

Association between psychosomatic health symptoms and common mental illness in
Ghanaian adolescents: age and gender as potential moderators

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Abstract

Little is known about the role of age and gender in the association between psychosomatic symptoms and common mental illness (CMI) in Ghanaian adolescents. This cross-sectional study examined age and gender as moderators between psychosomatic symptoms and CMI using data from a school-based survey (N = 770). Males reported higher psychosomatic symptoms and CMI while younger adolescents reported higher CMI only. Psychosomatic symptoms were positively associated with CMI but age and gender did not moderate this association. Interventions aimed at reducing the prevalence rate in psychosomatic symptoms are crucial in decreasing CMI in Ghanaian adolescents.

Keywords

Common mental illness, psychological wellbeing, psychosomatic health symptoms, physical health, adolescents, Ghana

INTRODUCTION

Mental health problems have become a common life experience for young people globally; affecting between 10% and 20% of children and adolescents (Kieling et al., 2011) and expected to account for 15% of the global burden of disease by 2020 (Biddle and Mutrie, 2008). About three quarters of lifetime mental health problems emerge in adolescence or early adulthood (Kessler et al., 2012) with depression, eating disorders and anxiety being some of the conditions that disproportionately affect young people (Viner and Booy, 2005). Common mental illness in adolescents has implications for self-esteem, health behaviours, educational achievement, social cohesion, future health, and life chances (Olweus, 1991). A study based on the Global School-based Health Survey in Ghana found that senior high school students reported having various mental health issues: 15% reported that they felt lonely, 13% felt so worried and 38% felt so sad or hopeless (Owusu, 2008).

Previous studies have investigated many aspects of the epidemiology of common mental illness in young people (e.g. Kessler et al., 2012; Li et al., 2010; Ormel et al., 2014; WHO, 2005), but some important aspects remain unaddressed or need replication among non-clinical samples in non-western countries, such as Ghana, where less is known about disparities and role of age and gender in the association between psychosomatic symptoms and common mental illness.

The socio-economic and cultural environment in Ghana differs significantly from that of western countries. It also is expected to have a different kind of impact on common mental illness in adolescents, especially when Africa, compared to the rest of the world, has the least developed child and adolescent mental health policies (WHO, 2005). Ghana is presently undergoing rapid social and economic changes and these can have a profound effect on how mental health policies and interventions are formulated and implemented (Patel et al., 2007). Poor socio-economic circumstances in low- and middle-income countries are associated with common mental illnesses (Lund et al., 2010) and it has been posited that this association is strongly linked to experiences of insecurity, hopelessness, rapid social change and risk of violence (Flisher et al., 2007). One consequence is that many individuals who need treatment for common mental illness in Ghana are unable to access psychiatric services, but seek the care of informal community mental health services such as traditional

and religious healers who offer a varying quality of service (Ofori-Atta et al., 2010). Accordingly, these socio-economic and cultural factors in Ghana are likely to differently shape the epidemiology of common mental illness among adolescents.

It is known that when physical complaints have no apparent medical basis they may be a reflection of nervousness in a social situation, a demanding school setting, family conflict, separation from parents, or other troubling circumstances (Gupta and Pérez-Edgar, 2011; Natvig et al. 2001). Conversely, common mental illness could be a precursor to some psychosomatic symptoms such as headaches (Powers et al., 2006), and is central in the aetiology of persistent fatigue (Viner et al., 2008). Social causation theories focus on the role of socio-economic circumstances (Hanson and Chen, 2007), but the experience of common mental illness could also be explained in relation to evolutionary theory framework when some physiological mechanism fails to perform a specific function it was designed to, and the failure of the mechanism causes the person real harm in the form of common mental illness (Wakefield, 1992).

For a long time, there was no validated measuring instrument for assessing the mental health of Ghanaian youth (Mutumba et al., 2014), until recently (Glozah and Pevalin, 2015). Also, only a few studies have examined the association between psychosomatic symptoms and common mental illness in adolescent samples in non-western settings (e.g. Owusu et al., 2011; Peltzer, 2002). Almost all adolescent mental health studies have been conducted in western settings and these studies have found strong associations between psychosomatic symptoms and common mental illness. For example, Svedberg et al. (2013) found that psychosomatic symptoms explained between 27% and 50% of the variance in health-related quality of life, which included measures of mental wellbeing. Psychosomatic symptoms in adolescence might be important signals of mental health problems and so should be taken seriously in school health and in general primary care, as psychosomatic problems in daily living can be both indicative and predictive of mental distress (Freyler et al., 2013; McBeth et al., 2002).

