

# Prevalence and correlates of common mental disorders among children and adolescents in Blantyre-Urban, Malawi

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## Abstract

### Background

The high global prevalence of mental disorders justifies the need to quantify their burden in the sub-Saharan Africa where there is a dearth of information. These mental disorders are linked to different socio-demographic factors.

### Objective

To determine the prevalence of, and factors associated with mental disorders among children and adolescents in Blantyre City, Malawi. Methods: Children and adolescents aged 6 to 17 years were interviewed to determine their socio-demographic characteristics and assess their mental health status using the Strengths and Difficulties Questionnaire (SDQ) and Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS). Associations between mental disorders and socio-demographic characteristics were tested using Chi-square and logistic regression analysis.

### Results

The prevalence of symptoms of psychopathology on the SDQ was 7.3% (95%CI 4.8-10.5%) while for the K-SADS was 5.9% (95% CI 3.7%-8.9%). The prevalence of mental disorders across the age ranges of 6 to 12 years and 13 to 17 years was 5.4% and 7.9 % respectively. Males had a higher prevalence (7.1%) compared to females (4.7%). Conduct disorder was most prevalent (3.4%), followed by either type of ADHD- Attention Deficit Hyperactive Disorders (2.0%). Having a single parent ( $p<0.001$ ), staying with a non-biological guardian ( $p<0.030$ ), engaging in paid work ( $p<0.039$ ), not attending school ( $p<0.019$ ) and having teacher difficulties ( $p<0.028$ ) were positively associated with a mental disorder.

### Conclusion

The socio-demographic factors associated with the risk of developing mental disorders may be important targets for mental health intervention programs.

**Keywords:** Mental disorders, Malawi, children and adolescents, prevalence

## Introduction

Mental disorders are among the leading causes of disease burden worldwide associated with 125.3 million Disability-Adjusted Life Years (DALY's) in 2019<sup>1</sup>. There is limited published literature on the prevalence and correlates of mental disorders among children and adolescents in Malawi. One study reported depression as the most common mental health condition among adolescents with at least 72% prevalence among adolescents referred for mental health screening and diagnosis in Lilongwe<sup>2</sup>. Despite lack of adequate evidence in our setting, studies elsewhere have established that overall, among youth aged 12–24 years of age, there is a 20–25% annual risk of having a mental health diagnosis<sup>3</sup>. There is need for research in sub-Saharan Africa to understand the scale of the mental health problems among adolescents and children<sup>4</sup>. We, therefore, conducted this study to determine the prevalence of common mental disorders (CMD) and the factors associated with the mental disorders among children and adolescents in Blantyre-Urban, Malawi.

## Methods

### Study design and setting

This cross-sectional study took place in South Lunzu, an informal settlement in Blantyre City located in the southern region of Malawi. Blantyre City has an estimated population of 350, 643 children and adolescents<sup>5</sup>.

### Study population

All children and adolescents aged 6 to 17 years living in Blantyre City except those in institutionalized care were eligible for inclusion. Potential participants were excluded if they had any of the following characteristics: (1) were visitors from outside Blantyre urban at the time of the study, (2) were unable to speak either English or Chichewa, (3) were deemed to be too ill to participate, and (4) had hearing or speech disability.

### Sample size

The formula below was used to calculate the sample size for the study population.

$$N = \frac{Z\alpha^2 P(1-P)}{D^2} \times \text{design effect}$$

Where:  $N$  = minimum sample size required;  $Z_{\alpha}$  = the standard normal deviation corresponding to two-sided level of significance ( $\alpha$ ) of 5% (1.96);  $P$  = the proportion of outcome (mental disorder/s) and  $D$  = degree of precision at 5%; Design effect = 1.5.

Kleintjes found an overall estimated adjusted prevalence of 17% for mental disorders in Western Cape, South Africa<sup>6</sup>. This prevalence was used to calculate the sample size for the study as indicated below.

$$N = \{(1.96) (1.96) \times 0.17 \times 0.83 / (0.05 \times 0.05)\} \times 1.5$$

**N= 324**

When adjusted for a non-respondent rate of 10%, the minimum calculated sample size for the study was 357 children and adolescents, rounded off to the nearest whole number.

### **Sampling technique**

Participants were randomly selected using a multi-stage sampling technique. After a random selection of households in three randomly selected standard enumeration areas as provided by the National Statistics Office of Malawi, all eligible children and adolescents were screened for mental disorders.

