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Prevalence and factors contributing to mental health challenges among school-going adolescents: a case of a climate-vulnerable Manafwa Watershed in Uganda

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Abstract

Background Globally, mental health challenges are common among school-going adolescents, with a prevalence of 50.2% and 43.6% for depression and anxiety disorders, respectively. In Northeastern Uganda, a prevalence of 26.6% and 8.6% for anxiety and depressive disorders respectively were reported among children. School-going adolescents are at higher risk of developing these mental health challenges and this could be worsened by natural disasters like landslides. We aimed to determine the prevalence and factors contributing to mental health challenges (having at least one of following; depression, anxiety, anger, disruptive behaviour and social concept) among school adolescents in the Manafwa Watershed area.

Methods This was a cross-sectional study in 3 districts of the Manafwa watershed area (Bududa, Manafwa, and Butaleja). We selected school-going adolescents aged 13-18 years because of the nature of study tools. Mental health challenges (anxiety, depression, anger, disruptive behaviour and self-concept) were assessed using the Beck Youth Inventory-II. Descriptive statistics and inferential analysis were performed to determine factors associated with mental health challenges.

Results A total of 762 adolescents participated, with a median age of 17 years (interquartile range =16–17 years). More than half of the students were females. The prevalence of mental health challenges was 65% with a (confidence interval) = 54.0% — 75.0%; the majority 44% of the participants had anxiety, and 31% had disruptive behaviour. Families with more than five children [adjusted odds ratio = 1.18, 95% confidence interval= 1.08—1.29, *p* value = <0.001] and substance abuse [adjusted odds ratio = 1.20, 95% confidence interval= 1.15—1.24, *p* value <0.001] were significantly associated with mental health challenges.

Conclusion The prevalence of mental health challenges among students was high with majority having anxiety and disruptive behaviour. Adolescents from families with more than five children and those with substance

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abuse were more likely to have mental health challenges. We therefore recommend that various stakeholders such as the Ministry of Health, and the Ministry of Education, design a curriculum that caters to the mental health needs of children. Family planning awareness, awareness on Government laws prohibiting alcohol and substance use, and parenting skills should be raised by the local leaders.

Keywords Mental health challenges, School-going adolescents, Vulnerable climate, Uganda

Introduction

Mental health challenges are a global public health problem, and the majority begin during youth (12–24 years of age) [1]. Mental health challenges are mental health conditions characterized by a clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour. It is usually associated with distress or impairment in important areas of functioning. According to the World Health Organization, 14.3% adolescents experience mental health challenges [2]. Globally, mental health challenges are common among school-going adolescents, with a prevalence of 50.2% and 43.6% for depression and anxiety disorders, respectively [3]. In Kenya, the prevalence of anxiety among adolescents was 38% [4]. A study conducted in Northeastern Uganda using the MINI international neuropsychiatric interview for children and adolescents showed a high prevalence of anxiety (26.6%) among adolescents [5]. A prevalence of 21% of depressive symptoms was also seen among adolescents in Central Uganda [6].

The risk of mental health challenges among students has been found to be greater among girls and adolescents not living with their biological parents [7]. Another study in Uganda showed that mental health challenges such as depression are associated with living in a child-headed household, chronic physical illness [8, 9] and orphanhood [6]. Mental health issues are linked to an increased incidence of burnout, suicide, dropout, and poor academic achievement in this age group [10, 11]. Multiple studies have also linked the closure of schools during the COVID-19 pandemic to increased mental health challenges among school going adolescents [12, 13].

Several studies have also linked climate changes including landslides to mental health challenges among children and adolescents [14, 15]. In Eastern Uganda, especially in climate-threatening climate and landslide-prone areas such as the Manafwa watershed area [16, 17], a preliminary study conducted in three sub-counties of the Bududa district (one of the Manafwa watershed districts) revealed that 154 (73.3%) adolescents reported that during the lockdown, they were worried about not returning to school, while 141 (67.1%) felt lonely at times during the pandemic, with 129 (61.4%) feeling sad or low sometimes during the COVID-19 pandemic [18]. The Manafwa Watershed area, one of the most highly populated areas in Uganda, nestled in the landscapes of Uganda, presents a unique climate and sociocultural context that influences the experiences of its school-going adolescent population. Although there is still lack of strong evidence of research on the mental health challenges of adolescents in this area.