Several studies have found age and gender disparities in common mental illness and psychosomatic symptoms. An extensive number of studies have found that more females than males report common mental illness with the gender difference first appearing in

adolescence (e.g. Farbstein et al., 2010; Svedberg et al., 2013; Wade et al., 2002) and psychosomatic symptoms (e.g. Svedberg et al., 2013; Wolbeek et al., 2006).

With respect to age differences, studies have generally found that older adolescents report more than younger adolescents on common mental illness (e.g. Kaplow and Widom, 2007; Poulin et al., 2004; Raa et al., 2007) and psychosomatic symptoms (e.g. Brun et al., 2007; 2005; Viner et al., 2008).

Based on what is known, it is important to critically and periodically examine the epidemiology of common mental illness in adolescents to aid in the development of prevention and intervention strategies. The moderating role of age and gender in the association between psychosomatic symptoms and common mental illness has not previously been examined in Ghana. Therefore, the aims of this study are first to describe age and gender prevalence of psychosomatic symptoms and common mental illness and, second, to test if age and gender moderate the association between psychosomatic symptoms and common mental illness. Based on the findings of previous studies, it is expected that there will be age and gender differences in psychosomatic symptoms and common mental illness, whereby older adolescents and females report higher levels.

METHODS

Participants

Seven hundred and seventy second-year and third-year students were randomly selected from four public senior high schools in Accra, Ghana to participate in this cross-sectional study. A simple random sampling technique was used to select these schools from a list of all senior high schools in the Accra Metropolitan Assembly. The population of Accra comprises of people from different ethnic, tribal, and socio-economic backgrounds across Ghana, so public senior high school students share similar background characteristics as students in other public senior high schools across Ghana. First-year students could not participate because they had not reported to senior high schools at the time of data collection. The sample comprised of 266 females and 504 males between the ages of 14 to 21 ($M = 16.86$, $SD = 1.01$). There were students over 18 years old and still in senior high school and this may be as a result of not starting school at an early age, class repetition

because of poor academic performance, inability to pay school fees, and pregnancy leading to dropout and later re-entry. These issues have decreased over recent years due to improvement in living standards and reduction in poverty, which encourages parents to send their children to school at an early age.

Procedure

Participants were asked to sign a consent form and those below the age of 18 were also required to complete a parental consent form. Data collection was carried out when all schools were in session and questionnaire completion took place in the classrooms. In each school, classrooms were randomly selected from the list of all classrooms in the school, and on the days of data collection all students in any of the randomly selected classrooms with a completed consent form(s) and willing to participate was allowed to complete the questionnaire. There is no specifically nominated ethics committee responsible for research ethics clearance in senior high schools in Ghana so school authorities discuss issues about privacy, confidentiality, anonymity and harm to participants before permission is given for their students to participate. Formal ethical approval was obtained from the University of Essex, UK, after a written permission was given by school authorities in Ghana for their students to participate in the study.

Measures

Psychosomatic health symptoms were assessed by the School Success Profile – Physical Health (SSP-PH) (Bowen and Richman, 1995). The SSP-PH consists of eight items asking if students feel little or no energy, trouble going to sleep, dizziness, headaches, stomach aches, tiredness and other aches and pains. The response options were on a 5-point Likert scale and the total score ranges from 8 – 40 with higher scores indicating more psychosomatic symptoms. Cut-off values were generated with terciles based on the distribution of scores within this study, as indicated in Table 1. The SSP-PH is a well-established instrument with good internal consistency (Bowen and Richman, 2008). In this study the SSP-PH had an $\alpha = 0.71$.

Common mental illness was assessed by the 12-item General Health Questionnaire (GHQ-12) (Goldberg, 1972). The GHQ-12 is a well-established, self-administered screening

instrument for identifying psychological distress in general population surveys. The response options were a 4-point Likert scale for each item and the Likert scale scoring method produces a more acceptable distribution of scores for parametric analysis. Total scores range from 12 to 48 with higher scores indicating more common mental illness. Cut-off values were generated with terciles based on the distribution of scores within this study, as indicated in Table 1. The α for this study was 0.75.

Parental education was measured by adding together the highest education attained by parents or guardians. Educational level scored as: University master's degree (6), University bachelor's degree (5), Polytechnic (4), Teacher or nursing training college (3), Form four/secondary school (2), and No education (1). Accordingly, the scores ranged from 2 to 12 with higher scores indicating higher levels of parental education. The scores were then collapsed into three parental education categories; high - greater or equal to 10, average - from 5 to 9 and low – less or equal to 4. The mean of the distribution was 6.34 and the standard deviation was 2.64. Age was dichotomised as younger (14-17) and older (18-21) based on the median age of the sample.

