Mental Disorders in Children and Youths Aged 10 to 24 Years in the Southwest Region of Cameroon: A Cross-Sectional Analysis

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Abstract

Background: Mental health issues pose a significant threat to public health, contributing substantially to global burden of disability. In Africa, the mental health of young individuals aged 10 to 24 is increasingly at risk due to a cumulative effect of various challenges that have adversely impacted their mental wellbeing, resulting in mental disorders. This study aims at assessing some mental disorders in children and youths aged 10 to 24 years in the Southwest Region of Cameroon. **Methods:** A cross-sectional study over a period of 1 year involving participants aged 10 to 24 years in the Fako Division, Southwest Region of Cameroon. Consecutive sampling was used to select the participants. The data was managed using Microsoft Excel and analyzed using SPSS version 25. **Results:** A total of 965 participants were enrolled with more than half of the participants (522, 54.1%) showing inadequate knowledge. The overall prevalence of mental health disorder was 68.8% (substance use disorder (30.1%), depression (29.0%), anxiety (23.9%), and suicidal thoughts (19.2%). A significant association was found between mental disorders and demographic factors (age, gender, and locality, $p < 0.05$). **Conclusion:** Majority of the participants had inadequate knowledge on mental disorders. The overall prevalence of mental health disorders was high with significant association with gender, communities and being internally displaced. There is a need for mass sensitization, peer support and expert care to reduce the prevalence and promote mental well-being.

Keywords

Mental Health, Public Health, Mental Disorders

1. Introduction

Mental health disorders are a significant public health concern and leading cause of disability globally (World Health Organization, 2022). The World Health Organization (WHO) defines mental health disorder as clinically significant disturbance in an individual's cognition, emotional regulation, or behavior (World Health Organization, 2013). Approximately 792 million people live with a mental disorder, with many of these cases emerging during adolescence (Twenge et al., 2019). Studies have shown that one in six people affected are aged 10 - 19 years (CCOUSP, 2023). Children and youths are disproportionately affected by crises and disease outbreak, making support for them a priority (Djatche et al., 2022). The World Health Organization highlights the burden of mental health disorders in low- and middle-income countries, emphasizing the need for mental health services in Cameroon (Office of the Special Representative of the Secretary-General for Children and Armed Conflict (SRSG CAAC), 2016).

In Cameroon, mental health issues are still a taboo. Public's view about mental illness remains unfavorable, as the topic itself evokes a feeling of fear and even disgust, fostering negative attitudes towards mentally ill people (Project & Project, 2023). Amidst this, there are still a good number of children and young adults facing numerous challenges, negatively influencing their mental health and leading to mental disorders (CCOUSP, 2023). The Northwest and Centre regions of the country are the most affected, with depression and anxiety being leading disorders (Mviena et al., 2020). A study on COVID-19 pandemic's impact on mental healthcare in Cameroon revealed challenges such as weak health-care system, inadequate mental health workforce, insufficient financing and limited access to mental health medications (Toguem et al., 2022). Also the ease of access to illicit drugs in urbanized settings contributes to the development of mental disorders like anxiety and psychosis (Mviena et al., 2020). Urban areas often have better access to mental health services, but may have higher levels of stress and noise pollution. Stress, anxiety and depression are more prevalent in localities with high levels of poverty, crime and unemployment. To add, the sociopolitical crisis and COVID-19 pandemic in Southwest region of Cameroon amplify mental health and well-being problems leading to school dropouts exposing the children and young adults to unhealthy behaviors such drug abuse (Toguem et al., 2022; Mviena et al., 2020). The crisis has also led to internal displacement of individuals and this significantly contributes to mental health through several factors which includes trauma and stress, loss of identity and sense of belonging, social isolation and disconnection, grief and bereavement, and limited coping mechanisms. Although some research exists on mental disorders in young individuals, not much is known on the burden of these disorders among displaced and conflict/crisis-affected children and young adults in Cameroon. The main aim of this study was to assess common mental disorders in children and young adults aged 10 to 24 years in the Southwest Region of Cameroon. This study focused on substance use, anxiety, depression and suicidal thoughts among youths aged 10 - 24 years as they

have been identified to have a high prevalence and severe consequences on youths' emotional, social and academic development (World Health Organization, 2022; Merikangas et al., 2009). Young adults aged 10 - 24 years face a critical period of development marked by significant physical, emotional and social changes. This age group is vulnerable to mental health issues due to rapid brain development, social and academic pressures, and increased risk taking behaviours.