We hypothesise that the prevalence of mental health challenges in higher in this region compared to other setting. We conducted a study assessing the prevalence and factors contributing to mental health challenges (anxiety, depression, anger, disruptive behaviour, and social concept) of school-going adolescents (children aged 13 to 18 years who attended secondary school in a climate vulnerable Manafwa watershed, Uganda).

Methods

Study design and setting

This was a cross-sectional study in the Manafwa watershed, Eastern Uganda, between May 2023 and June 2023. The Manafwa watershed is one of the largest watersheds (600 km^2) on the slopes of Mountain Elgon in Eastern Uganda and consists of three districts: Butaleja, Bududa, and Manafwa. The area has a total population of 652,861 people. The region has continuously been affected by natural disasters, majorly flooding and landslides. Besides leaving many individuals dead, these natural disasters also leave families homeless, children orphans, and the massive destruction of farms. At the institution of lockdown measures, Bududa district was still recovering from deleterious effects of landslides. The Manafwa watershed has approximately 230 primary schools and 40 secondary schools. Of the total population, 203,262 (31.1%) attended school. Among those who attended school, 40,442, representing 20%, were adolescents aged 13 to 18 years [19]. The Bududa district has 14 secondary schools with more than 6000 students. The Butaleja district has 22 secondary schools and 6000 students, and the Manafwa district has a total of 10 secondary schools with approximately 6800 students.

Participants

The target population for this study were all school going children in secondary schools in the Manafwa watershed region. We included students aged 13–18 years in government-aided secondary schools with written informed

assent from the child and a written permission from the parent/guardian, informed consent forms for school-going children aged 18 years was also obtained.

Students who missed school at the time of data collection, who were sick, or who were unable to participate in the study were excluded.

We focused specifically on adolescents who are 13 years and older because children below 13 years of age are predominantly enrolled in primary schools, whereas those aged 13 and above are typically in secondary schools. By selecting secondary schools, we ensured a more homogenous sample of adolescents who are experiencing similar social, educational, and developmental stages. This age group, middle to late adolescents (13–19 years) experience a significant cognitive, emotional, and social differences hence why focussing on those 13 and older allows us to target a group that is more comparable in terms of these developmental characteristics. Our study tools, the Beck Youth Inventories II and CRAFT tools are used in children not more than aged 18 years hence why we stopped on 18 years of age. Proportionate sampling was used to select the number of children to be recruited per district. A total of 250, 256, and 256 participants were recruited from Manafwa, Bududa, and Butaleja, respectively. Four secondary schools were selected per district based on population size. For each district we selected approximately 62 children per school. Children were mainly selected from senior 1 to senior 5 because of the age. A total of approximately 12 children were selected per class. Participants were then selected randomly using a random applicator program. A sampling frame consisting of all children from each class who attended school on that day was used.

Sample size estimation

Sample size calculation was performed using the Kish-Leslie formula for single proportions [20]. $N = \frac{Z^2 \frac{\alpha}{2} p(1-p)}{d^2}$ where p = The prevalence of depression and anxiety among adolescents during pandemic was 31.3% [21]. Z = Standard normal value corresponding to 95% level of confidence (1.96). d = tolerable sampling error 0.05. This gave $N = 331$.

A sample size of 762 was obtained after adjusting for clustering using a design effect of 2 and adjusting for 15% nonresponse.

Recruitment plan

The research assistants worked together with a contact teacher from the schools to generate sampling frame and to send out letters of permission to the parents.

Data collection

The data were collected by research assistants who were trained in data collection, research ethics, and questionnaire administration especially on how to ask sensitive questions.

