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Correlates of traditional medicine utilization among school-going adolescents and young adults with mental disorders in central and eastern Uganda: a cross-sectional survey

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Abstract

Introduction Mental disorders among adolescents and young adults (AYA) are a serious public health concern, particularly in low- and middle-income countries. Despite the growing impact, access to conventional mental healthcare remains limited, leading to high traditional medicine (TM) reliance. However, correlates of TM utilization by AYA with mental health challenges remain underexplored in academic literature. In this study, we investigated the correlates of TM utilization among students with self-reported mental disorders in central and eastern Uganda.

Methods In this cross-sectional study, we analyzed secondary data from a subsample of 302 students with self-reported history of a mental health disorder out of a sample of 1970 who completed the survey. In the primary study, stratified random sampling was used to select schools, and participants were selected proportionally. We used modified Poisson regression to examine the factors independently associated with TM use including demographic characteristics and the presence of emotional or behavioral disorders. Statistical significance was set at a p-value of less than 0.05.

Results Most participants were female (53.31%) and aged between 15 and18 years (71.6%). The majority of the participants had completed ordinary level of secondary education (92.54%), from the Central region (74.5%) and attended schools in urban areas (54.04%). The median monthly family income was $83.3, with over half earning ≤$100 monthly (58.8%). Nearly half of the participants reported a family history of mental health disorder (49.8%), and a notable percentage had at least one behavioral disorder (25.8%) or emotional disorder (21.2%). The adjusted model suggested that rural school attendees had a 1.3 times higher prevalence of TM utilization [aPR:1.30(1.01–1.68), $p=0.04$] compared to urban ones, and those with parents or guardians who completed college/university had a 38% lower prevalence [aPR:0.62 (0.41–0.94), $p=0.025$] of TM utilization compared to those with parents or guardians without formal education.

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Conclusion A large proportion of the students utilized TM, largely influenced by rural residence, and parents' education status. The high prevalence of TM use underscores the need for leveraging TM providers as a link to timely biomedical healthcare utilization and improving access to comprehensive treatment for mental health disorders with a focus on socio-economic disparities.

Keywords Uganda, Adolescent and young adults, Traditional medicine, Mental health, Behavioral disorders

Background

Mental health disorders among adolescents and young people are increasingly recognized as a public health concern, with disorders such as depression, anxiety, and behavioral disorders affecting millions [1]. Despite the limitations in estimating the impact of the problem globally, recent estimates indicate that one in seven adolescents experiences a mental disorder, with depression, anxiety, and behavioral disorders being leading causes of illness and disability [2].

Mental disorders greatly contribute to premature deaths and low quality of life. In 2020, an estimated 49.4 million and 44.5 million Disability-Adjusted Life Years (DALYs) were attributed to major depressive and anxiety disorders, respectively [3]. The COVID-19 pandemic period is believed to have aggravated the mental health impact across the globe with an additional 53.2 M and 76.2 M cases of major depressive and anxiety disorders, respectively [3]. Younger people, especially children, and adolescents were the most affected by the pandemic [4], with an over 1% increase in both major depressive and anxiety disorders [3]. In Uganda, the estimated prevalence of depression was 48.1% during the COVID-19 pandemic compared to 29.3% in the pre-pandemic period [5]. Among school going children, the effect of the pandemic on rates of depression is known to have been larger given that schools and other social venues were shut down during most of the pandemic [4, 6, 7]. Limited academic progress in the same period further complicates the mental health profile of school going children [6, 8, 9].

Adolescence is a critical transitional stage in development marked by significant physical, emotional, and psychological changes between child and adulthood periods, often accompanied by mental health challenges [2]. Thus, adolescence requires substantial attention to prevent mental health challenges including emotional and behavioral disorders. Despite the growing impact of mental disorders, access to conventional mental health care in low- and middle-income countries (LMICs) remains limited due to factors such as inadequate healthcare infrastructure [10–12], stigma [10, 13, 14], low literacy about mental health/services [10, 14], and the shortage of trained mental health professionals [12, 15].In resource-limited contexts, especially sub-Saharan Africa (SSA), 48.1% of individuals with mental disorders rely on traditional medicine (TM) or religious/spiritual healing for their care [16]. TM refers to "codified or non-codified systems for health care and well-being, comprising practices, skills, knowledge and philosophies originating in different historical and cultural contexts, which are distinct from and pre-date biomedicine, evolving with science for current use from an experience-based origin" [17]. "Nature-based remedies and holistic, personalized approaches to restore balance of mind, body and environment" are the main emphasis in TM [17].