2. Methods

2.1. Ethics

Ethical clearance with number: 2023/2066-3/UB/SG/IRB/FHS was sort and obtained from the Institutional Review Board of the Faculty of Health Sciences, University of Buea. Participation in the study was purely voluntary with youths signing the consent before being enrolled into the study. For participants who were less than 18 years, an assent was obtained from the parents or guardian of the child through an assent form. We collaborated with the Ministry of Youth and Civic Education to reach out to these youths in the various communities where the study was carried out. Confidentiality was maintained for participant responses through proper storage of the data in an encrypted system. Data was then extracted from the records with confidentiality and securely managed using Open Data kit database with a password for protection.

2.2. Study Design and Setting

A community based quantitative cross-sectional survey was conducted. First, Limbe I, Tiko and Buea were selected from among the 10 towns in Fako Division through purposive sampling. These towns were purposely selected because of their high population densities. Consecutive sampling was used by peer educators to collect data from children and young adults aged 10 to 24 years. This sampling technique was used in order to ensure protection of participants' privacy and well-being as using randomized sampling technique may have selected and included participants who were not willing to discuss their mental health experiences. Through our selected sampling method, we were able to purposively select participants who were more likely to provide informed consent or ascent thereby engaging openly in the research process. The study was conducted in three major towns (Buea, Limbe 1 and Tiko) in Fako Division, Southwest Region of Cameroon over a one-year period from May 2023 to July 2024. Fako Division is one of the six divisions in the Southwest Region of Cameroon with Limbe as its administrative capital and Buea as the Regional capital. Looking at the 2005 Cameroon national institute of statistics report, it has a total population of 466,412 and surface area of 2093 km^2 (Lele et al., 2023).

2.3. Participants

All youths aged 10 to 24 years in Buea, Limbe I and Tiko who were present and gave their consent or assent (obtained from the parents or guardian) at the time were

included in the study. All incompletely filled questionnaires and participants with illnesses which would interfere with providing accurate information were excluded.

2.4. Data Collection

Data was collected from 965 participants using structured questionnaires administered by peer educators with lived experience of mental health conditions. The questionnaire consisted of three sections: demographic data, knowledge on mental health, and prevalence of mental health disorders. Peer educators were trained to administer questionnaires and input responses into Kobo Collect (kobo toolbox).

2.5. Sample Size Calculation

The sample size was determined using the Cochran's formula [$n = (z\alpha/2)^2 p(1 - p)/d^2$], an estimated proportion of mental disorders among children and youths was taken as (50%), 95% confidence level, 5% margin of error. This gave a minimum sample size of, $n = (1.96)^2 \times 0.5(1 - 0.5)/(0.05)^2 = 384$. A 10% contingency addition was done on the sample size for non-response, the final sample size was 423 participants (Tesfaye et al., 2021).

2.6. Measures of Knowledge on Mental Disorders and Mental Disorders

The study assessed Anxiety, Suicide, depression and substance use. Standardized screening tools were used to determine knowledge and the prevalence of each disorder. The knowledge section was adapted from the Mental Health Knowledge Schedule (MAKS), while the prevalence section used standardized screening tools: Generalized Anxiety Disorder (GAD)-7, CAGE (Cut, Annoyed, Guilty, and Eye) Substance Abuse Screening, Ask Suicide-Screening Questions (ASQ) and Patient Health Questionnaire (PHQ)-9 for depression. To specifically adapt these tools for our context, particularly for displaced individuals translation and back translation for each tool, consulted with community leaders and displaced individuals to ensure that the tools were culturally sensitive and relevant to our context. For anxiety, a score ≥ 5, indicated anxiety while for suicide, a score ≥ 1 indicated a problem. For substance use, a score ≥ 1 indicated a problem and for depression, a score ≥ 10 indicated depression. Anxiety was measured with seven statements, scored 0 - 21, and respondents with scores ≥ 5 were considered to have anxiety. Suicide risk was assessed with four questions, scored 0 - 4, and respondents with scores ≥ 1 considered to have a problem. Depression was assessed with nine statements, scored 0 - 27, and respondents with scores ≥ 10 were considered to have depression. The overall prevalence was determined by the presence of any of these four disorders.