A sampling frame for each school was generated by registering the students in the classes on the day of data collection, and random sampling was performed. Additional 5 children were selected from each class to cater for a child who refused or whose parents refused to participate in the study. Eligible participants provided informed consent, and questionnaires were administered. For participants under the age of 18, permission forms were provided for delivery to their parents or guardians a day before data collection. Upon receiving the signed permission forms the following day, we proceeded to obtain assent from the minors before administering the questionnaires. For participants who were 18 years, the data was collected the same day they offered informed consent.

Study tools and variables

Pretested questionnaires were used to collect data from the participants and transferred to the Kobo Toolbox platform. We had the sociodemographic questionnaire developed from literature and it collected variables such as age categorized into early adolescence (13–14 years), middle-aged adolescence (15–17 years), late adolescence (> 17 years) [22], sex, district, number of adults in the home, number of family members who are children, number of school-going children in the home, orphanhood, nature of the family, household head (supplementary file 1).

Substance abuse was assessed using the CRAFT tool and mental health challenges was assessed using the Beck Youth Inventories II as described below.

Beck youth inventories

The Beck youth Inventories Second Edition (BYI-2) was used to assess mental health challenges in children aged 7 to 18 years. This is a five-inventory instrument that was developed to represent children's automatic thoughts, as well as emotional, behavioural, physiological, and cognitive symptoms. Each inventory (Self-concept, Anxiety, Depression, Anger, Disruptive Behaviour) contains 20 statements concerning thoughts, feelings, and behaviours that represent that underlying dimension. Self-concept taps into aspects concerning self-confidence and positive self-worth. "Anxiety" reflects children's specific worries, fears, including loss of control, and physiological symptoms associated with anxiety."Depression" reflects both vegetative and behavioural symptoms of

depression."Anger" reflects unfair treatment, feelings of anger, and hatred. "Disruptive behaviour" refers to thoughts and behaviours associated with conduct disorder and oppositional-defiant behaviour [23]. Studies conducted between 2005-2022 showed internal consistency ranging between 0.88-0.96 [24]. In this study, level of internal consistency was high 0.87.

For this study, mental health challenge was defined as having depression, anxiety, anger, and disruptive behaviour when T-score is greater than 59 and self-concept when T score is less than 45.

Car-Relax-Alone-Family and Friends-Trouble (CRAFFT) tool

To screen for substance abuse, we used the Car-Relax-Alone-Family and Friends-Trouble (CRAFFT) tool for children aged 12 to 18 years [25]. CRAFFT is a mnemonic acronym of the first letters of keywords in the test's 6 questions: (1) "Have you ever ridden in a CAR driven by someone (including yourself) who was 'high' or had been using alcohol or drugs?" (2) "Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?" (3) "Do you ever use alcohol or drugs while you are by yourself, ALONE?" (4) "Do you ever FORGET things you did while using alcohol or drugs?" (5) "Do your family or FRIENDS ever tell you that you should cut down on your drinking or drug use?" (6) "Have you ever gotten into TROUBLE while you were using alcohol or drugs?" Each "yes" answer is scored 1 point, and a CRAFFT total score of 2 or more is highly correlated with having a substance-related diagnosis and the need for substance abuse treatment [25]. The CRAFFT tool was developed by Knight et al. to screen for substance-related risks and problems in adolescents. When administered in a primary health care setting, the CRAFFT had good discriminative properties for determining alcohol and other substance use disorders in adolescents, with a high sensitivity (0.80) and specificity (0.86). The tool also had good internal consistency (Cronbach's alpha 0.68) [26]. The CRAFT tool has also been used and validated in eastern Uganda. In this study, the internal consistency was 0.17.

The exposure variable for this study was the COVID-19 pandemic and its restrictive measures like lockdown.

Data analysis

The responses from the questionnaires were exported and analysed using Stata software version 14.0. Descriptive statistics such as medians and corresponding interquartile ranges were used to summarize continuous variables, while proportions, percentages and bar graphs were used to describe categorical variables.