### **Study instruments**

**Socio-demographic Questionnaire.** This is a 40-item socio-demographic Questionnaire that was used to collect data regarding personal, family and school life of the respondent. The tool was developed by Omigbodun and we adapted and translated it to Chichewa for local use<sup>7</sup>.

**Malawi Global School-Based Health Questionnaire (M-GSHS).** Four modules (violence and intentional injury, mental health, tobacco use and drug use) of this validated questionnaire were used in this study<sup>8</sup>. The questionnaire was augmented with questions on delusions, hallucinations and school experiences and was self-completed by adolescents.

**Strengths and Difficulties Questionnaire (SDQ).** This is a 25-item behavioural screening questionnaire used to identify children at high risk of mental illness. It assesses negative attributes in four sub-scales of mental symptoms (conduct problems, emotional symptoms, peer problems, hyperactivity-inattention) and positive attributes in terms of pro-social behaviour in the previous 6 months<sup>9</sup>. The instrument has been used in previous studies done in Malawi, and is presumed reliable and valid for use in the study setting<sup>10</sup>. Children scoring in the abnormal range in any sub-class of disorders or in the total scores were further assessed using the K-SADS-PL.

**The Kiddie Schedule for Affective Disorders and Schizophrenia Lifetime DSM-5 version (K-SADS-PL).** This instrument is a semi-structured interviewer-administered diagnostic instrument that is designed to assess current and past episodes of psychiatric disorders in children and adolescents aged 6-18 years according to DSM-5 criteria<sup>11</sup>. This instrument has two parts; the diagnostic screening part which surveys for and rates the primary symptoms of disorders and the diagnostic supplement part in which children who score above threshold during screening are assessed for the diagnosis of current and most severe past psychiatric episodes. Only the diagnostic supplement part was used to diagnose past or present severe episodes of DSM-5 disorders in the children who scored abnormal on SDQ screening. The tool was also used to diagnose

psychotic and substance-related disorder(s). This tool was used in a study in Kenya<sup>12</sup> but we had no information that it had previously been used in Malawi.

### **Data collection process**

Data collection was done at the households of the participants using paper-based questionnaires during weekends and in the afternoon during weekdays to improve study participant recruitment and not to disrupt the schooling of the children and adolescents. Prior clearance to collect data was given by local leaders for the study area.

**Stage one:** The socio-demographic questionnaire and the SDQ were administered to parents or guardians of all participants by professional nurses from the study area. Adolescents aged 13-17 years were given the SDQ and M-GSHS to fill by themselves unless they preferred interviewer administration. The scores of each SDQ sub-class and total difficulty were determined by the interviewers by hand scoring.

**Stage two:** Further assessment using the appropriate K-SADS-PL diagnostic supplements for the specific diagnosis was done for all children who had any of the following regardless of their SDQ score: (1) an abnormal score in the four sub-scales of the SDQ, (2) suicidal ideations or history of suicide attempts, (3) alcohol and/or substance use, and (4) symptoms of psychosis as determined by the M-GSHS. The assessments were done by a medical doctor trained in community mental health.

### **Data management and analysis**

All collected data were entered in Microsoft Excel then cleaned and summarized in Tables and percentages using the Statistical Package for Social Sciences (SPSS) version 23. Participants' socio-demographic characteristics were presented in frequencies and percentages for the categorical data and all continuous data were summarized as mean and standard deviation. The overall prevalence of specific DSM-5 disorders and their patterns were presented in frequencies and percentages. Association of these disorders with selected socio-demographic characteristics were assessed using Chi-square test at 5% level of statistical significance. All significant associations were entered into a multivariate logistic regression model to determine associations at a confidence interval of 95%. For purposes of this analysis, all participants aged less than 13 years were classified as children whereas those aged 13 and older were classified as adolescents.

### **Ethical considerations**

Ethical approval was obtained from the College of Medicine Research and Ethics Committee (COMREC) of the University of Malawi (P.0.1/19/2583). Written informed consent was obtained from all parents or caregivers of the children and adolescents, and assent was obtained from the children and adolescents.