2.7. Data Analysis

Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive and multivariate logistic analysis was performed, and the level of knowledge was assessed using the median score. An association was sort

between level of knowledge and sociodemographic variables. The data was categorized into two groups based on the median score of 32, with scores < 32 indicating inadequate knowledge and scores ≥ 32 indicating adequate knowledge.

Descriptive and summary statistics were represented using tables and figures. Logistic regression was used to determine factors associated with mental disorders, p-value < 0.05 was considered statistically significant.

3. Results

3.1. Demographic Characteristics

A total of 965 study participants were recruited successfully, the mean age of the respondents was 17.82 years with a range of 10 to 24 years. Most of the study participants 419 (43.4%) were in the age group of 16 - 20 years, females were 563 (58.3%), Students were 826 (85.6%), majority of the participants were from host population 669 (69.3%) with 365 (37.8%) from the locality of Buea (See Table 1).

Table 1. Demographic characteristics of the study population.

Variable	Frequency (n = 965)	Percentage (%)
Age group (17.82 ± 3.73)		
10 - 15	281	29.1
16 - 20	419	43.4
Above 21	265	27.5
Total	**965**	**100.0**
Gender		
Male	402	41.7
Female	563	58.3
Total	**965**	**100.0**
Locality		
Buea	365	37.8
Limbe	324	33.6
Tiko	151	15.6
Mutengene	125	13.0
Total	**965**	**100.0**
Occupation		
Student	826	85.6
School dropout	67	6.9
Others	72	7.5
Total	**965**	**100.0**
Displacement status		
Internally displaced person	209	21.7
Host population	669	69.3
Refugee	45	4.7
Returnee	42	4.4
Total	**965**	**100.0**

3.2. Knowledge of the Respondents Regarding Mental Health Disorders

Almost all (710, 73.6%) of the study participants knew mental health disorders are a kind of medical disorder, and the majority (857, 88.8%) recognize mental health disorders as treatable. Additionally, (697, 62.2%) of the study participants reported mental health disorders are not contagious, and (745, 77.2%) indicated that leaving alone is not a treatment for mental illness. Additionally, many (714, 74.0%) of the respondents indicated that development of mental health problems is identical for males and females. Talking or laughing alone and excessive or unusual happiness were reported as the major symptoms of mental illness by (765, 79.3%) and (704, 73.0%) of the study participants, respectively (See Table 2).

Table 2. Knowledge on mental health disorder.

| No.	Items	Correct Answers	Percentage %
1	Mental health disorders are a kind of medical disorders [yes]	710	73.6
2	Mental health disorders are contagious diseases [no]	697	62.2
3	Recovered psychiatric patients are employed productively [yes]	576	59.7
4	Mental health disorders are treatable [yes]	857	88.8
5	People with severe mental health problems can fully recover [yes]	691	71.6
6	Leaving alone is the treatment for mental illness [no]	745	77.2
7	Symptoms of mental illness:		
	i. Irritability [yes]	665	68.9
	ii. Talking/laughing alone [yes]	765	79.3
	iii. Wandering [yes]	696	72.1
	iv. Excessive and unusual happiness [yes]	704	73.0
	v. Strange/unusual behavior [yes]	787	81.6
	vi. Excessive Feeling sad, tearful [yes]	701	72.6
	vii. Aggression/violence [yes]	785	81.3
	viii. Hearing and seeing things that are not there [yes]	778	80.6
	ix. Lack of sleep [no]	334	34.6
	x. Talkativeness [yes]	626	64.9
	xi. Trying to kill oneself [yes]	734	76.1
	xii. Isolating oneself [yes]	688	71.3
8	Older people may develop mental disorders [yes]	799	82.8
9	Children may develop mental disorders [yes]	733	76.0
10	Women may develop mental disorders as equal to male [yes]	714	74.0
11	Lower socioeconomic class or poverty increases the risk of having mental health disorders [yes]	696	71.2