TM practices have deep cultural roots and are often more accessible due to geographic locations, cost and acceptability within local communities [13, 14]. Available evidence indicate that up to 33.33% of people prefer traditional/alternative and complementary treatments for adolescent and children related mental health care to formal care [14]. While TM remains a vital and culturally grounded resource for many communities, there continues to be limited evidence on its efficacy [18]. Relying on TM and other alternative care practices may lead to delayed or no formal care which limits early identification and access to evidence based mental health interventions [16] which may lead to poor health outcomes among AYA with mental disorders.

The World Health Organization's traditional medicines strategy calls for promotion of safe and effective use of TM through country specific regulation of products, practices, and practitioners [19]. In Uganda, regulations to control TM use exist including the Witchcraft Act of 1957, and the Traditional and Complementary Medicine Act, 2019 [20]. However, their operationalization is limited, and this makes the safety of TM a challenge.

In Uganda, school-going adolescents represent a substantial proportion of vulnerable groups with limited mental health support and their care seeking behavior for mental health services remains understudied [21]. Some studies in central and eastern Uganda indicate that people including parents of adolescents turn to traditional healers first before seeking formal care for treatment of mental disorders [22, 23]. In the central Uganda, studies have reported a high prevalence (16–18%) of depressive symptoms among school going adolescents [24, 25]. In eastern Uganda, one study reported up to 44% anxiety, and 31% disruptive behaviour among the same population [26]. Specific to Iganga, one study indicated a 47.4% behavioral impairment, and 2.8% mild depression prevalence among AYA [27].

Given the need for early health care for mental disorders to enable positive health outcomes and the known reliance on TM in these regions, understanding the extent and correlates of TM utilization in this population is crucial for shaping effective AYA mental health interventions and policies. However, the utilization of TM by adolescents with mental disorders in Uganda, and these regions in particular remains underexplored. We examined TM utilization and its correlates among AYA with mental disorders in central and eastern Uganda.

Methods

Study design, setting, and population

We analyzed secondary data on 302 students with self-reported mental disorders from a cross-sectional survey among 1,972 adolescents and young people aged 12–18 in eight secondary schools in Iganga and Mukono districts located in Eastern and Central Uganda respectively. Located about 3 h (148 Kms) East of Kampala–Uganda's capital city, Iganga district is predominantly rural (436,736 rural Vs. 68,669 urban population – 13.6%) [28]. Mukono district, located less than an hour (21Kms) East of the capital city is predominantly urban (27% urbanization) [29]. The original survey referred to elsewhere [30] and further described in the subsequent sections below was conducted from June-November 2017. The survey assessed the mental health needs of secondary school adolescents including determining the prevalence of emotional and behavioral disorders; describing the associated demographic factors and mental health intervention practices and whether the current school intervention matched mental health needs. The two districts are located in Buganda (Mukono) and Busoga (Iganga) Kingdoms where people are known to have strong beliefs in traditional medicine [31–34].

Inclusion criteria

To be included in the original survey, the students had to be attending schools in the selected districts; were between 12 and 24 years old; whose parents/care takers consented; and the students gave assent and were willing to participate in the study. For this analysis, only those that had reported ever having mental health disorder health disorders were considered.

Sampling procedures

For the original sample, the central and eastern regions were purposively selected for the original survey because they are the most populated regions in Uganda. For schools, one school district was selected from each region based on its population and past academic performance. A list of all registered secondary schools in the respective districts was obtained from the District Education Officers (DEOs). We then created a list of schools and stratified them by their rural or urban status and government or private status. Stratified random sampling was then used to select four secondary schools from each district. These included two government-funded and two private schools in each district. To select the study participants per school, systematic sampling was used based on the school registers and the school specific proportions.

