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Adverse life experiences and mental health of adolescents in Ghana: a gendered analysis

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ABSTRACT

Adolescents living in sub-Saharan Africa have increased exposure to adverse life experiences (ALEs). The current study examines gender differences in the prevalence of ALEs, mental health outcomes and association between ALEs and mental health outcomes of school-going adolescents in Ghana, West Africa. A sample of 1,886 adolescents (1,174 females) completed mental health and ALEs self-report measures. A series of descriptive and multiple linear regression analysis was conducted. Results revealed girls report higher mental health problems than boys. However, there was gender similarity in the prevalence of ALEs, except for substance misuse and trauma to head that were reported more by boys. The effect of ALEs on mental health outcomes was largely invariant across gender. Substance misuse, victimization experiences and school-level stress significantly predict depressive symptoms in both boys and girls. Interventions targeting the ALEs investigated in this study would help improve the mental health of boys and girls.

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Introduction

The period of adolescence confers an increased vulnerability, providing a fertile grounds for the emergence of mental health problems (Blakemore, 2019; Jörns-Presentati et al., 2021) that if left untreated could lead to full blown, diagnosable mental disorders in adolescence or during adulthood (Fusar-Poli et al., 2012). Decades of research have implicated adverse life experiences (ALEs) as major risk factors for mental health problems in children and adolescents (Tiet et al., 1998). Referred to as actual or perceived threat to an individual's physical or psychological wellbeing (Richardson et al., 2020), ALEs can be examined across multiple levels, including personal/individual (e.g. neglect, abuse, malnutrition), home/family (e.g. poverty and mental illness) and community/school risks (e.g. neighbourhood cohesiveness, violence, conflict, and school stress; Cortina et al., 2012; Das-Munshi et al., 2016; Jörns-Presentati et al., 2021; Kabiru et al., 2014).

Globally, it has been estimated that 10% to 20% of children and adolescents suffer from common mental disorders, such as depression and anxiety (Kieling et al., 2011; Polanczyk et al., 2015). Adolescents and young adults constitute the majority (i.e. 30–35%) of the population in sub-Saharan Africa (SSA; Patton et al., 2016), and have an elevated risk for psychopathological behaviours owing to the preponderance of ALEs. Cortina and colleagues in their review found that one in seven (14.3%) children and adolescents in SSA experienced mental health problems, and one in ten (9.5%)

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met the diagnostic criteria for mental disorders (Cortina et al., 2012). In a more recent review, the prevalence of depression, anxiety disorders, emotional and behavioural problems, post-traumatic stress disorder and suicidal ideation among the general adolescent population was estimated at 26.9%, 29.8%, 40.8%, 21.5% and 20.8%, respectively (Jörns-Presentati et al., 2021). Given that most mental health problems develop during the adolescent period, it is pertinent to understand mental health issues in this critical period, particularly in resource constrained countries, including Ghana, where data paucity has hindered intervention programming, mental health policies and cross-cultural discourses. A gendered approach to ALEs and mental health outcomes is extremely important given that gender occupy a central position in SSA cultures (Adjorlolo et al., 2017; Akinola, 2018). The critical question with little clarity in the literature relates to whether the relationship between ALEs and mental health outcome is invariant across gender in Ghana and perhaps other SSA countries. That is, whether the prevalence and effects of ALEs on mental health outcomes is gender dependent. Consequently, adding to the literature from SSA, we examined gender differences and the effects of ALEs on mental health outcomes of adolescents in Ghana.

The gender-based socialization and parenting practices that epitomizes the patriarchal orientation of Ghanaian cultures, for example, places a non-negotiable demand on boys to be strong, 'hardy and tough' to able to withstand life adversities. Girls, on the other hand, are naturally perceived as 'weaker sex' who deserve to be cared for and protected from aggressors (Adjorlolo et al., 2017). The processes of socializing boys to be hardy and tough exposes them to abusive practices that can significantly affect their mental well-being. Owing to sociocultural norms and practices, there is the tendency to normalize adverse socialization processes, thereby creating an enabling environment for abuse experiences to be under-reported. Girls, on the other hand, may be exposed to ALEs associated with learning to perform domestic activities, such as cooking, washing, and sweeping. While the responsibility of parenting boys rested mainly with fathers and other males in the household or community, girls are also mostly socialized by mothers and/or females, suggesting that the sources of ALEs may differ across the genders. These observations are largely true for boys and girls raised in rural parts of the country where traditional practices are still upheld, as opposed to cities or the so-called urban areas where acculturation and modernity are copiously evident.

