0-1.9 years) and experienced nurses (20-40 years) and the MNA-SF was lower (47% and 52% respectively). As with nurse position, it would be expected that nurses with more experience would more accurately assess older patients' nutritional status. However, for the category of 10 to 19 years of nursing

experience, agreement between nurses' clinical judgment and the MNA-SF was substantially lower than that obtained by all other categories of years of nursing experience. In an attempt to explain this discrepancy, the category of 10 to 19 years of nursing experience was analysed against the variables of nurse position and number of shifts cared for the patient. No significant relationship was found with either of these variables. Again, as with nurse position, it is evident that increased nursing experience within this study is not necessarily related to increased ability of nurses to more accurately assess their patients' nutritional status.

When considering nursing experience, whether it is defined as years of nursing experience or by nurse position or classification, one has to consider the changing nature of nursing education and movement of nurses throughout the different nursing specialties. In Western Australia nursing education has undergone many changes for both Registered Nurses and Enrolled Nurses since the movement of education out of hospital based training. Currently the nursing workforce is composed of nurses with differing education and experience. In fact the category of nurses with 10 to 19 years of nursing experience, which had the lowest agreement with the MNA-SF, relates to the first nurses in the transition to university education from hospital based training in Western Australia. As this study is unable to substantiate why there is a discrepancy between nurses' clinical judgment and the MNA-SF by years of nursing experience, further research into the differing experience and education and its effect of nurses' ability to accurately assess their patients' nutritional status is warranted.

When assessing the comparison between nurses' clinical judgment and the MNA-SF by number of shifts cared for the patient, it would be expected that with increased number of shifts cared for the patient, nurse assessments would be more accurate. Contrary to this, however, it was found that the strength of agreement between nurses' clinical judgment and the MNA-SF was slightly higher for one shift cared for the patient as opposed to two or more shifts. This finding is unexpected as increased exposure to a patient and basic principles of 'continuity of care' would lead one to expect nurse accuracy would increase with number of shifts cared for the patient. Continuity of care is identified as

essential to quality individualised patient care. It assists in developing rapport and therapeutic relationships with patients, enabling timely exchange of information between clinicians and acts to promote a better understanding of patients' needs (Donaldson, 2001). Therefore in the context of this study it would be expected that continuity of care would increase nurses' accuracy in assessing their patients' nutritional status and thus allow for prompt and appropriate nutritional support to be implemented. As depicted by the conceptual framework it would be expected that nurses should assess all the variables surrounding a patient's health status and evaluate how these variables impact on their patient's health status. This analysis should result in the correct assessment of a patient's nutritional status, leading back to appropriate care being implemented. The more often this assessment occurs such as with more shifts cared for the patient, the more likely should the accuracy of the assessment be. It is becoming increasingly evident that nurses' assessment is inconsistent with the schema of the conceptual framework. The inconsistency between how nurses' would be expected to perform according to position, experience and shifts cared for the patient and what has actually been demonstrated by nurses, raises questions about the rationales provided by nurses for their clinical judgment in assessing older patients' nutritional status.

When assessing rationales provided by nurses for the judgments they made about patients' nutritional status, 'diet' (40.4%) was the most frequently stated rationale by nurses' in determining their patients' nutritional status. The category of 'diet' includes responses such as '*patient refuses to eat,*' '*patient eats and drinks well*' and '*patient is aware of diet and nutritional needs.*' This signifies that patients' eating habits and ability to maintain diet are main factors that alerted nurses within this study to determine whether their patient may require further nutritional assessment or support. What has become apparent from the results is that 'appearance' (18.8%) which was rated as the second highest rationale category signifies that observation is an important assessment method used by nurses for their assessment of patient's physical characteristics. Responses included, '*patient has fairly good BMI,*' '*patient's colour is good,*' '*patient has decreased weight*' and '*patient has a reasonable weight.*' It would be expected that observation would rate high as an assessment marker for determining nutritional status because if a patient

appears malnourished, they obviously require further assessment or support. A comparable proportion of rationales fall into the category of 'Other' (12.7%). Responses in this category were varied and include, '*dietetic, speech pathologist and medical opinion,*' '*nurses intuition,*' '*patient has an electrolyte imbalance*' and '*patient is on intravenous antibiotics.*' The diverse responses of this category may initially appear as individualised care; however, the rationales provided by nurses in this category were on the most part irrelevant and inappropriate to nutritional assessment and indicate that nurses are unaware of the important elements of nutritional status assessment. Further research into specific rationales provided by nurses for their clinical judgment is indicated to investigate this issue. The overall results of this study indicate that nurses' accuracy in assessing older patients' nutritional status within this setting is questionable.