To determine the prevalence of mental health challenges (having any of the inventories such as anger, anxiety, depression, self-concept and disruptive behaviour) was determined by calculating the total raw score for each inventory in the BYI 2 by adding item scores of 0, 1, 2, or 3 for all 20 items on the scale. The range of total raw scores for each of the five inventories is 0 to 60. The linear T score transformation method was used to transform total raw scores to standardized scores by converting to a mean of 50 and a standard deviation of 10. T scores for each norm group were computed using means and standard deviations specific to that norm group, i.e., ages 11–14 and 15–18. For depression, anxiety, anger, and disruptive behaviour, the higher the child's score on the continuum, the greater the distress the youth reported, where T = 70 + extremely elevated, T = 60–69 moderately elevated, T = 55–59 mildly elevated, and T = < 55 average. For self-concept, higher scores indicate a positive self-concept. T = > 55 above average, T = 45–55 average, T = 40–44 lower than average, and T = < 40 much lower than average. Absent health challenges were defined as "present if participant had either extremely elevated, moderately elevated, above average or average on any of the inventories vs. "absent if participant scored either mildly elevated, average, lower than average or much lower than average on any of the inventories.

To determine the factors contributing to mental health challenges, we used modified Poisson regression analysis with clustered robust standard errors. The assumption for independence was met, the probability of one participant having a mental health challenge would be independent of the probability of another participant having a mental health challenge. Since the outcome was common (prevalence greater than 10%) and binary, modified Poisson regression was most preferred. A bivariate analysis was performed, and variables with p values < 0.2 and variables with biological plausibility (age, sex and orphan status) were considered in the multivariate analysis, which was performed using stepwise backwards elimination and p-value of 0.05 considered to be statistically significant.

The model was a good fit, p value 0.01.

Quality control measures

All study tools were translated into Lumasaba, which is a common language spoken in the three districts by two native speakers working independently. It was then back translated into English by two other Lumasaba speakers. The two English translations were then checked against each other by a native English speaker for inter translator reliability and checked against the original English language inventory to ensure correctness. Differences between the two English translations were reconciled, and one final translation was used for the study.

Research assistants underwent protocol training by the study Principal Investigator (PI) and the study team on

the study protocol and data collection procedures to minimize errors. Double data entry was done performed, and the team continually cross-checked the data collection tools for completeness. The PI continually reviewed the performance of the research assistants and held weekly meetings to ensure adherence to the study protocol.

Results

Flow diagram

We administered 762 questionnaires and had a response rate of 100%. The total number of children enrolled per district was 256, 250, and 256 for Bududa, Manafwa, and Butaleja respectively. Figure 1.

Sociodemographic characteristics

A total of 762 adolescents participated in the study. The median age of the participants was 17 years (interquartile range = 16–17 years). The majority 67.7% (n = 516) were middle-aged adolescents. More than half of the students 58.6% (n = 446) were females, 14.3% (n = 109) were orphans, 19% (n = 145) had a substance abuse problem, and almost half 47.6% (n = 363) were from families with more than 5 children in the home. Table 1.

Mental health challenges

The prevalence of mental health challenges was 65% (n = 497), with a confidence interval (CI) = 54.0 — 75.0%.

Most of the participants (44%, n = 335) had anxiety and disruptive behaviour (31%, n = 233) (see Fig. 2).

Distribution of different inventories of mental health challenges across sex and stage of adolescence

There was no significant difference in the various inventories of mental health challenges across the age categories. More males (51%) than females (39%) had anxiety (p = 0.001). Disruptive behaviour was significantly more common among females than among males (35% vs. 24.4%, X2 = 8.57, p value = 0.002), and in general, more males than females had a self-concept (86.7% vs. 80.7%, p value = 0.029) (Table 2).

Factors associated with mental health challenges among students

The likelihood of having mental health challenges increased with an increasing number of children in the home [adjusted prevalence ratio (aPR) = 1.18, 95% confidence interval (CI) = 1.08—1.29, p value = < 0.001] and substance abuse [aPR = 1.20, 95% CI = 1.15—1.24, p value < 0.001]. Table 3.

Discussion

The present study assessed the prevalence of mental health challenges among school-going adolescents, as well as the factors associated with these challenges. In this study, 7 out of 10 school-going adolescents (65%) had a mental health challenge. Among various mental health challenges, anxiety constituted the majority, followed by disruptive behaviour, anger, depression, and negative self-concept. More males had more anxiety than females did, whereas disruptive behaviour was more common among females. Having a substance abuse problem and families with more than five children increased the likelihood of experiencing mental health challenges among school-going adolescents.