Sample size

For this analysis, we analyzed data on only those that reported history of mental health disorders. This was 302 (15.71%) of the 1,960 primary sample. For regression analysis, data on 286 were analyzed after excluding those who did not answer the question about service utilization. However, this sample size was considered to have sufficient power since a sample size of 204 would still predict a prevalence of 15.71%, with a precision of 95% and 95% CI.

Data collection and tools

The demographic characteristics and the Child & Adolescent Symptom Inventory-5 (CASI-5) were used for data collection. Face-to-face interviews were conducted in the most prevalent local languages (Lusoga and Luganda) as well as English by Psychiatric Clinical Officers (PCOs). PCOs are trained and able to conduct mental health diagnoses. The CASI-5 has over 100 questions to capture the frequency of various symptoms for 24 emotional and behavioral disorders. In each section of the CASI-5, respondents were asked about how often the symptoms impair social or behavioral functions. Interviews were conducted in dedicated spaces within the school environment ensuring the necessary privacy of the participants.

Study measures and variable measurement

Dependent variables

The dependent variable was utilization of traditional medicine for mental health disorders. This was assessed at two levels by self-reporting. First, the respondents were asked if they had ever had mental health disorder with *Yes* and *No* response options. For those who answered yes, they were asked what kind of treatment they sought with options of (i) traditional medicine or (ii) Western medicine.

Covariates

These included demographic variables and presence of symptoms of various behavioral and emotional disorders. Demographic variables were sex (female/male), age (categorized in two groups i.e., 12–15 and 16–18 years), residence (rural/urban), family history of mental health disorders, i.e., if any family member other than the participant had ever had/been diagnosed with a mental disorder (yes/no/not sure), and level of education [Advanced

(A') or Ordinary (O') level]. In addition to these variables, the nature of housing (permanent/ semi-permanent/hut), presence of domestic violence in the home (yes/no), and orphanhood (at least one parental death/both parents living) were used to measure hardship experiences. School characteristics were also assessed including sex status (mixed boys and girls or single sex school) and school ownership (private/government).

Table 1 Participants' socio-demographic characteristics (*N* = 302)

Characteristic		*n* (%)
Sex	Male	141 (46.69)
	Female	161 (53.31)
Age category, years (M = 15.45, SD = 1.88)	19–22	15 (5.02)
	15–18	214 (71.57)
	10–14	70 (23.41)
Level of education	Advanced level	22 (7.46)
	Ordinary level	273 (92.54)
Region	Eastern	77 (25.50)
	Central	225 (74.50)
Urbanity	Rural	139 (46.03)
	Urban	163 (53.97)
Nature of housing	Permanent	230 (78.23)
	Semi-permanent	64 (21.77)
Domestic violence in the home	Yes	96 (33.57)
	No	190 (66.43)
Orphan	Yes	53 (17.61)
	No	248 (82.39)
Orphan type	Lost both mother and father	6 (11.54)
	Lost mother	21 (40.38)
	Lost father	25 (48.08)
Parent's education level	None	37 (13.36)
	Elementary	29 (10.47)
	High school	118 (42.60)
	College/ university	93 (33.57)
Family history of mental health disorders	Yes	138 (49.82)
	No	139(59.09)
Family's total monthly income (USD)	Mean (± SD)	171.82 (± 343.4)
	Range	83.3 (2.8–2,639)
Family's total monthly income (USD)*	≤ 100	39 (58.82)
	> 100	27 (40.91)
Parent or guardian's employment	Professional	33 (11.46)
	Casual laborer	22 (7.64)
	Teacher	23 (7.99)
	Small business owner	165 (57.29)
	Other	45 (15.63)
Having ≥ 1 behavioral disorder	No	224 (74.17)
	Yes	78 (25.83)
Having ≥ 1 emotional disorder	No	238 (78.81)
	Yes	64 (21.19)

*Uganda shillings (UGX) to United States Dollar (USD) rate of 1USD = 3,600UGX was used