Inaccurate assessment due to the lack of awareness of key factors for assessing nutritional status could be the reason for the substantial discrepancy between nurse and tool assessment within this study. A study by Kowanko et al. (1999), which explored nurses' attitudes and knowledge on nutrition revealed that nurses were unaware of the prevalence of malnutrition within their hospital. More importantly, it indicated that nurses felt they did not have the knowledge or skills to adequately assess patients at risk of malnutrition. A study by Byron and Leu (1997) which found that nurses overlooked a considerable number of malnourished patients supports the findings from this study that nurses are failing to recognise patients at risk of malnutrition and further substantiates the need for nurses to develop sound nutritional knowledge.

It is imperative that nurses have a sound knowledge of nutritional needs to begin to accurately assess their patients' nutritional status (Kowanko et al., 1999). The majority of nurses (75%) in this study stated that they had no specific nutritional education. Of the 16 nurses who said they had received nutritional education, 56% stated that it was a component of their university or hospital education. This lack of specific nutritional education for nurses, educated at either hospital or university level, is consistent with findings from other nutritional studies (Holmes, 1996; Kowanko et al., 1999; Lennard-Jones, 1992; McWhirter & Pennington, 1994; Perry, 1997). Results from this study suggest

that nurses would benefit from education on nutrition to better assist a considerable number of their patients who have compromised nutritional status.

This study was conducted in an acute setting and it is appreciated that this area is busy and often task oriented. Increased workloads, nurses' skill mix and patient acuity are contentious issues that nurses must address in providing appropriate nursing care (Hegney, Plank, & Parker 2003; Kihlgren, Nilsson, & Sorlie, 2004). What appears to be a vicious circle with time management and issues discussed above is that problems experienced by older patients such as immobility, complex wounds and feeding regimens are further issues that stress nurses' workloads. However, if at risk patients are overlooked then increase time and cost may result from problems related to lack of intervention. Thus, nurses may require assistance with assessment of nutritional status to better assist their patients. A short and quick assessment tool will help alert nurses to potential nutritional problems their patients have. They can then refer these at risk patients to dietitians for further assessment and ultimately appropriate nutritional support.

Conclusion

Results from this study indicate that from the comparison between the use of nurses' clinical judgment and the MNA-SF in assessing older patients' nutritional status, there was a substantial difference in assessment scores. Nurses' assessments were often inaccurate compared with the MNA-SF. Levels of possible malnutrition, assessed using the MNA-SF within this sample, are consistent with other studies using the tool. However, a considerable proportion of at risk patients have been unrecognised by nurses. Patient variables as well as nurse variables generally did not appear to have any significant influence on nurses' ability to accurately assess their patients' nutritional status. A considerable proportion of nurses' rationales for their clinical judgement were based upon assessments of the patients' diet. The majority of nurses within the sample reported having no specific education on nutrition. The discrepancy between nurse and tool assessments within this study warrants an evaluation and development of nutritional education for nurses to assist them in their assessment of older patients' nutritional status. Additionally, the findings of this study indicate that the implementation of an assessment tool may be useful to assist nurses in assessing their patients' nutritional status.

Limitations

A limitation of the study could be considered that the researcher implementing the tool did not have prior training in using the MNA-SF. This possibly had some effect on the assessments obtained using the tool. The MNA-SF consisted of six short questions, which were mainly obtained from patients themselves or from their patient progress notes, no actual interpretation was required during assessments. A follow up study using trained personnel with the tool would be useful to investigate if similar findings were found in a comparison with nurses in assessing older patients' nutritional status. A strength of the study could be considered that all MNA-SF assessments were implemented by one researcher, ensuring consistency of assessment.

The use of next of kin or family to answer questions for cognitively impaired individuals may have reduced accuracy of data collected. In order to address this, only close family members (i.e. partner, child or sibling) were used to gain information. Cognitively impaired patients are at increased risk of malnutrition and it was an objective of this study to include these patients within this study. However, 96% of patients in the study were considered oriented. Further research with a greater number of patients who are considered cognitively impaired is necessary for a valid assessment of this variable.