Statistical Analysis

Statistical analysis was conducted with IBM SPSS 22 software. Independent samples t-test was performed to examine gender and age differences in psychosomatic symptoms and common mental illness. When estimated, in G*Power (Faul et al. 2009), the sample size required to research a statistical power of 95% and detect the smallest effect size of 0.02 was 652 participants. A one-way analysis of variance (ANOVA) was also performed to examine parental education differences in psychosomatic symptoms and common mental illness. The Bonferroni post hoc test was performed if there was a significant ANOVA result. A hierarchical multiple regression analysis was the main statistical procedure used to examine the moderating effects of age and gender on the association between psychosomatic symptoms and common mental illness. Moderation effects were examined with two-way interaction effects between gender * psychosomatic symptoms and age * psychosomatic symptoms. With statistical significance set at the 0.05 level, the predictor variables were included in blocks – (1) gender, age and parental education, (2) psychosomatic symptoms and (3) the two interaction terms.

RESULTS

Descriptive Statistics and Prevalence of Common Mental Illness and Psychosomatic Symptoms

The results indicate that 62% of the participants reported moderate to high common mental illness and about 60% reported moderate to high psychosomatic symptoms. Table 1 shows the descriptive statistics of key variables and prevalence of common mental illness and psychosomatic symptoms scores by age and gender.

Gender, Age and Parental Education differences in psychosomatic symptoms and common mental illness

Table 2 presents the results of the independent-samples t-test and one-way ANOVA showing gender, age and parental education differences in psychosomatic symptoms and common mental illness. Results of the t-test show that males reported significantly higher scores on psychosomatic symptoms and common mental illness. The difference by age in psychosomatic symptoms was not statistically significant, while younger adolescents reported significantly higher common mental illness scores than older adolescents. Also, one-way ANOVA results show that there were significant differences by parental education in psychosomatic symptoms, but not for common mental illness. The Bonferroni post hoc test for differences in psychosomatic symptoms indicated a significant negative difference between high parental education and low parental education only ($p < 0.05$).

Table 1. Descriptive statistics and prevalence of common mental illness and psychosomatic symptoms (N = 770).

Category Splits	Gender			Age			Range	M	SD	
	Male	Female	Total	Younger	Older	Total				
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)				
Common Mental Illness	Low (12-34)	157 (33.6)	109 (46.8)	266 (38.0)	187 (34.8)	79 (49.1)	266 (38.1)	12-48	35.97	5.57
	Moderate (35-39)	152 (32.5)	78 (33.5)	230 (32.9)	182 (33.8)	47 (29.2)	229 (32.8)			
	High (40-48)	158 (33.8)	46 (19.7)	204 (29.1)	169 (31.4)	35 (21.7)	204 (29.2)			
	Total	467 (100)	233 (100)	700 (100)	538 (100)	161 (100)	699 (100)			
Psychosomatic Symptoms	Low (8-29)	167 (34.4)	135 (52.1)	302 (40.6)	240 (41.4)	62 (38.0)	302 (40.6)	8-40	30.48	4.69
	Moderate (30-33)	151 (31.1)	86 (33.2)	237 (31.9)	176 (30.3)	61 (37.4)	237 (31.9)			
	High (34-40)	167 (34.4)	38 (14.7)	205 (27.6)	164 (28.3)	40 (24.5)	204 (27.5)			
	Total	485 (100)	259 (100)	744 (100)	580 (100)	163 (100)	743 (100)			

Table 2. Gender, age and parental education differences in psychosomatic health symptoms and common mental illness.

	Psychosomatic Symptoms						Common mental illness					
	N	M	SD	<i>t</i>	df	<i>p</i>	N	M	SD	<i>t</i>	df	<i>p</i>
Gender												
Male	485	31.30	4.47				467	36.63	5.42			
Female	259	28.94	4.70	6.74	742	< 0.001	233	34.64	5.63	4.52	698	< 0.001
Age												
Younger	580	30.45	4.75				538	36.34	5.50			
Older	163	30.55	4.47	-0.25	741	> 0.05	161	34.71	5.63	3.27	697	< 0.01
Parental Education				<i>F</i>	df	<i>p</i>				<i>F</i>	df	<i>p</i>
High	111	29.59	4.959				104	35.27	6.40			
Average	365	30.42	4.517	3.31	2	< 0.05	340	36.13	5.29	0.99	2	> 0.05
low	266	30.94	4.772				254	36.07	5.57			

The moderating effects of age and gender in the relationship between psychosomatic health symptoms and common mental illness

Hierarchical multiple regression was performed to investigate the ability of psychosomatic symptoms to predict common mental illness, after controlling for age, gender and parental education. With the exception of the correlation coefficient between psychosomatic symptoms and common mental illness ($r = 0.41, p < 0.01$), all other correlations were weak, indicating that multi-collinearity was unlikely to be a problem in the regression analysis (Tabachnick and Fidell, 2007).