The overall prevalence of mental health challenges in this study was greater than the 41.8% reported among students in China (41.8%) [27]. The disparity could be due to the variations in study settings, as our study was

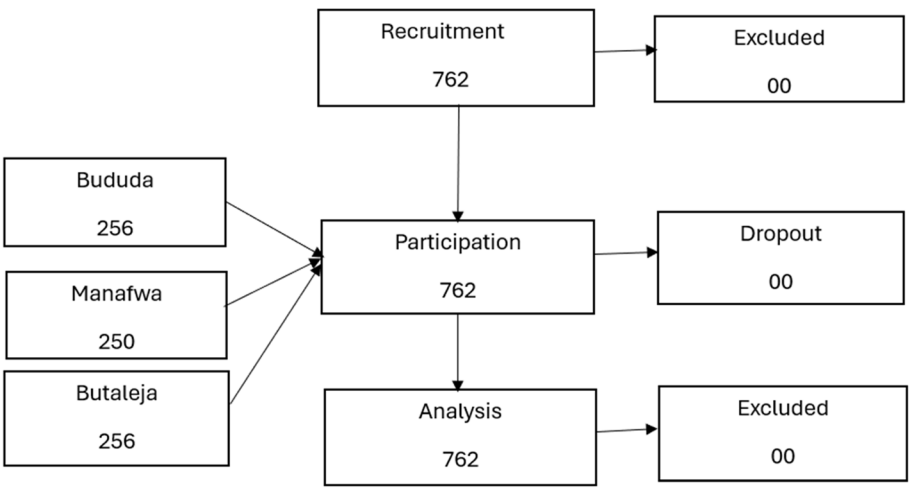

Fig. 1 Flow diagram

Table 1 Distribution of study characteristics within the selected districts in the Manafwa watershed area

Variable	Bududa	Butaleja	Manafwa Manafwa	*P* value
	n **= 256, n (%)**	***n*** **= 256, n (%)**	***n*** **= 250, n (%)**	
Age				
Early adolescence	19 (7.4)	8 (3.1)	29 (11.6)	**<0.001**
Middle adolescence	163 (63.7)	177 (69.1)	176 (70.4)	
Late adolescence	74 (28.9)	71 (27.7)	45 (18.0)	
Sex				
Female	154 (60.2)	142 (55.5)	150 (60.0)	0.475
Male	102 (39.8)	114 (44.5)	100 (40.0)	
Schools				
1	64 (25.0)	64 (25.0)	62 (24.8)	1.000
2	64 (25.0)	64 (25.0)	64 (25.6)	
3	64 (25.0)	64 (25.0)	62 (24.8)	
4	64 (25.0)	64 (25.0)	62 (24.8)	
Nature of family				
Monogamous	159 (62.1)	123 (48.1)	148 (59.2)	**0.013**
Polygamous	55 (21.5)	85 (33.2)	64 (25.6)	
Single parent	42 (16.4)	48 (18.8)	38 (15.2)	
Household head				
Child	0 (0.0)	4 (1.6)	2 (0.8)	**0.024**
Father	199 (77.7)	208 (81.3)	214 (85.6)	
Mother	57 (22.3)	44 (17.2)	34 (13.6)	
Orphanhood				
Not orphan	233 (87.1)	214 (83.6)	216 (86.4)	0.486
Orphan	33 (12.9)	42 (16.4)	34 (13.6)	
Number of children in household				
≤ 5	150 (58.6)	87 (34.0)	162 (64.8)	**< 0.001**
> 5	106 (41.4)	169 (66.0)	88 (35.2)	
Number of adults in household				
≤ 3	179 (69.9)	156 (60.9)	157 62.8	**0.081**
> 3	77 (30.1)	100 (39.1)	93 (37.2)	
Number of school children in household				
≤ 5	172 (67.2)	151 (56.0)	198 (79.2)	**< 0.001**
> 5	84 (32.8)	105 (41.0)	52 (20.8)	
Substance abuse				
No	170 (66.4)	244 (95.3)	203 (81.2)	**< 0.001**
Yes	86 (33.6)	12 (4.7)	47 (18.8)	

conducted in a climate vulnerable setting and variations in the screening tools used, as the study in China used a Mental Health Inventory of Middle School Students [27]. While the BYI 2 used in this study includes separate scales for assessing different emotional and behavioural dimensions [23], the former tool covers a wide range of mental health indicators relevant to middle school students [28].