The environment in which adolescent boys and girls are socialized is extremely important in determining their exposure to ALEs. According to the social disorganization theory, aggressive tendencies (e.g. physical fights, assaults), traumatic and road traffic accidents and maltreatment experiences (e.g. been beaten or object falling on the head) are prevalent in disorganized neighbourhoods because of the disruptions in social networks and breakdown in informal social controls systems (Sampson & Groves, 1989). However, there is the possibility that boys and girls growing up in the same neighbourhood may not be exposed to the same ALEs and even when they do, the characteristics of the ALEs including the duration, intensity, and frequency may differ. This, according to the dose-response theory (Bell et al., 2015), may lead to gender differences in the expression and effects of ALEs on mental health. For example, adverse events such as trauma to the head due to falls, road traffic accident, and physical aggression can be experienced by both genders; however, the risk is significantly elevated in boys owing to the physiological mechanisms, mainly hormonal influences, that fuel aggressive tendencies in boys. (Susman et al., 1987). Relatedly, in Ghanaian cultures, there is a serious gender consideration to substance misuse practices by adolescents. It must be emphasized that the use of substances by adolescent is generally prohibited in most Ghanaian cultures. However, where smoking and alcohol use are tolerated, such behaviours are associated more with boys, relative to girls whose actions are deemed as gross violation of gender norms and expectations (Nketiah-Amponsah et al., 2018). Consequently, the sanctions associated with substance misuse behaviours are severe for adolescent girls. This gender-based discriminatory practices provide enough impetus for girls to conceal their substance misuse behaviours from their guardians, thereby depriving them of opportunity for early identification and intervention. This development can affect the disclosure of substance misuse tendencies, but more importantly, it also suggests that the long

term and incremental effect of substance misuse could be devastating for girls, perhaps more than boys.

Despite the indication of gender differences in the prevalence and effects of ALEs on mental health, the evidence-base in Ghana and other African countries is noticeably limited. The study addressed the existing knowledge gap by examining gender differences (1) on the prevalence of mental health problems; (2) adversity experience; and (3) the associations between ALEs and mental health outcomes with a school-based adolescent sample in Ghana. The findings would contribute to the burgeoning cross-culture, gendered discourses on ALEs and mental health, while serving as a resource to support research efforts and professional practice in Ghana and countries that share similar characteristics with Ghana.

Method

Design and data collection procedure

The study design has been reported elsewhere (Adjorlolo et al., 2021). Briefly, data were gathered using a cross-sectional survey involving the administration of self-report questionnaires. Three senior high school (SHS) located in three different administrative regions of Ghana (i.e. Greater Accra, Central and Eastern Regions) participated in a nation-wide study designed to investigate the mental health of students in SHS. Participants were recruited from an indigenous SHS in each region. Ghana's educational system operates on a 6-3-3-4 system (i.e. primary school – 6 years; junior high school – 3 years; senior high school – 3 years; and University Bachelor's degree – 4 years), with English as the official language of instruction at the various levels of education. A multi-stage sampling technique was used to select the schools. First was the random selection of a district (small administrative units) in each region, followed by a purposive selection of one indigenous school in each district. A school is defined as indigenous provided that over 90% of the student population is from the region or district in which the school is located. This was intended to allow for investigation of geographical differences in mental health outcomes. A mixed indigenous school (i.e. school with boys and girls) was preferred, given the opportunity to investigate gender differences in ALEs and mental health outcomes. Officials from the District Education Office of the various Districts provided information on school(s) meeting the indigenous SHS criteria. They also granted institutional permission for the study. The questionnaires were administered to the participants in their respective classes. Prior to this, the research team explained the purpose of the study, responsibilities of participants and ethical issues. Only those who consented to participate in the study were handed a pack of questionnaires. Participants were given the opportunity to ask questions. Instructions to complete the questionnaire were read to them after which some participants were randomly invited to summarize the instructions. This was intended to ensure that the participants understood the instructions to complete the questionnaires. Once completed, the questionnaires were handed over to the research team in each class. The Noguchi Memorial Institute for Medical Research Institutional Review Board of the University of Ghana granted ethical approval for the study (NMIMR-IRB CPN 012/19–20).