It could be considered a limitation of the study that nurses' clinical judgment was not compared with the full MNA. However, the MNA-SF has been validated against the original instrument and has proved to have good diagnostic accuracy (Rubenstein et al., 2001). A follow up study would be useful to investigate this issue. Finally, this study did not use a random sample and so generalisability of results is limited.

Implications for Practice

It is evident from this study as well as from the literature that nutritional knowledge is essential for those who are assessing and implementing care for older patients who are nutritionally compromised. Nutritional education for nurses is indicated to ensure best practice. It should aim to increase nurses' awareness of the epidemiology of malnutrition in older people, factors that place older people at risk of malnutrition, as well as providing specific education in the assessment of older patients' nutritional status. This education will assist in improving the accuracy of nurses' clinical judgment in the assessment of older patients' nutritional status and facilitate prompt and appropriate assessment and implementation of care for older patients who require nutritional support.

As this study showed a substantial difference between nurses' clinical judgment and the MNA-SF in assessing of older patients' nutritional status, the inclusion of a nutritional assessment tool during admission as well as for revision of long stay patients is possibly indicated. Further research or a trial of selected nutritional assessment tools would be required to identify the most appropriate tool for routine clinical use.

It is imperative that nurses are consistent and diligent with documentation. In this study it was identified when nurses assessed patients as possibly malnourished they did not necessarily refer them on for dietetic assessment. It is vital that documentation is complete, thus outlining progress of patients, as well as allowing members of the multidisciplinary team to assess care implemented. This will prevent unnecessary duplication of service but most importantly may increase the likelihood that appropriate care is implemented and accounted for.

Recommendations for Future Research

This study has led to certain recommendations for future research. Firstly the implementation of a nutritional education programme should be assessed to examine which components of such a package would most improve the accuracy of nurses' clinical judgment in assessing older patients' nutritional status. Further research should also evaluate the effect of a nutritional package on resulting nursing practice and its effect on patient care and patient outcomes.

In this study it was found that nurses assessed 35% of patients as possible malnutrition by using nurses' clinical judgment alone. However, only 17% of patients had a dietetic referral documented within their progress notes. Further investigation is required to explore the finding that even though nurses are assessing their patients as possible malnutrition they are still not necessarily referring them for further nutritional assessment. Further research should evaluate the attitudes of nurses towards nutrition and nutritional assessment. It should investigate in greater detail the reasoning and rationales nurses provide for what they are basing their clinical judgment on during their assessment of nutritional status. It could lead to a better understanding of the variables associated with the poorest agreement within this study such as gender, BMI or medical diagnosis.

Further investigation into relationships between nurses' clinical judgment and assessment tools in the assessment of nutritional status should be undertaken to determine if it is necessary to introduce a validated and reliable nutritional assessment tool in the acute clinical setting. As no nutritional tool has been universally accepted, a study should be conducted comparing a variety of tools. This would assist in identifying the most appropriate assessment tool specific for the acute clinical setting.

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APPENDIX A

Short Form- Mini Nutritional Assessment

(®Société des Produits Nestlé S.A., Vervy, Switzerland, Trademark Owners).

Mini Nutrition Assessment

A. Has food intake declined over the past three months due to loss of appetite, digestive problems, chewing or swallowing difficulties?

0 = severe loss of appetite

1 = moderate loss of appetite

2 = no loss of appetite

☐

B. Weight loss during last three months

0 = weight loss greater than 3 kg (6.6 lbs)

1 = does not know

2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs)

3 = no weight loss

☐

C. Mobility

0 = bed or chair bound

1 = able to get out of bed/chair but does not go out

2 = goes out

☐

D. Has suffered psychological stress or acute disease in the past three months

0 = yes

2 = no

☐

E. Neuropsychological problems

0 = severe dementia or depression

1 = mild dementia

2 = no psychological problems

☐

F. Body Mass Index (BMI) (weight in kg)/(height in m)²

0 = BMI less than 19

1 = BMI 19 to less than 21

2 = BMI 21 to less than 23

3 = BMI 23 or greater

☐

Screening score (subtotal max. 14 points)

12 points or greater: Normal – no need for further assessment

11 points or below: Possible malnutrition – continue assessment

☐

☐

Note: If greater specificity is desired consider 10 points or below as possible malnutrition.

Alternative height calculations using knee to heel measurements:
with knee at 90° angle (foot flexed or flat on floor or bed board), measure from bottom of heel to top of knee.