The high prevalence of anxiety compared to other mental health challenges echoes findings from other studies [29, 30]. This study was conducted in a period when the whole world is recovering from the effects of COVID-19 pandemic including school closures, alterations in educational settings, and the potential threat of infection [29, 31]. The ensuing anxiety may be a normal reaction to the difficulties presented by the public health crisis. The prevalence of anxiety reported in this study was higher than that of 38.5% among secondary school students in central Uganda [12] and that of 38.0% among adolescents in Kenya [4]. The increased prevalence of anxiety

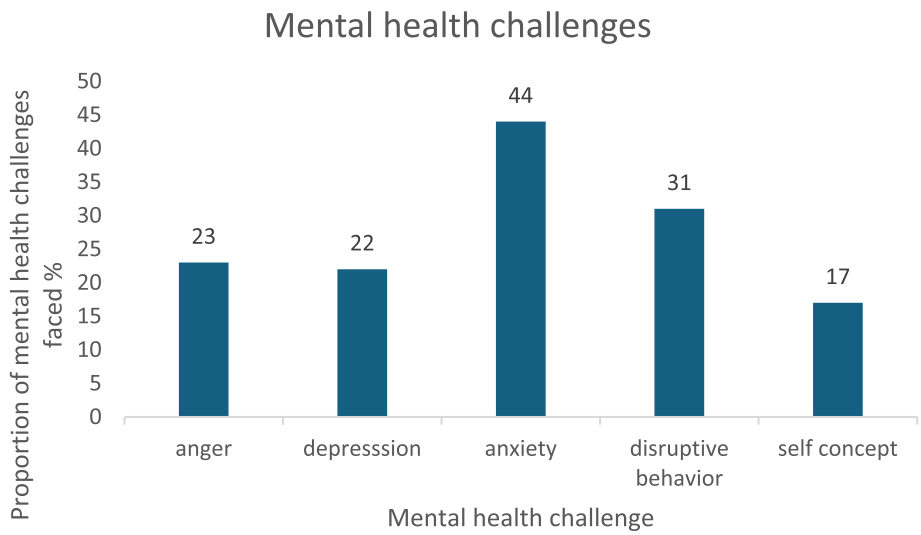

Fig. 2 Different mental health challenges faced by school-going adolescents

Table 2 Inventories of mental health challenges compared by age and sex

Challenges	Stage of adolescence			*P* value	SEX		*P* value
	Early *n* = 56	Middle *n* = 516	Late *n* = 190		Female *n* = 446	Male *n* = 316	
Depression							
Absent	45 (80.4)	408 (79.1)	140 (73.7)	0.278	352 (78.9)	241 (76.3)	0.384
Present	11 (19.6)	108 (20.9)	50 (26.3)		94 (21.1)	75 (23.7)	
Anxiety							
Absent	37 (66.1)	288 (55.8)	102 (53.7)	0.256	272 (61.0)	155 (49.1)	**0.001**
Present	19 (33.9)	228 (44.2)	88 (46.3)		174 (39.0)	161 (51.0)	
Anger							
Absent	47 (83.9)	395 (76.6)	145 (76.3)	0.443	346 (77.6)	241 (76.3)	0.671
Present	9 (16.1)	121 (23.4)	45 (23.7)		100 (22.4)	75 (23.7)	
Disruptive behaviour							
Absent	40 (71.4)	361 (70.0)	128 (67.4)	0.758	290 (65.0)	239 (75.6)	**0.002**
Present	16 (28.6)	155 (30.0)	62 (32.6))		156 (35.0)	77 (24.4)	
Self-Concept							
Present	14 (25.0)	88 (17.1)	26 (13.7)	0.133	86 (19.3)	42 (13.3)	**0.029**
Absent	42 (75.0)	428 (83.0)	164 (86.3)		360 (80.7)	274 (86.7)	