Figures for some variables do not sum to 302 due to non-response

M Mean, *SD* Standard Deviation

Other covariates considered were having at least one behavioral and emotional disorder as measured using CASI-5. A Likert scale with values 0 = Never, 1 = Sometimes, 2 = Often, 3 = Very Often was used to quantify the participants' responses to the CASI-5 survey. In this study, we considered those with responses of at least 2 (Often or Very Often) to have the symptoms. We also used the DSM-5 guidelines to classify the presence of symptoms of emotional or behavioral disorders [35] as we earlier described in a prior study conducted among the school-going adolescents [27]. Generally, for this analysis, the emotional disorders included major depressive disorder, generalized anxiety disorder, social anxiety disorder, and separation anxiety disorder. The behavioral disorders included attention deficit/hyperactivity disorder, conduct disorder, and oppositional defiant disorder. A person was considered to have emotional or behavioral disorder symptoms if they were found to meet the criteria for at least one of the disorders under each of these categories. Participants who demonstrated emotional and behavioral disorders were encouraged to seek further evaluation and possible management from the nearest health facilities [30].

Statistical analysis

First frequencies and percentages of the respondents were computed for each variable. Secondly, we carried out bivariate analysis using modified Poisson regression to assess the associations between covariates (hardship experiences, demographic characteristics, school features and emotional or behavioral disorders) and utilization of traditional medicine. Modified Poisson regression which yields prevalence ratios (PR) instead of odds ratios was used because it is considered more conservative when the outcome is common [36, 37] and the prevalence of traditional medicine utilization (48.6%) was high. Backwards elimination was applied to build our final analytic model and only variables that had a p-value ≤ 0.2 at bivariate analysis were considered at the multivariable regression stage. Collinearity between independent variables was assessed using Pearson correlation analysis. Statistical significance was considered at $p < 0.05$ and 95% confidence intervals are reported. Data were analyzed using StataNow/SEv14 (StataCorp LLC College Station Texas 77845).

Results

Participants' socio-demographic characteristics

As shown in Table 1, there were slightly more females (53.31%) than males (46.69%) with average age of 15.45 years (SD ± 1.88), and the majority were aged 15–18 years (71.57%). Overall, 17.61% of students were orphans; among those 48.08% lost their father, 40.38% lost their mother, and 6 students (11.5%) lost both parents. Most

Table 2 Bivariate and multivariable analysis of correlates of traditional medicine utilization (*N* = 286)

Characteristic		Traditional medicine utilization		cPR (95% CI)	aPR (95% CI)
		Yes n(%)	No n(%)		
Age category, years (M = 15.45, SD = 1.88)	10–14	40(28.78)	26(18.06)	1	
	15–18	94(67.63)	110(76.39)	1.20(0.59–2.42)	
	19–22	5(3.60)	8(5.56)	1.60(0.77–3.22)	
Region	Central	105(75.54)	105(71.43)	1	
	Eastern	34(24.46)	42(28.57)	0.89(0.67–1.19)	
Nature of housing	Permanent	104(76.47)	116(81.12)	1	
	Semi-permanent	32(23.53)	27(18.88)	1.15(0.87–1.51)	
Domestic violence in the home	Yes	47(36.15)	43(30.50)	1	
	No	83(63.85)	98(69.50)	0.88(0.68–1.13)	
Orphan	No	118(84.89)	117(80.14)		
	Yes	21(15.11)	29(19.86)	0.84(0.59–1.19)	
Orphan type	Both parents	3(14.29)	3(10.34)	1	
	Only mother	9(42.86)	12 (41.38)	0.86(0.33–2.21)	
	Only father	9(42.86)	14(48.28)	0.78(0.30–2.04)	
Family history of mental health disorders	Yes	66(51.97)	67(48.91)	1	
	No	61(48.03)	70(51.09)	0.94(0.73–1.20)	
Family's total monthly income	≤ 100USD	15(60.00)	23(58.97)	1	
	> 100USD	10(40.00)	16(41.03)	0.97(0.52–1.83)	
Having ≥ 1 behavioral disorder	No	106(76.26)	106(72.11)	1	
	Yes	33(23.74)	41(27.89)	0.89(0.67–1.19)	
Having ≥ 1 emotional disorder	No	113(81.29)	113(76.87)	1	
	Yes	26(18.71)	34(23.13)	0.87(0.63–1.19)	
Sex	Male	59(42.45)	74(50.34)	1	1
	Female	80(57.55)	73(49.66)	1.18(0.92–1.50)	1.17(0.91–1.52)
Level of education	Advanced level	6(4.44)	14 (9.72)	1	1
	Ordinary level	129(95.56)	130(90.28)	1.66(0.84–3.30)	1.40(0.70–2.80)
Urbanity	Urban	65(46.76)	90(61.22)	1	1
	Rural	74(53.24)	57(38.78)	1.34(1.06–1.71)**	1.30(1.01–1.68)**
Parent or guardian's education level	None	22(17.19)	13(9.63)	1	1
	Elementary	11(8.59)	18(13.33)	0.60(0.35–1.03)	0.69(0.41–1.17)
	High school	57(44.53)	52(38.52)	0.83(0.60–1.14)	0.89(0.64–1.23)
	College/ University	38(29.69)	52(38.52)	0.67(0.47–0.95)*	0.62(0.41–0.94)**
Parent or guardian's employment	Professional	14(10.53)	16(11.35)	1	1
	Casual laborer	6(4.51)	16(11.35)	0.58(0.27–1.28)	0.57(0.26–1.24)
	Teacher	11(8.27)	11(7.80)	1.07(0.61–1.89)	1.11(0.63–1.97)
	Small business owner	78(58.65)	79(56.03)	1.06(0.70–1.61)	0.88(0.58–1.33)
	Other	24(18.05)	19(13.48)	1.19(0.75–1.91)	0.95(0.60–1.52)