Study measures

Adverse Life Experiences: Seven personal, home, and community/neighbourhood level of adverse events were included. The following items were included: life time substance use behaviour (*Have you ever smoked or used alcohol?*), traumatic experiences (*I was involved in an accident or someone hit my head with an object or an object fell on my head*), violence victimization (*How often you been physically attacked or beaten in the last 12 months*), school-level stress (*How much stress do you usually feel because of school activities such as attending classes?*), disorganized neighbourhood (*People in my neighbourhood do not respect rules and laws; People do not care*

about what goes on in the neighbourhood) and family history of mental disorders (Do you know a relative or family member who suffers from mental illness?). The responses to the items were mostly categorical, such as Yes, No and I do not know for family history of mental disorders. Given the skewed response patterns, data were recoded to dichotomized categories for subsequent analyses.

Four mental health measures were included, which assessed adolescents' depressive, anxiety symptoms, suicidal behaviours, and overall wellbeing.

Patient Health Questionnaire-9- PHQ (Kroenke et al., 2001) was used to assess for adolescent depressive symptoms. The PHQ-9 items are rated on a four-point scale ranging from 'not at all' (0) to 'nearly every day' (3). Higher scores, obtained by summing the participants' responses, indicate more depressive symptoms. The PHQ-9 has been validated with Ghanaian adolescents (Anum et al., 2019). The Cronbach's alpha recorded in the present sample was 0.72.

Generalized Anxiety disorder-GAD (Spitzer et al., 2006) was administered to assess for the symptoms of anxiety. The GAD is a 7-item scale items rated on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly always), with total scores ranging from 0 to 27. The GAD has been validated on Ghanaian adolescents (Adjorlolo, 2019). The internal consistency (Cronbach's alpha) of the GAD in the current study was 0.75

Suicidal Behaviour Questionnaire-Revised-SBQ-R (Osman et al., 2001) was administered to screen for suicidal tendencies. The SBQ-R is a four-item scale Likert response rated. The SBQ-R total score ranges from 3 to 18, with higher scores reflecting greater risk for suicidal tendencies. The SBQ-R has been validated on Ghanaian adolescents (Adjorlolo et al., 2020). The Cronbach's alpha reported in the present study was 0.78.

World Health Organization Well-Being Index (Topp et al., 2015) measures subjective, positive well-being. The scale's five items are scored from 5 (all of the time) to 0 (none of the time), with a total score ranging from 0 (absence of well-being) to 25 (maximal well-being). A Cronbach's alpha of 0.80 was observed for the present sample.

Other measures: We also collected data on several demographic variables, including age, gender, household size, birth order and mental health help-seeking from mental health professionals and spiritualists.

Data analyses

Data were analysed with SPSS version 26 (IBM Corp), with a two-tailed statistical significance set at 0.05. Gender differences on mental health and ALEs variables were examined using chi-square analysis (for categorical variables) and independent samples t-tests (for continuous variables). Pearson correlation was used to examine the co-occurrence patterns of mental health symptoms/outcome variables. Lastly, multiple linear regression, controlling for demographic confounders, was used to examine the association between ALEs and mental health outcome (i.e. depression, anxiety, suicidal ideation, and well-being). Personal, family, and neighbourhood ALEs were included as predictors simultaneously, controlling for demographic confounders. The analyses were conducted separately for boys and girls.

RESULTS

Demographic characteristics of participants

A total of 1, 886 participants participated in the study and were distributed as follows: 844 from Greater Accra region, 249 from Eastern region and 793 from Central region. The demographic information of the participants, based on gender, were summarized in Table 1. As can be seen, majority of the participants were aged from 16 to 17 years (i.e. 55.1%), and study in boarding

Table 1. Study sample and descriptive results.