Continued

12	**Metal illness is due to:**		
	i. Genetic reasons [**yes**]	632	65.5
	ii. Stress/tension [**yes**]	811	84.0
	iii. Accident/injury [**yes**]	841	87.2
	iv. Brain functional abnormality [**yes**]	852	88.3
	v. Family events/conflict [**yes**]	759	78.7
	vi. Conflict in marriage or family [**yes**]	778	80.6
	vii. Worrying too much [**yes**]	774	80.2
	viii. Neurotransmitter imbalances [**yes**]	691	71.6
	ix. Witchcraft [**yes**]	643	66.6
	x. God's punishment for past sins [**no**]	515	53.4
	xi. Evil spirit possession [**yes**]	677	70.2
	xii. Personal weakness [**yes**]	553	57.3
	xiii. Poor nutrition [**yes**]	552	57.2
	xiv. Polluted atmosphere [**yes**]	450	46.6
13	**Mental illness can be treated;**		
	i. Traditional [**yes**]	609	63.1
	ii. Religious [**yes**]	769	79.7
	iii. Medical [**yes**]	874	90.6
14	Professional advice or counseling can be an effective treatment for people with mental illnesses [**yes**]	812	84.1
15	Medication can be an effective treatment for people with mental illnesses [**yes**]	781	70.9
16	Mental illness requires treatment from the psychiatric hospital [**yes**]	823	85.3
17	Mental illness can be successfully managed at home by families [**yes**]	458	47.5
18	Mental illness should be managed by witchdoctors [**no**]	715	74.1

The median overall knowledge score value was 32 with the minimum and maximum values of 3 and 43 out of 44 knowledge items. The overall knowledge score showed 54.1%, (522) respondents had inadequate knowledge towards mental health problems (See Figure 1).

3.3. Factors Associated with Knowledge Regarding Mental Health Disorders

Using multivariate logistic regression analysis, the association between sociodemographic factors and knowledge of mental health disorders was tested. The logistics regression analysis results, showed that age, gender, and locality were found to have significant association with knowledge of mental disorders with p-value < 0.05 (Table 3).
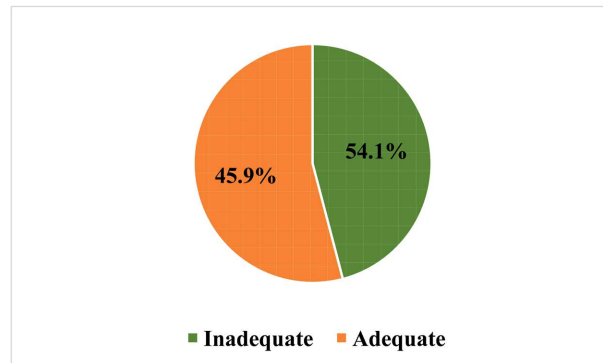
Figure 1. Distribution of participants based on overall knowledge of mental health disorder.

Table 3. Univariate association between the demographic characteristics and knowledge of mental health disorders.

Variable	n	Adequate	%	Inadequate	%	OR (95% CI)	*p*-value
Age group							
10 - 15	281	140	49.8	141	50.2	**0.602 (0.428 - 0.846)**	**0.004**
16 - 20	419	217	51.8	202	48.2	**0.651 (0.476 - 0.891)**	**0.007**
Above 21	265	165	62.3	100	37.7	1	
Total	**965**	**522**	**54.1**	**443**	**45.9**		
Gender							
Male	402	195	48.5	207	51.5	**0.680 (0.526 - 0.880)**	**0.003**
Female	563	327	58.1	236	41.9	1	
Total	**965**	**522**	**54.1**	**443**	**45.9**		
Locality							
Buea	365	233	63.8	132	36.2	**2.106 (1.395 - 3.178)**	**0.000**
Limbe	324	165	50.9	159	49.1	1.238 (0.818 - 1.873)	0.312
Tiko	151	67	44.4	84	55.6	0.838 (0.591 - 0.952)	0.838
Mutengene	125	57	45.6	68	54.4	1	
Total	**965**	**522**	**54.1**	**443**	**45.9**		
Occupation							
Student	826	454	55.0	372	45.0	1.033 (0.637 - 1.675)	0.896
School dropout	67	29	43.3	38	56.7	0.646 (0.331 - 1.262)	0.201