in the current research may be linked to a combination of stressors related to the vulnerability of the study region to natural disasters [16, 17], and differences in assessment tools. Several studies in disaster prone areas also show that climate change such as landslides can greatly impact the mental health of children and adolescents [14]. A study conducted in Bududa, one of the study areas showed a high prevalence of post-traumatic stress disorder among the community, survivors of the landslides [15] which is also a possible contributor of other mental health challenges.

This finding that more males than females experienced anxiety echoes findings from a study among adolescents in Malawi [32]. However, this finding was contrary to findings from a study in Kampala [12]. The higher prevalence of anxiety among males in this study is likely due to gender-related variations in healthcare-seeking behaviour, including mental health services [33, 34]. Furthermore, the interplay of cultural factors, including cultural expectations, restricted social support structures, and specific challenges faced by males in African nations—such as the traditional demand for stoicism and

Table 3 Bivariate and multivariate analyses of factors associated with mental health challenges

Variable	Bivariate analysis		Multivariate analysis	
	Crude Prevalence ratio (95% CI)	*P* value	Adjusted Prevalence ratio (95% CI)	*P* value
Age				
Early adolescence	1 (Reference)		1 (Reference)	
Middle adolescence	0.89 (0.65, 1.21)	0.453	0.90 (0.70,1.21)	0.494
Late adolescence	0.86 (0.62, 1.20)	0.380	0.87 (0.63,1.21)	0.408
Sex				
Female	1 (Reference)		1 (Reference)	
Male	0.98 (0.95, 1.02)	0.363	0.97 (0.93,1.01)	0.154
Orphanhood				
Not orphan	1 (Reference)		1 (Reference)	
Orphan	1.10 (0.96, 1.26)	0.173	1.09 (0.98, 1.22)	0.107
Household head				
Child	1 (Reference)			
Father	0.77 (0.49, 1.23)	0.270		
Mother	0.81 (0.53, 1.24)	0.332		
Nature of family				
Monogamous	1 (Reference)			
Polygamous	1.07 (1.01, 1.14)	0.024		
Single parent	1.14 (0.99, 1.31)	0.078		
Number of children in home				
≤ 5	1 (Reference)		1 (Reference)	
> 5	1.17 (1.06, 1.29)	0.003	1.18 (1.08, 1.29)	**< 0.001**
Number of adults in home				
≤ 3	1 (Reference)			
> 4	1.01 (0.92, 1.11)	0.812		
Number school children in home				
≤ 5	1 (Reference)			
> 5	0.99 (0.95, 1.07)	0.770		
Substance abuse				
No	1 (Reference)		1 (Reference)	
Yes	1.18 (1.12, 1.25)	< 0.001	1.20 (1.15, 1.24)	**< 0.001**

emotional restraint imposed on men [35]—could influence the identified correlation following the pandemic [36].

The findings in this study that disruptive behaviour was the second most prevalent mental health challenge align with findings from previous studies [37, 38]. The high prevalence of disruptive behaviour is likely due to negative emotions that result in greater irritability, aggressiveness and opportunistic behaviours among adolescents [39].

The finding in this study that disruptive behaviour was more common among females than males contradicts findings from previous studies [40, 41]. The discrepancy in the results can be attributed to the fact that the present study was conducted in a disaster prone area, a period during which there were likely disruptions in families [42, 43]. The literature underscores that girls exhibiting disruptive behaviour, in contrast to boys, are more frequently associated with families characterized by dysfunction [44, 45]. Furthermore, discrepancies in results may be influenced by traditional societal expectations related to gender roles. The expression and perception of disruptive behaviour in females could be shaped by established norms that prescribe specific behaviours for each gender. Deviating from these traditional expectations may lead to distinct interpretations of disruptive behaviour in females.