### **Results**

#### **Participants socio-demographic characteristics**

Three hundred and fifty-four participants were enrolled in the study. Among the participants, 172 (48.6%) were females and 76 (21.5%) participants were adolescents. The mean age of participants was 10.25 years (SD: 3.05; range 6-17 years). Most (n=299, 84.5%) of the participants were living with 2 guardians. Fifty-one (14.6%) were not living with

any biological parent and 67 (18.9%) were living in a single-parent home following divorce, separation, or death of one parent.

Three hundred and fifty participants (98.9%) were in school and 201 (57.4%) belonged to classrooms with less than 100 students.

**Table 1: Prevalence results of SDQ screening and mental disorders distributed across gender and age group of participants**

Variable	Result of SDQ screening		Mental Disorder		
	n (%)	95% CI		n (%)	95% CI
	N=354		N=354		
Sex					
Female	12 (7)	3.6-11.8		8 (4.7)	2.0-9.0
Male	14 (7.7)	4.3-12.6		13 (7.1)	3.9-11.9
Total	26 (7.3)	4.8-10.5		21 (5.9)	3.7-8.9
Age Group (Years)					
6 to 12	20 (7.2)	4.4-10.9		15 (5.4)	3.0-8.7
13 to 17	6 (7.9)	3.0-16.4		6 (7.9)	3.0-16.4
Total	26 (7.3)	4.8-10.5		21 (5.9)	3.7-8.9

\*CI = Confidence interval

**Table 2: Prevalence and pattern of mental disorders among children and adolescents in Blantyre-Urban, Malawi (N=354)**

Disorder	Frequency (%)
DSM 5 Mental Disorder	
Conduct	12 (3.4)
Either type of ADHD*	7 (2.0)
Hyperactive ADHD	5 (1.4)
Combined ADHD	2 (0.6)
Depression	4 (1.1)
Specific Phobia	4 (1.1)
**Intellectual Disability	2 (0.6)
**Secondary Enuresis	1 (0.3)

\*This accounts for having either combined, inattentive or hyperactive types of ADHD

\*\*Pre-diagnosed clinically

The majority of the participants, 337 (96.3%) reported not having difficulties with teachers and only 88 (25.1%) reported unsatisfactory academic performance based on their average scores from school progress reports.

**Prevalence of mental disorders**

**Prevalence of SDQ Abnormalities**

An SDQ prevalence of 7.3% (95%CI: 4.8-10.5) for psychopathology was determined in the screening of the children and adolescents. Out of 26 children and adolescents

who screened positive on SDQ, 20 (7.2%) were children and 6 (7.9%) were adolescents. The prevalence of SDQ psychopathology for females and males was 7.0% and 7.7% respectively. The summary of SDQ prevalence is provided in Table 1.

**Prevalence of mental disorders**

Out of the 76 adolescents who completed the M-GSHS questionnaire, out of 2 (2.6%) who reported suicidal ideation, one was male who also attempted suicide twice. Delusions and hallucinations were found in 2 (2.6%) adolescents, one female and one male. Only 1 (1.3%) male adolescent reported use of alcohol in the past year.

The overall prevalence of mental disorders was 5.9% and was higher in males (7.1%) than in females (4.7%). The summary of K-SADS prevalence is provided in Table 1.

**Patterns of mental disorders**

Conduct disorder was the most prevalent [3.4% (12)] followed by either type of ADHD-Attention Deficit Hyperactivity Disorder (hyperactive, inattentive and combined types) [2.0% (7)].

The respective prevalence of combined ADHD and hyperactive ADHD was 0.6% (2) and 1.4% (5). The prevalence of inattentive ADHD was 0.0%. Depression and specific phobia each had a prevalence of 1.1% (4). Other mental disorders were intellectual disability [0.6% (2)] and enuresis [0.3% (1)]. The summary of patterns of mental disorders is provided in Table 2 below.

**Comorbidities of mental disorders among participants**

There was comorbidity in 8 (38.1%) participants with highest comorbidity between ADHD and conduct disorder [5 (23%)] followed by intellectual disability [2 (9.5%)]. One (4.7%) participant had more than two mental disorders and only 1 (4.7%) participant had depression and specific phobia. Two (9.5%) participants had comorbid epilepsy.