	Total (n = 1886)	Boys (n = 712)	Girls (n = 1174)	p
<i>Demographic</i>	% or M(SD)	% or M(SD)	% or M(SD)	
Adolescent Age (Continuous)	17.27 (1.62)	17.56 (1.65)	17.10 (1.58)	<.001
Age groups	6.6%	.1%	8.1%	<.001
≤15 years	22.9%	17.5%	26.2%	
16 years	32.2%	32.0%	32.3%	
17 years	23.4%	26.3%	21.6%	
18 years	14.9%	20.1%	11.7%	
≥19 years				
School Type	78.3%	78.2%	8.4%	.953
Boarding school	21.7%	21.8%	21.6%	
Day school				
Number of household sibling	54.5%	55.5%	53.8%	.751
0–3	35.3%	34.3%	35.9%	
4–7	10.2%	10.3%	10.2%	
More than 7				
Birth order	31.2%	31.6%	30.9%	.669
First	43.4%	44.1%	42.9%	
Middle	25.5%	24.3%	26.1%	
Last				
Region growing up	28.0%	29.3%	27.2%	.259
Rural	41.9%	42.8%	41.3%	
Urban	30.2%	28.0%	31.5%	
Mixture				
Male Guardian w Formal Occupation	33.2%	33.4%	33.1%	.916
Female Guardian w Formal Occupation	12.0%	12.4%	11.8%	.764
#Days Physical Active > 10 mins last month	31.6%	29.5%	32.8%	.143
0 day	42.8%	42.2%	43.1%	
1–3 day	13.1%	15.0%	11.9%	
(1) Days	12.6%	13.3%	12.2%	
>7 days				
<i>Adverse Life experiences</i>				
Ever smoked or used alcohol	16.8%	22.3%	13.5%	<.001
Head trauma by accident or hitting	33.4%	36.3%	31.7%	.043
Been attacked or beaten last 12 months	26.1%	26.5%	25.9%	.787
Family member with mental illness	21.6%	21.5%	21.6%	.946
Experience A lot/very much School Stress	46.6%	48.9%	45.3%	.252
Neighbourhood not respect rules & laws	67.4%	64.4%	69.2%	.035
People not care neighbourhood	62.3%	61.4%	62.9%	.508
<i>Mental Health Problems</i>				
PHQ-9 Moderate to Severe Depression	31.2%	25.4%	34.7%	<.001
Full sample	30.6%	34.5%	29.5%	.609
≤15 years	31.1%	21.8%	34.9% 33.9%	.008
16 years	30.4%	24.7%	36.0%	.017
17 years	30.2%	22.5%	38.0%	.002
18 years	34.3%	30.8%		.205
≥19 years				
GAD-Moderate to Severe Anxiety	16.5%	14.2%	17.9%	.036
Full Sample	19.4%	24.1%	17.9%	.456
≤15 years	17.9% 15.5%	11.3%	20.5%	.024
16 years	16.1%	14.5% 11.2%	16.1%	.599
17 years	15.7%	17.5%	19.8%	.016
18 years			13.9%	.406
≥19 years				
WHO Poor Wellbeing (≥28 cut)	13.0%	10.1%	14.8%	.003
<i>Mental Health (MH) Service Seeking</i>				
Ever seen a professional for MH	21.2%	21.6%	20.9%	.695
Ever seen a prof. spiritualist for MH	18.3%	17.4%	18.3%	.623
	M(SD)	M(SD)	M(SD)	
PHQ-9 Depression	7.60 (4.95)	6.74 (4.73)	8.12 (5.02)	<.001
GAD Anxiety	6.28 (4.42)	5.68 (4.43)	6.64 (4.37)	<.001
Suicidal Ideation	4.80 (2.93)	4.09 (2.24)	5.23 (3.20)	<.001
WHO- Wellbeing	62.88 (25.38)	65.60 (24.98)	61.24 (25.49)	<.001

Note. Family member with mental illness is based on n of 1271.

Table 2. Correlations among mental health measures (by gender).

		1	2	3	4
1.	Depression	1	.61***	.34***	-.28***
2.	Anxiety	.63***	1	.34***	-.27***
3.	Suicidal ideation	.22***	.29***	1	-.21***
4.	Wellbeing	-.29***	-.33***	-.14***	1

Note. Correlations below Diagonal are for boys, and above diagonal are for girls.

*** $p < .001$

schools (78%). More than half of the participants (54.5%) grew up with 0 to 3 siblings in the same household.

Gender differences on mental health and adverse life experiences

Table 1 presents a summary of the analyses of gender differences across the mental health measures and ALEs. There was a statistically significant gender difference in the mental health outcomes. Specifically, girls endorsed depressive and anxiety symptoms, suicidal ideation, and poor well-being significantly more than their boys' counterparts (all $ps < 0.05$). The pattern of the relationship is similar across gender. Regarding ALEs, the percentage of boys who ever abused a substance (22.3% versus 13.5%) and experienced head trauma (36.3% versus 31.7%) were significantly more than girls ($p < 0.05$). Lastly, significantly more girls (64.4% versus 69.2%) than boys reported that they lived in disorganized neighbourhoods where rules and laws are not respected ($p < 0.05$).

Mental health co-occurrence patterns by gender

To study co-occurrence of anxiety, depression, suicidal ideation and wellbeing, correlation analysis was conducted. Table 2 displayed the summary of the intercorrelations among the mental health variables, separated by gender. Overall, the direction of the correlation is invariant across gender. For example, there were similar association between depression and anxiety ($r = .63$ for boy and $.62$ for girl).