The percentage of adolescents in this study experiencing depression (22%) aligns closely with findings from a study in Malawi (21%) [32]. Both investigations were

carried out in a period after the COVID-19 lockdown, indicating that the participants had comparable experience during the pandemic.

The finding that school-going adolescents from homes with more than 5 children were more likely to have mental health challenges echoes findings in a study conducted among school-going adolescents in central Uganda [6]. Managing a household with more than five children imposes greater financial demands and, consequently, strains the family financially [46]. Additionally, larger family sizes can lead to overcrowding and the potential neglect of specific children, thereby contributing to mental health challenges [46].

The finding that having a substance abuse problem was associated with an increased likelihood of having mental health challenges echoes previous literature [27]. Although substances may offer momentary relief from stressors, such as those of the post trauma, they frequently worsen mental health issues over time [47]. Additionally, the connection between substance abuse and mental health is often reciprocal. Individuals who experienced mental health challenges during a traumatic experience are more prone to engaging in substance abuse [37, 47].

Limitations and strengths

Due to the geographical location of the setting, it was hard to conduct a household survey therefore the authors conducted a school-based survey instead. Because of the school setting, the children could have also been more compelled to participate.

The extremely low internal consistency of the CRAFFT Tool was observed although substance abuse was one of the independent variables.

The study also did not have a conceptual framework.

However, despite the above challenges, the study was powered by a large sample size.

The standardized tools used in this study gave a more comprehensive insight into the mental health challenges in this area.

Conclusion

In this region, the prevalence of mental health challenges among students was high (65%) with majority having anxiety and disruptive behaviour. Having more than five children and having substance abuse problem were significantly associated with mental health challenges in adolescents from families.

Implications and recommendations

The high prevalence of mental health challenges among the students can lead to poor performance. We also found a high prevalence of disruptive behaviour which could lead to indiscipline in the schools. We recommend that teachers recommend that various stakeholders, such as the Ministry of Health, in collaboration with the Ministry of Education design a curriculum that caters to the mental health needs of children and that promotes mental health awareness among children. In addition to the above recommendation, family planning awareness should be raised by the ministry of health and services made available to the community in Manafwa watershed area to control family size. Awareness of Government laws prohibiting alcohol and substance use for persons less than 18 years should be raised among the community by the local leaders. The parents in Manafwa watershed area should be trained on parenting skills for large families like encouraging open communication and creating family time. Social support from the local leaders and village health teams like counselling should be offered to larger households.

Abbreviations

aPR	Adjusted prevalence ratio
BYI 2	Beck Youth Inventory 2
CI	Confidence interval
CRAFT	Car-Relax-Alone-Family & Friends Trouble tool
PI	Principal Investigator

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-024-20288-0.

Supplementary Material 1.

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Authors' contributions

Conceptualization was done by CB, JM, AWS, DM, TS. Data curation by POA, SN, AWS, MMM. Formal analysis by POA, SN, DM, JA, JM, RMK. Funding acquisition by CB. Investigation by CB, JM, AWS, DM, POA, SN, AWS, MMM, RMK, NT, JSN. Methodology by POA, SN, AWS, NT, RMK, CB, JM, DM, JSN. Supervision by CB, AWS. Writing-Original draft by POA. Writing- review and editing by CB, JM, AWS, DM, POA, SN, AWS, MMM, RMK, JSN, TS, NT, JA.

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Availability of data and materials

Data is provided within the manuscript or supplementary information files.

Declarations

Ethics approval and consent to participate

Administrative clearance was obtained from the Chief Administrative Officers/District Education Officers for Bududa, Manafwa and Butaleja Districts.

Permission was obtained from the headteachers of the different schools. Ethical approval was obtained from the Makerere University School of Biomedical Sciences Research Ethics Committee (approval number: SBS-2023-283). Further clearance was sought from the Uganda National Council for Science and Technology (UNCST Reg No. HS2725ES). This research was conducted in accordance with Good Clinical Practice, the Declaration of Helsinki, and local laws and regulations.
Informed consent and permission from parents/guardians were obtained before data collection.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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