**Socio-demographic correlates of mental disorders in participants**

Male participants had a higher proportion (13%) of mental disorders than females (8%) with no statistical significance (p<0.321). There was significant positive association between having a mental disorder and engaging in work for money (p=0.039), not staying with biological parent(s) (p<0.030), staying with a single parent (p<0.001), cessation of school attendance (p<0.019), having difficulty with teachers (p<0.028) and higher classroom population (p<0.007). The Summary of socio-demographic characteristics associated with mental disorders is provided in Table 3 below.

**Table 3: Association between personal characteristics and mental disorders among children and adolescents in Blantyre-Urban, Malawi**

Variable	Mental Disorder		Total (N=354)	X <sup>2</sup>	p-value
	No [n (%)]	Yes [n (%)]			
Sex					
Female	164 (95.3)	8 (4.7)	172 (100)	0.98	0.321
Male	169 (92.9)	13 (7.1)	182 (100)		
Engaged in work for money					
No	314 (94.9)	17 (5.1)	331 (100)	5.79	0.039* <sup>f</sup>
Yes	19 (82.6)	4 (17.4)	23 (100)		
Marital Status					
Single parent	55 (82.1)	12 (17.9)	67 (100)	21.25	<0.001* <sup>f</sup>
Married	278 (96.9)	9 (3.1)	287 (100)		
Present guardian					
Biological parent(s)	285 (95.3)	14 (4.7)	299 (100)	5.39	0.030* <sup>f</sup>
Grandparent(s), uncle/aunt or sibling	48 (87.3)	7 (12.7)	55 (100)		
Child in School? (N=354)					
Yes	331 (94.6)	19 (5.4)	350 (100)	14.08	0.019* <sup>f</sup>
No	2 (50.0)	2 (50.0)	4 (100)		
Teacher Difficulty (N=350)					
Absent	321 (95.3)	16 (4.7)	337 (100)	8.19	0.028* <sup>f</sup>
Present	10 (76.9)	3 (23.1)	13 (100)		
Number of children in class (N=254)					
≤100	195 (97.0)	6 (3.0)	201 (100)	9.03	0.007* <sup>f</sup>
≥101	46 (86.8)	7 (13.2)	53 (100)		

\*p-value significant at 5%

<sup>f</sup> test statistic using Fisher's Exact Test***Socio-demographic characteristics associated with specific mental disorders***

This study only accounted for the socio-demographic factors that were associated with conduct disorder. More males had conduct disorder than females [10(5.5%) versus 2 (1.2%);  $\chi^2$  p-value < 0.024].

Marital status was significantly associated with conduct disorder, where a high proportion of children had a single parent [6 (9.0%)] with p-value < 0.013. Having a mental disorder was significantly associated with number of children in class (p<0.011), where more children with conduct disorder [5 (9.4%)] were observed in classes with ≥101 children.

***Socio-demographic characteristics of participants independently associated with mental disorders***

On logistic regression, children who had a single parent had 5 times higher odds of being diagnosed with a mental illness (p<0.012) while children who belonged to classrooms with more than 100 children had 3 times higher the odds of being diagnosed with mental illness (p<0.032) using multivariate model. Table 4 shows the results of binary regression analysis.

**Discussion*****Prevalence of mental disorders among children and adolescents in Blantyre-Urban***

We found a 7.3% prevalence of symptoms of mental disorders among children and adolescents as measured by the SDQ.

**Table 4: Bivariate and multivariate regression analysis of sociodemographic factors independently associated with mental disorders among children and adolescents in Blantyre-Urban, Malawi.**

Characteristic	Bivariate		Multivariate Model	
	UOR (95% CI)	p-value	AOR (95% CI)	p-value
Marital Status				
Married (ref)	1		1	
Single	6.739 (2.71-16.77)	<0.001*	5.318 (1.44 -19.68)	0.012*
Present guardian				
Biological parent(s) (ref)	1		1	
Grandparent(s), uncle/aunt or sibling	2.969 (1.14 -7.73)	0.026*	2.038 (0.50 - 8.29)	0.320
Engaged in work for money				
No (ref)	1		1	
Yes	3.889(1.91-12.70)	0.025*	2.838(0.54 - 14.81)	0.216
Class Children				
≤100 (ref)	1		1	
≥101	4.946(1.59-15.41)	0.006*	3.810(1.12 - 12.92)	0.032*
Having difficulty teachers				
Absent (ref)	1		1	
Present	6.019(1.51-24.03)	0.011*	2.404 (0.33 - 17.59)	0.388