Continued

Others	72	39	54.2	33	45.8	1	
Total	965	522	54.1	443	45.9		
Displacement status							
Internally displaced person	209	115	55.0	94	45.0	1.112 (0.573 - 2.161)	0.754
Host population	669	369	55.2	300	44.8	1.118 (0.599 - 2.088)	0.726
Refugee	45	16	35.6	29	64.4	0.502 (0.212 - 1.185)	0.116
Returnee	42	22	52.4	20	47.6	1	
Total	965	522	54.1	443	45.9		

3.4. Overall Prevalence of Mental Health Disorders and Associated Factors

Out of the 965 participants of this study, the overall prevalence of mental health disorder was 68.8% (664) with 23.9% suffering of anxiety disorder, 30.1% suffering of substance use disorders, 19.2% suffering of suicidal thoughts and 29.0% suffering of depression (Figure 2).
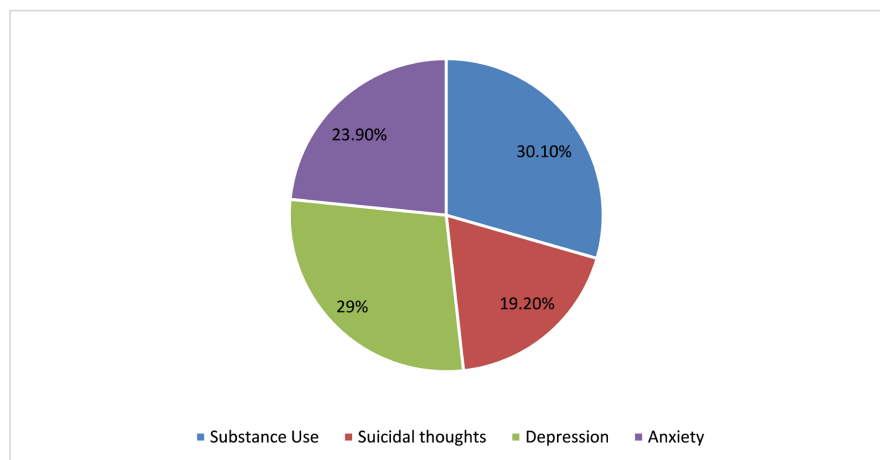
Figure 2. Mental disorders among children and youths aged 10 to 24 years in Fako Division (2024).

Using Multivariate logistic regression analysis, the association between socio-demographic factors and prevalence of mental health disorders was tested. The logistics regression analysis results, presented in Table 4 show that displacement status (internally displaced person), gender, and locality were found to have significant associations with prevalence of mental health disorders with their respective p-value < 0.05 (See Table 5).

Table 4. Mental disorders among children and youths aged 10 to 24 years in Fako Division (2024).

Variable	Frequency	Percentage
Anxiety screening		
Normal resilience	422	43.7
Mild	312	32.3
Moderate	166	17.2
Severe	65	6.7
Total	**965**	**100**
Depression screening		
Minimal symptoms	685	71
Minor depression	181	18.8
Moderate depression	81	8.4
Severe depression	18	1.9
Total	**965**	**100**
Substance use screening		
No problem	675	69.9
Problem with substance use	290	30.1
Total	**965**	**100**
Resilience screening		
Normal resilience	4	0.4
High resilience	961	99.6
Total	**965**	**100**

Table 5. Multivariate association between the demographic characteristics and prevalence of mental health disorders.