Adverse life experiences and mental health outcomes

To study the association between ALEs and mental health outcomes, a series of regression analysis were conducted. Table 3 summarize the findings for boys and girls, respectively. Overall, we found some gender consistency in the patterns of association. For example, across the genders, it was observed that violence victimization experience was significantly and positively associated with depressive and anxiety symptoms (all $ps < .05$). School-level stress was also related to depressive symptoms in both boys and girls (all $ps < .05$). Some gender differences also emerged. For example, substance misuse significantly predicted all the mental health outcomes, including depression, anxiety, and suicidal ideation in girls (all $ps < .05$). Among boys, however, substance misuse was only associated with depressive symptoms. Trauma to the head was associated with anxiety symptoms, and suicidal ideations in girls but not in boys (all $ps < .05$). Disorganized/incohesive neighbourhood, indexed by lack of respect for rules and laws, was associated with depression and anxiety symptoms in only boys. Similarly, the pattern of interaction between age and ALEs on the mental health outcomes did not differ broadly across gender.

Discussions

The study contributed to the literature on gender, mental health outcomes and ALEs in Ghana, a sub-Saharan African country. Previous studies have focused on anxiety and depression, but with little

Table 3. Association between adverse life experiences and mental health outcomes (Gender and age moderation effects).

Demographic Confounders	Depression		Anxiety		Suicidal Ideation		WHO-Wellbeing	
	B (SE)	p	B (SE)	p	B (SE)	p	B (SE)	p
BOY								
Age	.11 (.135)	.434	.17 (.13)	.185	-.14 (.07)	.042	1.18 (.76)	.121
# of Sibling	-.09 (.30)	.766	-.19 (.28)	.502	.07 (.15)	.628	.81 (1.69)	.633
Physical Activity	-.26 (.21)	.232	.03 (.20)	.901	.03 (.11)	.790	1.29 (1.20)	.285
<i>Adverse Life Experiences (ALEs)</i>								
Ever smoked or used alcohol	1.09 (.54)	.043	.42 (.50)	.405	.33 (.27)	.227	.12 (3.02)	.968
Head Trauma by Accident/Hitting	-.21 (.44)	.637	.30 (.41)	.471	.24 (.22)	.282	.83 (2.46)	.435
Been attacked or beaten last 12 months	1.89 (.49)	<.001	1.33 (.46)	.004	.20 (.25)	.416	-6.42 (2.76)	.020
Family member with mental illness	.52 (.50)	.304	-.34 (.48)	.480	.07 (.25)	.780	-3.98 (2.84)	.162
A lot/very much School Stress	1.48 (.41)	<.001	.60 (.39)	.126	.38 (.21)	.067	-7.50 (2.33)	.001
Neighbourhood-Not Respect Rules/Laws	1.01 (.47)	.032	1.37 (.44)	.002	.40 (.24)	.089	-2.21 (2.65)	.405
People Not care neighbourhood	.17 (.46)	.713	.08 (.44)	.849	.17 (.23)	.461	-1.17 (2.60)	.654
<i>ALEs × Age Interaction Effect Model</i>								
Ever smoked or used alcohol × Age	-.27 (.37)	.475	.19 (.35)	.577	.09 (.19)	.647	-2.86 (2.08)	.170
Head Trauma × Age	.43 (.32)	.184	-.32 (.30)	.289	-.09 (.16)	.565	.22 (1.81)	.904
Been attacked or beaten × Age	.02 (.33)	.957	.36 (.31)	.246	.001 (.17)	.994	.43 (1.87)	.818
Family members w/mental illness× Age	-.23 (.33)	.473	-.89 (.31)	.004	.02 (.17)	.901	1.31 (1.83)	.474
School Stress × Age	-.36 (.29)	.208	-.27 (.27)	.319	-.07 (.15)	.624	1.18 (1.61)	.465
Neighbourhood-Not Respect Rules×Age	-.33 (.33)	.308	.01 (.31)	.986	-.12 (.17)	.473	5.77 (1.83)	.002
People Not care neighbourhood × Age	.67 (.32)	.035	.64 (.30)	.031	.22 (.16)	.180	-4.51 (1.78)	.012
GIRL								
Age	-.03 (.11)	.812	-.16 (.09)	.068	-.09 (.06)	.163	.18 (.57)	.751
# of Sibling	.10 (.27)	.715	.24 (.22)	.287	.27 (.15)	.083	.22 (1.42)	.875
Physical Activity	-.27 (.18)	.133	-.59 (.15)	.000	.03 (.11)	.783	3.76 (.97)	<.001
<i>Adverse Life Experiences (ALEs)</i>								
Ever smoked or used alcohol	1.88 (.54)	.001	2.15 (.45)	.000	1.89 (.31)	.000	-8.64 (2.89)	.003
Head Trauma by Accident/Hitting	.60 (.39)	.123	1.02 (.33)	.002	1.01 (.23)	.000	-3.78 (2.09)	.071
Been attacked or beaten last 12 months	2.04 (.44)	<.001	1.13 (.36)	.002	1.21 (.25)	.000	-3.17 (2.33)	.178
Family member with mental illness	.51 (.44)	.251	.71 (.37)	.052	.42 (.25)	.098	-3.92 (2.35)	.096
A lot/very much School Stress	1.35 (.35)	<.001	1.23 (.29)	.000	.35 (.20)	.088	-1.39 (1.89)	.463
Neighbourhood-Not Respect Rules/Laws	.45 (.41)	.264	.16 (.34)	.632	-.22 (.23)	.347	-1.33 (2.17)	.539
People Not care neighbourhood	.54 (.39)	.168	.64 (.33)	.050	.09 (.23)	.687	.15 (2.11)	.942
<i>ALEs × Age Interaction Effect Model</i>								
Ever smoked or used alcohol × Age	-.29 (.27)	.281	-.13 (.22)	.553	.19 (.16)	.225	-.60 (1.45)	.677
Head Trauma × Age	.12 (.29)	.691	.35 (.24)	.146	.30 (.17)	.069	.90 (1.55)	.559
Been attacked or beaten × Age	-.18 (.32)	.585	-.47 (.27)	.076	-.01 (.19)	.966	-1.25 (1.72)	.466
Family members w/mental illness× Age	-.33 (.32)	.311	-.34 (.27)	.198	-.06 (.19)	.769	.53 (1.72)	.756
School Stress × Age	.12 (.26)	.629	.05 (.21)	.804	.03 (.15)	.835	-2.07 (1.37)	.132
Neighbourhood-Not Respect Rules×Age	-.35 (.33)	.300	.02 (.27)	.944	.01 (.19)	.969	1.52 (1.78)	.391
People Not care neighbourhood × Age	.12 (.31)	.707	-.27 (.26)	.302	.01 (.18)	.940	-1.11 (1.67)	.507