cPR Crude prevalence ratio; *aPR* Adjusted prevalence ratio

*$p \leq 0.04$; **$p \leq 0.025$

participants (92.54%) had attained the ordinary level of secondary education, while 42.6% of the parents had attained advanced/high school education. The majority (74.50%) were from the Central region, and 53.97% lived in urban areas. Most participants (78.23%) lived in permanent houses and 33.57% reported presence of domestic violence in the home. The mean monthly family income was 171.82 USD (SD ± 343.4), with 58.82% earning ≤ 100 USD monthly. The majority of parents or guardians (57.29%) were small business owners. Nearly half (49.82%) reported a family history of mental health disorders and 25.83% of participants had at least one behavioral disorder or at least one emotional disorder (21.19%).

As shown in Table 2, almost half (48.6%) of the participants had utilized traditional medicine. After statistical adjustment, only the location of the school in terms of being urban or rural and parent or guardian's education level were independently associated with traditional medicine utilization. The prevalence of traditional medicine utilization among those who went to rural schools was 1.3 times that among those who went to urban

schools [aPR:1.30(95%CI 1.01–1.68), $p = 0.04$]. The prevalence of traditional medicine utilization among those whose parents or guardians completed college/ university was 38% lower compared to those whose parents or guardians had no formal education [aPR:0.62(95% CI 0.41–0.94), $p = 0.025$].

Discussion

This study revealed that nearly half (48.6%) of school-going adolescents and young people with self-reported mental health disorders utilized traditional medicine. Though we did not assess decision making in this study, it is likely that for adolescents who are considered minors, their parents and guardians influence their healthcare utilization choices. Therefore, this discussion is based on that assumption. This high prevalence is not a surprise since studies in other African countries indicate that traditional medicine is often seen as more culturally appropriate and accessible than biomedical care [38–41]. Therefore, our findings are particularly of concern given that adolescence is a growth phase where untreated mental disorders can have long-term consequences on academic achievement, social functioning, and overall development [42]. Though we did not explore dual utilization of TM and biomedical care, findings from systematic reviews also indicate that traditional medicine is often used alongside biomedical treatments [43, 44].