\*Statistically significant p-value

UOR= Unadjusted odd ratio; AOR= Adjusted odds ratio; 1= ref: reference category

Among those with symptoms of mental disorders, 5.9% of the participants satisfied the K-SADS case definitions for various mental disorders, with conduct disorder and ADHD having 3.4% and 2.0% prevalence, respectively. There was also a 23% comorbidity of ADHD and conduct disorder, and two other participants with epilepsy had comorbidity with either one of intellectual disability or ADHD. These findings are consistent with the estimated 6—7% global prevalence of mental disorders among children and adolescents<sup>13,14</sup>. Although findings in other studies reported higher prevalence for mental disorders among children and adolescents in the range of 10 – 20% in LMIC<sup>4</sup> and in South Africa<sup>6</sup>, our study has objectively provided evidence for presence of mental disorders in Malawi using instruments that have been validated for use in mental health research. However, our study may have underestimated the prevalence due to differences in study methods. Other comparable studies were systematic reviews and annual prevalence rates of mental disorders were derived<sup>6</sup>. Our study found lower prevalence of depression and anxiety despite the evidence of its high global prevalence. The small sample size and lack of the SDQ to pick emotional symptoms would account for this.

### ***Sociodemographic Correlates of Mental Disorders***

There was positive association between mental disorders and being engaged in paid work before or after school. Aransiola<sup>15</sup> also established a similar association. This finding suggests the positive relationship between engaging children in paid work and poor mental health where paid work can influence mental illness or having mental illness can put the child at risk of skipping or absconding from school to engage in paid work. Engaging children in paid work could also indicate poor social economic status where children engage in paid work to support the families where they belong. Poor socioeconomic status is also an important risk factor for developing mental illness<sup>16</sup>. This study, however, did not establish the link between poor social economic status and presence of mental illness. Our study found that not attending school and having reported difficulty with teachers have positive association with mental illness. Surveys conducted between 2004 and 2007 established a bi-directional association between poor mental health and exclusion from school and reported that children who had poor mental health also had problems at school<sup>17</sup>. Children with mental illness may show abnormal behaviours which teachers might interpret as inappropriate for the class environment. This poses risk of unhelpful

disciplining styles for such children by their teachers such as excluding them from the classroom. Parents may also decide to exclude children from the school community to prevent the stigma associated with having mental illness. Children living in single parent homes were likely to be diagnosed with mental disorders. The absence of one parent can affect provision of complementary emotional, physical, and social support to children from both parents. Special programs targeted towards parents such as parenting skills and managing challenging behaviours should be planned for parents to achieve quality of life among children with mental disorders<sup>18</sup>. The findings of this study provide evidence for development of child mental health policy, strategic plans, and programmes to promote the wellbeing of children with mental disabilities in the school and general community. More community-based studies with larger sample size should also be conducted to establish more associations between mental health and various sociodemographic factors among children and adolescents in Malawi.

### Study strengths and limitations

To the best of our knowledge, this is the first study in Malawi aimed at investigating the prevalence of CMD and factors associated with the same among children and adolescents in Malawi. As a topic that is understudied in Malawi and sub-Saharan Africa, few standardized methods and validated study instruments exist. Using multiple data collection instruments, we have assessed CMDs presence among children and adolescents in the study area. Although the geographic restriction of the study limits the generalizability of the results, these findings raise pertinent questions relating to children's rights that we believe are of national concern. This study was subject to the limitations of cross-sectional studies and thus we could not establish causality of the associations stated above. The risk of recall bias in this cross-sectional study limited the potential to determine the association between childhood malnutrition and CMDs.

This study did not investigate the associations between the CMDs identified and sociodemographic factors (e.g., poverty, alcoholism in a parent, domestic violence, and corporal punishment) and clinical risk factors (e.g., childhood malnutrition and HIV-associated neurocognitive disorders), which have been associated with higher prevalence of mental disorders and are potential areas of study in this setting.

### Conclusion

We found prevalence of 5.9% for mental disorders in Blantyre-Urban, Malawi, similar to findings from some studies done in developed countries. However, higher prevalence has been observed in other studies done in high and low and income countries. Behavioral disorders were the most prevalent in this community with other specific mental disorders being less prevalent as opposed to studies done elsewhere. This study has also established sociodemographic factors that have positive association with mental disorders which can be targeted in programming to meet the mental health needs of children and adolescents of this community.

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