attention to suicidal ideation symptoms and mental wellbeing. This study added new evidence in respect of the prevalence and co-occurrence patterns on these under-studied mental health areas, as well as contribute to new evidence in understanding how ALEs influence mental health symptoms' development.

Prevalence of adverse life experiences

ALEs are fairly distributed in the study population. Experiences relating to disorganized neighbourhood was rated highest, mainly because of the preponderance of poor neighbourhoods in Ghana (Owusu et al., 2016). Impoverished neighbourhoods are often characterized by the breakdown in social and formal control systems and order, providing an enabling environment for adverse behaviours, including victimization to manifest and flourish (Sampson & Groves, 1989). This was followed by school-related stress, head trauma, victimization, family member with mental illness, and

lastly substance misuse. More importantly, most ALEs investigated in this study, namely school-related stress, victimization, neighbourhood disorganization, and female history of mental illness, were invariant across gender. The findings lend support to existing literature (Flouri & Panourgia, 2011), suggesting that experiences of adverse events permeate the gender divide in Ghana and that neither boys nor girls are immune to ALEs. The study participants were recruited from school environments that were not designed to operate separately for boys and girls, allowing for the distribution of stress across multiple levels, including at the classroom and dormitories. Similar argument can be advanced for disorganized neighbourhood.

In contrast, it was observed that boys and girls differ significantly on substance misuse and head trauma experiences, with more boys reporting these experiences. This is largely consistent with previous studies (Opland et al., 1995; Whaley et al., 2016). Historically, substance misuse has been associated with the male gender (Opland et al., 1995; Whaley et al., 2016), which in the Ghanaian context can be exacerbated by some sociocultural practices. These include the supposed 'flexible' policing of boys in communities by parents and significant others where they easily exposed to adverse peer influences. There is also the tendency for boys to be entrusted with the responsibility of serving guests with alcoholic beverages which they must sometimes taste before serving. The high prevalence of trauma to the head found in boys could be due to a confluence of sociocultural, environmental, and biological predispositions. In Ghanaian societies, boys, compared with girls, have some 'entitlement and liberty' to freely associate with their peers and to engage in practices where aggressive and high-risk taking behaviours can occur (Susman et al., 1987). This increases their vulnerabilities to ALEs such as trauma to the head resulting from falling and/or being knocked on the head.