Despite this, the high prevalence of TM utilization underscores the need to promote use of Western biomedicine since there are many effective mental health treatments and therapies especially when healthcare is sought early. Dependence on TM may lead to delayed healthcare seeking and thus exacerbate mental disorders among adolescents and young people. The efficacy of most practices applied in traditional mental health care have not been extensively tested [45] despite their reliance. In addition, some of the TM practices have been linked to human rights and physical abuses [43] including chaining [46, 47] and food deprivation [48, 49] of patients through food restriction and forced fasting [43, 50]. Nevertheless, the documented TM preference could be leveraged to engage providers to offer basic psychosocial support to patients and as a channel to formal health care referrals. This may help prevent late healthcare seeking behavior among adolescents and young people with mental health disorders. Improved health care utilization has been reported where such engagements have been leveraged, for example referral of expectant mothers by traditional birth attendants has been shown to improve skilled birth attendance [51]. Qualitative interviews with health service leaders have shown that they believe that collaboration with traditional healers may be beneficial to child and adolescent mental health service delivery [22].

The prevalence of TM utilization among those who went to rural schools was 1.3 times that among those who went to urban schools. This is in line with findings from Ethiopia and Nigeria which also reported higher TM utilization in rural areas compared to urban areas [52–54]. One reason for this could be the strong association between living in rural areas and more conservative or traditional beliefs. In addition, access to biomedical care is limited among people in rural areas. Other researchers have also reported that traditional healers are a widely used source of mental healthcare, especially in areas with limited and unaffordable biomedical mental health services like in sub-Saharan Africa (SSA) [43]. It has also been reported that rural areas in Africa possess strong beliefs in TM with even a perception that most traditional medicines are better and more effective for some disorders [55]. Such beliefs may facilitate more trust in TM than biomedical care similar to what other scholars have reported [39–41, 56]. Health facilities may need to consider integrating mental health services into outreaches to serve rural areas. Targeted health education with an emphasis on some of the potential dangers of TM is also warranted, as some traditional medicines have been found to have harmful side effects [44] resulting from herbal constituents, contamination, or adulteration [57].

The prevalence of TM utilization among those whose parents or guardians completed college/university was 38% lower compared to those whose parents or guardians had no formal education. Though there have been mixed findings about the relationship between parent's education level and TM utilization [44], most studies align with our findings [54, 58–60] while others are contrary [61, 62]. Higher TM use among those with low or no formal education could be attributed to possible higher health literacy among parents who had access to further education which may counter possible beliefs in TM. Initiatives focused on promoting biomedical healthcare for mental health disorders should target such populations with lower formal levels of education. Contextualized approaches, including use of translated education media that is culturally responsive as well as alternative health promotion approaches would be important.

Strengths and limitations

This study may have been affected by social desirability bias. Some studies have indicated that non-disclosure of TM use is very common [44], and this could have affected our results. This analysis was based on secondary data analysis, and we did not assess decision making in this study which may have helped us to interpret our findings more authoritatively. We also did not explore dual utilization of TM and biomedical care, and social-cultural factors that could have been important to our

discussion and conclusion. In addition, the age category of 19–22 years was underrepresented meaning that these results may only be interpreted in the context of adolescents. Nevertheless, this is one of the few studies focused on TM utilization for mental health among school going adolescents in Uganda.

Conclusion

A large proportion of adolescents in secondary schools with a self-reported mental health disorder utilized traditional medicine, influenced by rural residence, and parents' education status. The high prevalence of traditional medicine use emphasizes the need for promoting biomedical mental healthcare to ensure timely and effective treatment for mental health disorders. Given the high prevalence of TM use, particularly among rural populations and individuals with limited access to education, efforts to improve mental health outcomes may require expanded access to quality mental healthcare and greater literacy regarding informed TM use and biomedical treatment options. More research among adolescents should focus on assessment of the effect of social-cultural factors on traditional medicine utilization.

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Authors' contributions
Conceptualization: CA, AK, RA; Methodology: CA, AK, RA; Writing – original draft: AK; Writing – review & editing: AK, CA, RA, MB, JD-G, LDC, RK.

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Data availability
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the Makerere University School of Medicine Research Ethics Committee (SOMREC). Permission to conduct the study was also obtained from the Uganda National Council for Science and Technology (REF#:HS65ES). For participants below the legal age of independent participation, their parents gave consent prior to their assent. All respondents provided informed consent/assent to participate in the study. Confidentiality and privacy were maintained throughout the research process.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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