Men = (2.02 × knee height, cm) – (0.04 × age) + 64.19
Women = (1.83 × knee height, cm) – (0.24 × age) + 84.88

Body weight calculations in amputees:
For amputations, increase weight by the percentage below for contribution of individual body parts to obtain the weight to use to determine Body Mass Index.

Single below knee 6.0% Single at knee 9.0%
Single above knee 15.0% Single arm 6.5%
Single arm below elbow 3.6%

APPENDIX B
Patient Demographics

Patient Demographics	Pt Code:_____	Data collected by: Pt/ NOK
P1 Age:_____	P2 Date of Admission:_____	
P3 Gender:	MALE	1
	FEMALE	2
P4 Medical Diagnosis:	Cardiovascular	1
	Respiratory	2
	Cerebrovascular/ neurological	3
	Renal	4
	Gastrointestinal	5
	Diabetes	6
	Orthopaedic	7
	Other	8
P5 Other medical conditions:_____		

P6 Has a dietetic referral been made: YES		1
	NO	2
P7 Living Arrangements:	Alone	1
	Family/Partner	2
	Hostel/Nsg Home	3
P8 Cognitive Status: (orient. t/p/p)	YES	1
	NO	2

APPENDIX C

Nurse Assessment and Demographic Data Sheet

Part A: Nurse Assessment **Pt Code:** _____ **Nurse Code:** _____ **Consent** _____

N1 In regards to nutritional status of the patient you are caring for, is the patient's status

☐ Normal 0

☐ Possible malnutrition 1

N2 Why did you make that decision? _____

Part B: Nurse Demographics

N3 Age: 20 – 29 1
 30 – 39 2
 40 – 49 3
 50 – 51 4
 60 – above 5

N4 Gender: MALE 1
 FEMALE 2

N5 Position: CN 1
 RN 2
 EN 3
 Graduate Nurse 4
 Agency Nurse CN 5
 Agency Nurse RN 6
 Agency Nurse EN 7

N6 Type of nursing education:
 Hospital 1
 University 2
 Hospital & uni 3
 TAFE 4
 TAFE/ followed by uni 5

N7 How many years of clinical nursing experience to you have? _____

N8 For how many shifts have you nursed this patient including this one? _____

N9 Have you had specific education in nutrition?
 YES 1
 NO 2

N9A Please state _____

APPENDIX D

Patient Information Sheet and Consent Form

Sir Charles Gairdner Hospital
Hospital Ave, Nedlands Western Australia, 6009

A comparison of nurses’ clinical judgement and the Short Form- Mini Nutritional Assessment in assessing the nutritional status of older patients in an acute clinical setting

Honours Nursing Student: Mr Roger Shreeve
Supervisor: Associate Professor Sue Nikoletti
Co-Supervisor Ms Jeanne Young

Patient’s Information Sheet

I invite you to consider participating in a nutritional study I am conducting as part of my Honours Project.

What is the study about?

Good nutrition is important for good health and helps you in recovery when you are ill. Accurate nutritional assessment is important to help nurses care for patients who are undernourished. This study will compare a nutritional assessment form with nurses’ clinical judgment on nutrition.

What will I have to do?

I would like to ask you 6 short questions (eg food intake, weight loss) and 8 background questions (eg age, date of admission to hospital). This should take about 10 minutes to complete. Your nurse will also be asked two short questions about your nutrition.

What will happen to the information I provide?

When the assessment forms are completed the research investigator will analyse and summarise the results according to groups. A final report will be written and submitted for academic assessment. The findings may be published and presented at conferences. However, you will not be identifiable in any reports, publications or discussions about the data.

How will my privacy be respected?

If you decide to participate, your information will remain strictly confidential. All assessments will be coded with a number instead of your name. All documents will be kept

in a locked research office at Edith Cowan University for a period of 5 years before being destroyed. Only the research investigators will have access to your data.

What are the benefits of me participating? Are there any risks?

By participating in this study you will be assisting me in finding out what is the best way to assess the nutritional status of patients who are in hospital. Should you have any concerns regarding your nutrition please talk to your nurse. There are no risks involved in this study, which consists of answering several simple questions.

Who can I contact if I have any questions about the study?

Should you have any queries regarding the study you can contact Roger Shreeve on 9346 2019 or Jeanne Young on 9346 2561 at the S.C.G.H. Centre for Nursing Research.

Who has given permission for this study?

