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# Prevalence of Attention-Deficit/Hyperactivity Disorder Among Primary School Children in Oforikrom, Ghana Based on the Disruptive Behavior Disorders Rating Scale

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## Abstract

**Objective:** To determine the prevalence of attention-deficit/hyperactivity disorder (ADHD) among primary school children in Oforikrom, Kumasi, Ghana.

**Methods:** 10 of 35 primary schools in Oforikrom were readily available. Of 2000 children aged 5 to 13 years selected, 1540 (77%) of their parents/guardians consented to participate. Their parents/guardians and six teachers from each school were asked to complete the Disruptive Behavior Disorders Rating Scale to screen children for the presence of ADHD, oppositional defiant disorder, or conduct disorder. Children who displayed symptoms (pretty much or very much) in most related items as determined by parents and/or teachers were considered positive cases.

**Results:** The mean age of 1540 pupils was  $9 \pm 2.16$  years. Most (31%) were primary 4 pupils. 5% of pupils displayed ADHD symptoms (attention deficit disorder subtype in 36%, hyperactivity disorder subtype in 27%, and combined subtype in 37%). Of them, 51% were male. Most (19%) of those who displayed the symptoms were in primary 5.

**Conclusion:** The prevalence of ADHD among primary school children in Oforikrom was 5%. 51% of those with ADHD symptoms were male. Most (19%) of those with ADHD symptoms were in primary 5.

**Key words:** Attention deficit disorder with hyperactivity; Child; Ghana; Prevalence

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## Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a common behavioural disorder in children and affects about 3% to 7% of school-age pupils.<sup>1</sup> It is characterised by impulsivity, hyperactivity, cognitive/behaviour or emotional deficits, and inattention symptoms that may manifest as hyperactive.<sup>2</sup> Its worldwide prevalence is between 2% and

7%, with an average of around 5%.<sup>3</sup> In the United States, about 1% to 6% of school-aged children are hyperactive,<sup>4</sup> and approximately 3% to 7% of children have ADHD.<sup>5</sup> In the England and Wales, 5% of school-aged children aged 6 to 16 years have some form of the hyperactive disorder.<sup>6</sup> In Saudi Arabia, 13.5% of primary school children are hyperactive,<sup>7</sup> whereas in Nigeria, the prevalence is 8.7% among children aged 7 to 12 years.<sup>8</sup> In Ghana, the prevalence of ADHD among children varies from 7%<sup>9</sup> to 12.8%.<sup>10</sup>

A hyperactive disorder can affect every aspect of the children's life as well as their parents' and teachers'.<sup>11</sup> Such children's behaviour may disrupt school and home settings, and they are likely to display explorative, inquisitive, playful, restless, impulsive, and overactive characteristics.<sup>11,12</sup>

People with ADHD are easily distracted by irrelevant stimuli that frequently interrupt ongoing tasks, and they are likely to attend to trivial noises or events that may be simply overlooked by someone without the disorder.<sup>13</sup> They have difficulty remaining seated and usually get up frequently. They fidget with objects, tap their hands, and shake their feet or legs excessively. They often get up from the table during meals, while watching television, or while doing homework; they talk excessively, and they make excessive noise during quiet activities.<sup>14</sup> This study aims to determine the prevalence of ADHD among primary school children in Oforikrom, Kumasi, Ghana.

## Methods

This cross-sectional study was approved by the Ethics Committee on Human Research Publication at the Kwame Nkrumah University of Science and Technology (Ref: CHRPE/AP/074/18). Informed consent was obtained from parents/guardians of each participant. There was no monetary incentive for participation, and participants were anonymised.

Oforikrom has 35 primary schools with approximately 14,000 pupils, 245 teaching staff, and 35 headteachers. Multi-stage sampling was used. To achieve a confidence level of 95% with a margin of error of 0.05, 32 of the 35 schools should be selected.<sup>15</sup> However, only 10 schools were readily available, with an estimated sample size of 4000 pupils. To ensure a representative sample of the study population, we proportionally sampled half of subjects from each stratum (school) until the minimum sample size of 2000 was reached.