In terms of help-seeking for mental health support services from informal (e.g. faith healers) and formal sources (e.g. mental health professionals), no statistically significant difference was observed between boys and girls. Although help-seeking for mental health services is generally poor across gender, relative to physical health services (Aguirre Velasco et al., 2020), girls are more inclined to using mental health services than their boys counterparts (Galdas et al., 2005). The poor utilization of mental health services by adolescents, regardless of gender, suggest a general problem such as unfamiliarity with and/or inaccessible and unresponsive mental health support systems, negative experiences associated with seeking help for mental health problems such as stigma (Aguirre Velasco et al., 2020; Westberg et al., 2022). Indeed, the pre-tertiary educational system in Ghana is largely devoid of dedicated mental health support programmes to ameliorate the mental well-being of students. The School Health Education Programme (SHEP) instituted by the Ghana Education Service (GES) does not emphasize mental health as a core component of school health, relative to hygiene and physical health. The general lack of mental health support systems across the schools included in the study could explain the seemingly lack of gender difference in help-seeking behaviour for mental health services, although similar findings have been reported elsewhere among adolescents (Haavik et al., 2017).

Prevalence, co-occurrence and predictors of mental health outcomes

Consistent with the trend in the psychopathology literature, girls in this study reported significantly more symptoms of depression, anxiety, suicidal ideation as well as poor wellbeing (Gutman & Codioli McMaster, 2020). However, the pattern and magnitude of the co-occurrence of these psychopathological behaviours and wellbeing appear similar across the genders. Impliedly, boys with depressive symptoms can also experience anxiety symptoms and that the strength and direction of the relationship would be similar as with their girl counterparts. Thus, no gender is insulated from the co-occurring effects of psychopathological behaviours. To the extent that these effects are negative, both genders could be affected at a similar magnitude.

Another important observation relates to the gender similarity demonstrated by the predictive models of mental health outcomes. Depressive symptoms, for instance, was predicted by substance

misuse, victimization experiences and school-level stress in both boys and girls. Similarly, victimization experiences and neighbourhood disorganization significantly predicted anxiety symptoms in both boys and girls. Lastly, the effects of the interaction between age and ALEs on the various mental health outcomes were largely similar across the two genders. Consistent with previous discussions, gender differences were limited to substance misuse and trauma to the head. These ALEs significantly predicted suicidal ideation in girls but not in boys. Therefore, the bulk of the study findings point towards the direction of gender invariance with respect to the influence of ALEs on mental health outcomes. The study findings, together with previous studies (Brown et al., 2016; Shaik et al., 2017), suggest that the effects of ALEs on mental health outcomes are not always influenced by gender. This observation holds for ALEs that have historical relationships with gender such as substance misuse as well as those that could be deemed as gender neutrals such as experiences of school stress. Our findings have broadened the ALEs literature and mental health outcomes, questioning some dominant views. For example, the gender invariance in the relationship between mental health outcomes and ALEs partly negate the previous suggestion of low psychopathology threshold for internalizing behaviours among females, compared with males (Cyranowski et al., 2000; Harkness et al., 2010; Kendler et al., 2006). Others have argued that exposure to stressors can induce psychological and physiological changes that position boys to perceive and cope with stressful situations in more appropriate ways (Dienstbier, 1989). Granted the above, it is argued that girl's exposure to ALEs similarly increase their resilience or serves as buffer system against mental health problems. In conclusion, ALEs have exerted similar effects on mental health outcomes among boys and girls.