This study has been approved by the Edith Cowan University Faculty Ethics Committee. If you have any concerns about this study and you would like to talk to an independent person, you may contact Associate Professor Kate White from Edith Cowan University on 9273 8024. This study has also been approved by the S.C.G.H. Nursing Scientific Sub-Committee.

What if I decide not to participate?

Your involvement in this study is entirely voluntary and if you decide not to participate, we respect your decision. Your current or future care will not be affected in anyway. You are also able to withdraw from the study at any time by asking your nurse to contact Roger Shreeve or Jeanne Young on the above mentioned numbers.

What do I do if I am interested in taking part?

If you are interested in taking part in the study please sign the consent form below and leave it on your locker, in the envelope provided.

Thank you for taking the time to read this information sheet.

Sir Charles Gairdner Hospital
Hospital Ave, Nedlands Western Australia, 6009

A comparison of nurses' clinical judgement and the Short Form- Mini Nutritional Assessment in assessing the nutritional status of older patients in an acute clinical setting

Honours Nursing Student: Mr Roger Shreeve
Supervisor: Associate Professor Sue Nikolett
Co-Supervisor Ms Jeanne Young

Consent Form

THIS IS TO CERTIFY THAT I,

_____ (please print name) have read the information sheet for the above named study.

Any questions I have asked have been answered to my satisfaction.

I understand that if I have any concerns or further questions I may contact the people listed on the information sheet given to me.

If I agree to take part in this study, I realise I may withdraw at any time without affecting my current and future access to health services.

I agree that research data gathered for the study may be published provided my name or other identifying information is not used.

.....

Signature of Participant
	Date

.....

Name of Investigator	Signature of Investigator	Date
----------------------	---------------------------	------

This study has been approved by the Edith Cowan University Faculty Ethics Committee. If you have any concerns about this study and you would like to talk to an independent person, you may contact Associate Professor Kate White from Edith Cowan University on 9273 8024. This study has also been approved by the S.C.G.H. Nursing Scientific Sub-Committee.

APPENDIX E

Next of Kin Information Sheet and Consent Form

Sir Charles Gairdner Hospital
Hospital Ave, Nedlands Western Australia, 6009

A comparison of nurses' clinical judgement and the Short Form- Mini Nutritional Assessment in assessing the nutritional status of older patients in an acute clinical setting

Honours Nursing Student: Mr Roger Shreeve
 Supervisor: Associate Professor Sue Nikoletti
 Co-Supervisor: Ms Jeanne Young

Next of Kin Information Sheet

I invite you and your relative to consider participating in a nutritional study I am conducting as part of my Honours Project.

What is the study about?

Good nutrition is important for good health and helps you in recovery when you are ill. Accurate nutritional assessment is important to help nurses care for patients who are undernourished. This study will compare a nutritional assessment form with nurses' clinical judgment on nutrition.

What will you have to do on behalf of your relative?

I would like to ask you 6 short questions regarding your relative (eg food intake, weight loss) and 8 background questions about your relative (eg age, date of admission to hospital). This should take about 10 minutes to complete. Your relative's nurse will also be asked two short questions about your relatives' nutrition.

What will happen to the information I provide?

When the assessment forms are completed the research investigator will analyse and summarise the results according to groups. A final report will be written and submitted for academic assessment. The findings maybe published and presented at conferences. However, you and your relative will not be identifiable in any discussions about the data, nor in any reports.

How will our privacy be respected?

If you decide to participate, your relative's information will remain strictly confidential. All assessments will be coded with a number instead of their name. All documents will be kept

in a locked research office at Edith Cowan University for a period of 5 years before being destroyed. Only the research investigators will have access to your data.

What are the benefits of you and your relative participating? Are there any risks?

By participating in this study you and your relative will assist me in finding out what is the best way to assess the nutritional status of patients who are in hospital. Should you have any concerns regarding your relative's nutrition please talk to their nurse. There are no risks involved in this study, which consists of answering several simple questions.

Who can I contact if I have any questions about the study?

Should you have any queries regarding the study you can contact Roger Shreeve on 9346 2019 or Jeanne Young on 9346 2561 at the S.C.G.H. Centre for Nursing Research.

Who has given permission for this study?

This study has been approved by the Edith Cowan University Faculty Ethics Committee. If you have any concerns about this study and you would like to talk to an independent person, you may contact Associate Professor Kate White from Edith Cowan University on 9273 8024. This study has also been approved by the S.C.G.H. Nursing Scientific Sub-Committee.