Of 2000 pupils aged 5 to 13 years selected, 1540 (77%) of their parents/guardians consented to participate. Between December 2017 and March 2018, their parents/guardian and six teachers from each school were asked to complete a structured questionnaire to collect sociodemographic data of pupils and the Disruptive Behavior Disorders Rating Scale to screen children for the presence of ADHD, oppositional defiant disorder, or conduct disorder. The scale has been proved reliable and valid in different studies.<sup>16,17</sup>

The scale includes 45 questions that describe the child's behaviour in terms of hyperactivity/impulsivity, inattention, combination of both, oppositional defiant disorder, and conduct disorder. Both parents/guardians

and teachers were asked in each question the degree of the child's behaviour: 'not at all', 'just a little', 'pretty much', and 'very much'. Children who displayed symptoms (pretty much or very much) in most related questions as determined by parents and/or teachers were considered positive cases. The scale took 5 to 10 minutes to complete. Data were analysed using SPSS (version 21.0, IBM, USA).

## Results

The mean age of 1540 pupils was  $9 \pm 2.16$  years. Most (31%) were primary 4 pupils. 5% of pupils displayed ADHD symptoms (attention deficit disorder subtype in 36%, hyperactivity disorder subtype in 27%, and combined subtype in 37%). Of them, 51% were male. Most (19%) of those who displayed the symptoms were in primary 5 (Table).

## Discussion

ADHD is a common neuropsychiatric disorder among school children.<sup>18</sup> According to the Centres for Disease Control and Prevention,<sup>19</sup> the mean ages for the diagnosis of mild, moderate, and severe hyperactive disorders are 8 years, 7 years, and 5 years, respectively. The worldwide prevalence rates for ADHD are estimated to be 3% to 7% among children.<sup>20</sup> In the present study, 5% of the primary school children displayed ADHD symptoms, consistent with the 5% reported among children in England<sup>6</sup> and Germany.<sup>21</sup> Nonetheless, a higher prevalence of 7% was reported in another study in Ghana,<sup>10</sup> 6.8% by Centers for Disease Control and Prevention in 2015,<sup>19</sup> 8% among children

**Table. Prevalence of attention-deficit/hyperactivity disorder symptoms among primary school children by sex, age, and class**

Variable	No. (%) of children (n=1540)*	Negative*	Positive (n = 70)*	X <sup>2</sup> (DF)	p Value
Sex				1.76 (1)	0.169
Male	776 (52)	740 (51)	36 (51)		
Female	764 (48)	730 (49)	34 (49)		
Age, y				2.67 (1)	0.129
6-7	387 (26)	370 (97)	17 (24)		
8-9	407 (35)	392 (95)	15 (21)		
10-11	384 (24)	364 (93)	20 (29)		
≥12	362 (15)	344 (94)	18 (26)		
Class				12.11 (1)	0.121
Primary 1	232 (6)	220 (15)	12 (17)		
Primary 2	240 (9)	229 (15)	11 (16)		
Primary 3	260 (18)	248 (17)	12 (17)		
Primary 4	289 (31)	277 (19)	12 (17)		
Primary 5	259 (18)	246 (17)	13 (19)		
Primary 6	260 (18)	250 (17)	10 (14)		

\* Data are presented as No. (%) of children

in Puerto Rico,<sup>22</sup> and 13.5% in a study in Saudi Arabia.<sup>7</sup> However, a prevalence of <5% has also been reported.<sup>23-25</sup> The difference in prevalence between studies could be attributed to differences in methodologies, classification systems, definitions, or age range of participants. The prevalence of ADHD is higher in males than in females, according to a review of 44 studies<sup>26</sup> and the Centers for Disease Control and Prevention.<sup>19</sup>

There are limitations to the present study. Participants were seen only once. There was no further clinical test to confirm the presence of ADHD such as the Swanson, Nolan, and Pelham Rating Scale (SNAP-IV), SNAP-IV Scoring, SNAP DSM-5, and SNAP & SWAN website.

## Conclusion

The prevalence of ADHD among primary school children in Oforikrom was 5%. 51% of those with ADHD symptoms were male. Most (19%) of those with ADHD symptoms were in primary 5.

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## Declaration

The authors have no conflict of interest to disclose.

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