Variable	n	Prevalence of mental health disorders				COR (95% CI)	*p*-value
		Yes	%	No	%		
Age group							
10 - 15	281	183	65.1	98	34.9	0.897 (0.629 - 1.280)	0.550
16 - 20	419	302	72.1	117	27.9	1.240 (0.888 - 1.732)	0.207
Above 21	265	179	67.5	86	32.5	1	
Total	**965**	**664**	**68.8**	**301**	**31.2**		
Gender							
Male	402	258	64.2	144	35.8	**0.693 (0.526 - 0.912)**	**0.009**
Female	563	406	72.1	157	27.9	1	
Total	**965**	**664**	**68.8**	**301**	**31.2**		

Continued

Locality (community)							
Buea	365	232	63.6	133	36.4	1.243 (0.821 - 1.881)	0.305
Limbe	324	243	74.0	81	25.0	**2.137 (1.382 - 3.303)**	**0.001**
Tiko	151	116	76.8	35	23.2	**2.361 (1.405 - 3.967)**	**0.001**
Mutengene	125	73	58.4	52	41.6	1	
Total	**965**	**664**	**68.8**	**301**	**31.2**		
Occupation							
Student	826	561	67.9	265	32.1	0.759 (0.440 - 1.308)	0.320
School dropout	67	50	74.6	17	25.4	1.054 (0.493 - 2.254)	0.891
Others	72	53	73.6	19	26.4	1	
Total	**965**	**664**	**68.8**	**301**	**31.2**		
Displacement status							
Internally displaced person	209	154	73.7	55	26.3	**2.100 (1.059 - 4.163)**	**0.034**
Host population	669	453	67.7	216	32.3	1.573 (0.836 - 2.960)	0.160
Refugee	45	33	73.3	12	26.7	2.062 (0.839 - 5.073)	0.115
Returnee	42	24	57.1	18	42.9	1	
Total	**965**	**664**	**68.8**	**301**	**31.2**		

4. Discussion

The study was carried out in Fako Division (Limbe I, Tiko and Buea), Southwest Region Cameroon. This study aimed at assessing mental disorders in children and youths aged 10 to 24 years. Majority of the participants were female (n = 563) and the mean age was (17.82 ± 3.73).

4.1. Knowledge on Mental Health Disorders

Over all, most of the respondents (522, 54.1%) had inadequate knowledge on mental health disorders. This result is similar to a study conducted by (Djatche et al., 2022) who reported that 67.1%. Inadequate knowledge across these studies could reflect that despite the high prevalence of mental health problems across communites worldwide, very few strategies have been designed to increase the level of awareness. Therefore, there is a need for mass sensitization on mental

health disorders. Mental health disorders were recognized as medical conditions by 73.6% of the study population, with 88.8% of participants viewing them as treatable. However, this contrasts with a study in Mpumalanga Province, South Africa where most participants attributed mental health issues to pregnancy and witchcraft (Mboweni et al., 2023). Furthermore, 77.2% of the participants identified that being alone is not a treatment for mental disorders and 74.0% of respondents believed that mental health problems occur in both male and female.

4.2. Prevalence of Mental Health Disorders

The overall prevalence of mental health disorders among youths aged 10 - 24 in the Southwest region of Cameroon was 68.8%, alarmingly high compared to the WHO's estimated 15% (WHO, 2022). This may reflect specific contextual factors such as socioeconomic stressors or cultural stigma related to mental health. This was also similar to a study done by Djatche et al. (2022) who reported that 71.4% of his study participant had at least one mental health disorder, signifying that many people face mental health disorders which could be caused by either socio-economic factors, social factors or trauma. This study found a 23.9% anxiety prevalence, consistent with Hofmann et al. (2012) meta-analysis, which reported anxiety prevalence rates among young people ranging from 20% to 25%. The prevalence of substance use was 30.1% which was higher than the global average, reported by the World Health Organization (WHO, 2022). High substance use in Fako division may be due to the ongoing crisis in the Southwest and Northwest regions of the country which has led to school drop outs, high crime wave, unemployment and poverty. To add, there was a 19.2% prevalence of suicidal thoughts among children and adolescence, which differed from the findings of Nock et al. who had a prevalence of 66.0% in the United States of America. This difference could be due to the fact that the latter focused only on adults while this study focused on both children and youths. There was a significant association between gender and mental health disorders ($p = 0.009$), with males less likely to have a mental disorder (OR = 0.693). This was consistent with the results of Weinberger et al. (2017) and Merikangas et al. (2009).

5. Conclusion

This study was aimed at assessing common mental health disorders in children and youths aged 10 - 24 years in the Southwest of Cameroon with more than half of the participants having inadequate knowledge on mental health disorders. The overall prevalence of mental health disorders was high with significant association to gender, locality and being internally displaced.