What if we decide not to participate?

Your involvement in this study is entirely voluntary and if you decide not to participate, we respect your decision. Your relative's current or future care will be not affected in anyway. You and your relative are also able to withdraw from the study at any time by asking your nurse to contact Roger Shreeve.

What do I do if we are interested in taking part?

If you are interested in taking part in the study please sign the consent form below and leave it on your relative's locker, in the envelope provided.

Thank you for taking the time to read this information sheet

Sir Charles Gairdner Hospital
Hospital Ave, Nedlands Western Australia, 6009

A comparison of nurses' clinical judgement and the Short Form- Mini Nutritional Assessment in assessing the nutritional status of older patients in an acute clinical setting

Honours Nursing Student: Mr Roger Shreeve
Supervisor: Associate Professor Sue Nikolett
Co-Supervisor Ms Jeanne Young

Consent Form

THIS IS TO CERTIFY THAT ON BEHALF OF

I, _____ (please print name) have read the information sheet for the above named study.

Any questions I have asked have been answered to my satisfaction.

I understand that if I have any concerns or further questions I may contact the people listed on the information sheet given to me.

If I agree to take part in this study, I realise my relative and I may withdraw at any time without affecting our current and future access to health services.

I agree that research data gathered for the study may be published provided my relative's and my name or other identifying information is not used.

.....
Signature of Next of Kin

.....
Date

.....

Name of Investigator	Signature of Investigator	Date
----------------------	---------------------------	------

This study has been approved by the Edith Cowan University Faculty Ethics Committee. If you have any concerns about this study and you would like to talk to an independent person, you may contact Associate Professor Kate White from Edith Cowan University on 9273 8024. This study has also been approved by the S.C.G.H. Nursing Scientific Sub-Committee.

APPENDIX F

Nurse Information Sheet

SIR CHARLES GAIRDNER HOSPITAL

Hospital Ave, Nedlands Western Australia, 6009

A comparison of nurses' clinical judgement and the Short Form- Mini Nutritional Assessment in assessing the nutritional status of older patients in an acute clinical setting

Honours Nursing Student: Mr Roger Shreeve
 Supervisor: Associate Professor Sue Nikoletti
 Co-Supervisor Ms Jeanne Young

I invite you to consider participating in a nutritional study I am conducting as part of my Honours Project.

What is the study about?

Accurate nutritional assessment is important to allow for the appropriate care of patients who are undernourished. Adequate nutrition is considered crucial to good health. It assists with immune processes, disease prevention, wound healing and provides psychosocial benefits associated with quality of life. Therefore appropriate and early intervention for nutrition will help improve patients' quality of life. This study will be comparing a nutritional assessment form with nurses' clinical judgment on nutrition.

What will I have to do?

All you will have to do is verbally answer two short questions on the nutritional status of your patient and answer some demographic questions (age, years of nursing experience etc). This should take no more than 5 minutes of your time. Your participation is voluntary and you can withdraw at any time. It is anticipated that you be asked to complete only one to two assessments, however no more than five assessments will be asked of you. Should you not wish to participate, then the nurse from the next shift looking after the consented patient will be approached.

How will my privacy be respected?

If you decide to participate, your information will remain strictly confidential. All assessments will be coded with a number instead of your name. All documents will be kept in a locked research office at Edith Cowan University. for a period of 5 years before being destroyed. Only the research investigators will have access to your data.

Who can I contact if I have any questions about the study?

Should you have any queries regarding the study you can contact Roger Shreeve on 9346 2019 or Jeanne Young on 9346 2561 at the S.C.G.H. Centre for Nursing Research. This study has been approved by the Edith Cowan University Faculty Ethics Committee. If you have any concerns about this study and you would like to talk to an independent person, you may contact Associate Professor Kate White from Edith Cowan University on 9273 8024. This study has also been approved by the S.C.G.H. Nursing Scientific Sub-Committee. **Thank you for taking the time to read this information sheet.**

APPENDIX H

Copy of Edith Cowan University's Research Ethics Approval Letter

13 September 2004

Roger SHREEVE
696 Beach Road
HAMERSLEY WA 6022

Student # 0910471

Dear Roger,

Course: **Bachelor of Nursing - Honours**

Thesis Title: **A comparison of nurses' clinical judgment and the Short Form.**

Date Proposal Approved: **23 August 2004**

Date Ethics Approved: **10 September 2004**

Please be advised that your application for Ethics Clearance has been approved by the Faculty of Computing, Health and Science Ethics Sub-Committee for the conduct of Human Research.