Implications of findings for intervention programming

The findings of the study offer researchers, practitioners, and policymakers the opportunity to design and implement interventions to ameliorate the mental wellbeing of adolescents at school settings. First, the similarities in adverse event experiences between boys and girls suggest that the risk factors for mental health problems are generally distributed across adolescent settings. Thus, both boys and girls could be assessed for ALEs investigated in this study using screening measures to identify those with elevated exposure profiles and heightened risk for mental health problems and other behavioural maladies for a more detailed and thorough assessment to inform intervention planning. Second, it was observed that the influence of ALEs on mental health outcomes was largely invariant across genders, presupposing that boys and girls experienced similar mental health effects after exposure to ALEs. Therefore, both genders would benefit from interventions to prevent ALEs as well as improve and promote their mental wellbeing following exposure to ALEs. The ALEs investigated in this study can be prevented via a host of interventions in the home environment and school settings. Parents/legal guardians, together with school authorities, should invest heavily in the provision of safe and secured environments for adolescent boys and girls. This include addressing bullying and other proscribed behaviours that are characteristic of the SHS system in Ghana. Bullying, for instance, creates victims who in turn can become offenders (Plummer & Cossins, 2018). This phenomenon increases the victim-offender population across the SHS, partly explaining the large proportion of adolescent boys and girls who experienced ALEs. Awareness creation on what constitute violent victimization, bullying and anger/aggression-provoking behaviours and their consequences, both short and long term, should be prioritized and carried out periodically. Effort to address substance misuse behaviours is also recommended, including education on the risk factors and consequences, peer counselling and support system, screening for the risk of substance misuse during and after enrolment to inform appropriate support system. School authorities should also take steps to enquire about the aspect of school activities that are stressful to students to inform target intervention planning.

With respect to the provision of mental health services, the various adolescent-specific mental health interventions such as the Coping Power program (Lochman & Wells, 2002), Social and Emotional Training (Kimber et al., 2008), Promoting Alternative Thinking Strategies (Domitrovich et al., 2010) and

BounceBack Intervention (Anthony & McLean, 2015) intended to mitigate ALEs can be delivered to both boys and girls. This line of reasoning can be extended to interventions designed to reduce the co-occurrence of mental health problems as well as improve help-seeking for mental health services. As discussed previously, gender influence on these outcomes were minimal, increasing the likelihood that adolescent boys and girls would benefit from similar interventions. For example, psychoeducation, peer training and outreach initiatives that are often instituted to reduce barriers to mental health help-seeking (Aguirre Velasco et al., 2020) can be provided to both boys and girls. These interventions can be delivered as universal, selective or indicative services (Arora et al., 2019). However, for resources constrained countries such as Ghana (Roberts et al., 2014), universal services appear exceptionally attractive owing to the relatively high cost, infrastructure and human resources required for selective and indicative mental health services. Universal mental health service delivery is aimed at promoting and preventing mental health problems and can be delivered to adolescents at school settings regardless of their exposure to ALEs. Given the pervasiveness of ALEs, school-level programs such as mental health-sensitive curriculum design and physical education activities would help to build resilience, foster mental health growth and develop the necessary internal and external systems to mitigate the development of mental health problems following exposure to ALEs. For those who screened positive for ALEs and have been deemed at high risk for or have mental health problems, selective and indicative services can be instituted to remediate their mental wellbeing, focusing specifically on reducing the impact of ALEs. This can be achieved following a detailed intake assessment to understand vulnerabilities, weakness, strengths and opportunities for growth to help in designing targeted and tailored intervention.

Study limitations

The study findings should be examined given the following limitations. The cross-sectional survey design adopted in the study does not permit discussions on causal relationship between ALEs and mental health problems. Due to the retrospective nature of the study, there is a possibility of recall bias. This, coupled with the use of self-report questionnaire, could result in under or overreporting of ALEs and mental health problems. Using single items to represent complex constructs such as ALEs could be problematic although studies have provided evidence regarding the utility of single items in mental health research (Ahmad et al., 2014; Verster et al., 2021). The closure of schools as part of COVID-19 mitigation measures prevented the inclusion of participants whose background might be different from those who participated in the study. Increasing the sample size to accommodate participants from other regions may have impacted the direction and magnitude of the study findings. Data were gathered from participants recruited from the school settings which might limit their exposure to ALEs, raising the possibility that the findings might differ among non-school going adolescents.

Conclusion

Mental health problems pose serious developmental challenges to adolescents and youth in Ghana and other SSA countries. Calls to develop intervention programs to improve the mental wellbeing of adolescents are as useful as understanding gender differences in the risk factors of mental health problems. This is extremely important to guide to intervention planning. The influence of gender on the relationship between ALEs and mental health problems does not always hold. That is, the pathway to mental health problems, following exposure to ALEs does not always differ as a function of gender. The implication is that both genders could benefit from similar screening efforts and intervention programming designed to improve mental health. The findings could help to position practitioners and school authorities to profile and identify adolescents at risk for mental health problems for detailed assessment and interventions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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