6. Limitation

Firstly, this study used consecutive sampling which is a non-probability sampling methods, leading to selection bias. Secondly our study only assessed four mental health disorders; substance use, anxiety, depression and suicidal thoughts among

youths aged 10 - 24 years, leaving out other mental disorders. The potential influence of confounding factors like hormonal fluctuations, rapid physical, emotional and social changes inherent to the age group is a limitation to the study. Thirdly, our study focused solely on secondary sources of mental health without exploring the role of stigma in mental health outcomes. This may limit generalizability of our finding. Finally, this study only used a cross-sectional design making it difficult to assess causality and track changes over time.

Recommendations

To the State

1) Establish community peer support groups led by trained peer educators with lived experiences to support young people and other individuals dealing with mental health disorders.

2) Setup regular community mental health interventions or health campaigns to enhance screening through mobile units and trained peer educators with lived experiences who will be able to reach underserved areas and populations.

3) Create and establish community Mental Health Clinics to ease access to management of mental health cases, expert care, and psychiatry consultations within the community.

To schools

1) Integrate mental health education into the curriculum to raise awareness and reduce stigma amongst students and in the school milieu.

2) Train mental health student ambassadors with lived experience who can run mental health clubs in their schools. This will help to fostering mental health awareness and support within schools.

3) Organizing quarterly pedagogic workshops and Seminar for teachers, guidance counselors and other school staffs to educate them on early identification and detection of mental health issues in the school premises.

To researchers

1) Carry out in-depth studies (qualitative studies) to get insight on mental health disorders and how it can be best managed in communities. Future studies should prioritize more comprehensive assessments of these confounding factors.

2) Develop database on mental health through screening by using digital systems and mobile devices for sustainability in data collection, management, analysis and for future research.

To mental health facilities/institutions

1) Collaborate with communities to provide psychological first aid to children and youths with mental health case and increase mental health awareness.

2) Partner with community social groups to carry out resilience building, initial screening and counseling sessions.

3) Telehealth stakeholders should partner with the government to increase access to mental health services and counseling sessions.

To parents

- To support their children and create friendly environment where the children and youths can express themselves.
- Should be involve in mental health campaigns and workshops other to acquire skills which will ease in early identify of mental health signs and symptoms in children and youths.

To youths

1) To develop help seeking behavior by confining to trained peer educators and mental health expert with lived experience.

2) To acquire hand-on skills such as hackathons, brainstorming sessions, and design thinking workshops that will help them fully focus and support their communities meaningfully.

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Authors' Contributions

LK was the principal investigator, project lead and main initiator of this research work from conception of topic to execution and compilation for publication, and EC participated in the initial drafting of the protocol and ethical clearance application procedure, AA and TM participated in the initial draft of this paper, methodological assessment and design of the study. AL collected the data and managed data as well as monitored and evaluated progress based on the methodology and objectives of the work as well as contributed to the final compilation, and WK and AW analysed the data and produced the result. GG contributed to the methodology and final compilation, supervised the data collection and analysis and RA checked this work and ensured that the aim of this worked was achieved and covered in entirety. VT and KZ also gave contributions to this paper especially with regards to the methodology checked for any grammatical errors on all the subsequent and final version of the paper. All authors read and approved the final manuscript.

Availability of Data and Materials

The dataset used for the current study is available from the corresponding author on reasonable request.

Ethics Approval

Ethical clearance with number: 2023/2066-3/UB/SG/IRB/FHS was sort and obtained from the Institutional Review Board of the Faculty of Health Sciences, University of Buea. Participation in the study was purely voluntary with youths signing the consent before being enrolled into the study. For participants who were less than 18 years, an assent was obtained from the parents or guardian of the child through an assent form. We collaborated with the Ministry of Youth and Civic Education to reach out to these youths in the various communities where the

study was carried out. Confidentiality was maintained for participant responses through proper storage of the data in an encrypted system. Data was then extracted from the records with confidentiality and securely managed using Open Data kit database with a password for protection.

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Conflicts of Interest

The authors declare that they have no competing interests.

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