This approval is granted **SUBJECT TO** the procedure/s as outlined in your application and the conditions, if any, as outlined by the Committee in the attached memorandum. **Please note that the collection of data for your research must adhere to these conditions.**

As you received approval for your Honours proposal on the 23rd August 2004 **you are now authorised to commence data collection.**

If you have any queries or need assistance during the course of your study please contact Rebecca Treloar Cook - Administrative Officer - Higher Degrees on **6304 2593**.

Further guidance and information can be obtained from the Faculty of Computing, Health and Science *Honours and Masters by Coursework Handbook* that is available from the following web address: <http://www.chs.ecu.edu.au/org/rhd/admin.html#higher>

I wish you all the best in your studies.



Professor Linda Kristjanson
Associate Dean (Research & Higher Degrees)
Faculty of Computing, Health and Science
Phone: 08 9273 8617
Fax: 08 9273 8882
Email: l.kristjanson@ecu.edu.au

cc. *Student File*
Ethics File
University Ethics Committee
Supervisor – Sue Nikoletti
Postgraduate Coordinator

APPENDIX I

Copy of Sir Charles Gairdner Hospital's Research Ethics Approval Letter



Department of
Health



Sir Charles
Gairdner Hospital

16th April 2004

MR Roger Shreeve
C/- Centre for Nursing Research
Sir Charles Gairdner Hospital
Nedlands WA 6009

Dear Roger,

"A comparison of nurses' clinical judgment and the Short Form-Mini
Nutritional Assessment in assessing the nutritional status of older patients in
the acute clinical setting.

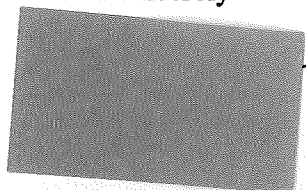
The Nursing Research Scientific Sub-Committee (NRSS) met on 13 July 2004 to review your
proposal with the following suggestions.

- *Change the wording on the information sheet for patients and relatives (Pages 32 & 38)
to a less formal tone.*
- *Page 30, Appendix 2, Q4 add Orthopaedics.*

You may commence your study once a copy of ethics approval has been received from the
Edith Cowan University Faculty Ethics Committee by the SCGH Nursing Research Scientific
Sub-Committee and SCGH Human Research Ethics Committee.

The Nursing Research Scientific Sub-Committee requests a review of the studies approved by
the Committee annually to establish progress. You will be asked to provide an up to date
synopsis of your study on a proforma sheet sent to you at a later date.

Yours sincerely



MS HEATHER GLUYUS
ACTING CHAIRPERSON
NURSING RESEARCH SCIENTIFIC SUB-COMMITTEE

APPENDIX J

Short Form- Mini Nutritional Assessment Permission Letter



April 8, 2004

Dear Mr. Shreeve,

We are pleased to grant you the right to use the Nestlé Mini Nutritional Assessment (MNA®) in your study comparing the MNA-SF with the nurses clinical judgement in assessing older patients nutritional status.

To meet copyright requirements you must include the following references:

Guigoz Y, Vellas B and Garry PJ 1994. Mini Nutritional Assessment. A practical assessment tool for grading the nutritional state of elderly patients. *Facts and Research in Gerontology*. Supplement 2:15-59.

Rubenstein LZ, Jarker J, Guigoz Y and Vellas B. Comprehensive Geriatric Assessment (CGA) and the MNA®: An Overview of CGA, Nutritional Assessment, and Development of a Shortened Version of the MNA®. In "Mini Nutritional Assessment (MNA®): Research and Practice in the Elderly". Vellas B, Garry PJ and Guigoz Y, editors. Nestlé Nutrition Workshop Series. Clinical & Performance Programme, vol. 1 Karger, Bale, 1997.

You must also include the following statement identifying the trademark owners:
®Société des Produits Nestlé S.A., Vevey, Switzerland, Trademark Owners.

We confirm by this letter that we hold the necessary rights and that no consent is required of any third party to grant such permission.

We are happy that you consider the MNA® a valid tool and are using it as a reference tool. We would be very interested in your publication when it is completed.

Best regards,

Patricia S. Anthony, MS, RD, CNSD
Manager, Clinical Nutrition Support Services
Nutrition Strategic Business Division
Nestec Ltd.