In Step 1 of hierarchical multiple regression, three predictors were entered: age, gender, and parental education. This model was statistically significant and explained 6 % of variance in common mental illness. After entry of psychosomatic symptoms at Step 2 (which was highly significant), the total variance explained by the model was 20%. In the final Step, the two interaction terms were entered into the model but were not significant, indicating that the association between psychosomatic symptoms and common mental illness was not moderated by gender or age (Table 3).

Table 3. Hierarchical regression analysis results for predictor and outcome variables.

	Common Mental Illness					
	<i>B</i>	<i>SE B</i>	β	<i>F</i>	R^2	ΔR^2
Step 1						
Constant	41.03	1.15				
Gender	-2.38	0.45	-0.20***	13.58***	0.06	0.06
Age	-2.29	0.52	-0.17***			
Parental Education	0.42	0.31	0.05			
Step 2						
Constant	25.84	1.77				
Gender	-1.25	0.43	-0.11**	41.05***	0.20	0.14
Age	-2.01	0.48	-0.15***			
Parental Education	0.12	0.29	0.02			
Psychosomatic Symptoms	0.46	0.04	0.39***			
Step 3						
Constant	26.47	6.19				
Gender	-1.15	0.43	-0.10**			
Age	-2.02	0.48	-0.15***	28.11***	0.20	0.00
Parental Education	0.10	0.29	0.01			
Psychosomatic Symptoms	0.44	0.20	0.37*			
Psychosomatic Symptoms X Gender	0.12	0.09	0.15			
Psychosomatic Symptoms X Age	-0.12	0.11	-0.13			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion

This study investigated the role of age and gender in the association between psychosomatic symptoms and common mental illness in Ghanaian adolescents. The findings indicate that 62% of the participants reported moderate to high common mental illness and about 60% reported moderate to high psychosomatic symptoms, suggesting a high prevalence of these disorders in the present sample (Owusu, 2008). The common mental illness prevalence estimate in this study is almost twice as high as the prevalence rate in Israeli adolescents (Farbstein et al., 2010). It is also slightly higher than the prevalence rate of studies conducted in sub-Saharan Africa on child and adolescent mental health problems (Cortina et al., 2012). On the other hand, the psychosomatic symptoms prevalence estimate is also slightly higher than the estimate found in European children (Vanaelst et al., 2012) but there is practically no information on psychosomatic symptoms to compare with respect to adolescent samples in sub-Saharan Africa.

The results also show that males reported more psychosomatic symptoms and common mental illness than females. This runs contradictory to a number of previous studies that have investigated gender differences in psychosomatic symptoms and common mental illness in western samples. Females have generally been found to report more common mental illness (e.g. Farbstein et al., 2010; Svedberg et al., 2013; Wade et al., 2002) and psychosomatic symptoms (e.g. Svedberg et al., 2013; Wolbeek et al., 2006) than males, even though these findings were found using western samples. In Ghanaian adolescents, males may have reported more common mental illness because of social pressure, norms and expectations. Culturally, males are regarded as breadwinners and so are expected to work hard at home and also excel in school to enhance their job opportunities in future. This pressure may lead to the experience of more common mental illness.

Pubertal development could partly explain increased developmental challenges for girls and so are expected to report more common mental illnesses (Wichstrøm, 1999). For example, females from South Asian backgrounds dread the social consequences of disagreements and so are content with their present circumstances and are expected to change social situations gradually (Talbani and Hasanali, 2000), and are thus likely to report less common mental illnesses and psychosomatic symptoms compared to males. Also, males are more

likely to engage in risky health behaviours, such as excessive alcohol consumption, which may have comorbid mental health outcomes. Being male is significantly positively associated with delinquent and anti-authority behaviours (Kloep et al., 2009). Males may have reported more common mental illnesses and psychosomatic symptoms than females because of the apparent current socio-economic circumstances and pressure to achieve and succeed in Ghana. Moreover, males usually describe a need to succeed and show dominance in school and in groups and express feeling conflict between their school or work obligations and the need to spend time with friends and family (Watts and Borders, 2005). Under normal circumstances, these pressures to achieve do not go without experiencing one emotional problem or the other - common mental illness or psychosomatic complaints.

The results also showed that younger adolescents reported more common mental illness than older adolescents, but there were no age differences in psychosomatic symptoms. Previous studies have reported that older adolescents report more common mental illness than younger adolescents (e.g. Kaplow and Widom, 2007; Poulin et al., 2004; Raoa et al., 2007). The current study corroborates this and showed that older Ghanaian adolescents reported more psychosomatic symptoms than younger adolescents, but that this difference was not statistically significant.

Young people encounter a series of age-related and gender-specific challenges over the years as part of the process of human growth and development. For instance, during early adolescence, movement towards independence is characterised by struggle with sense of identity, moodiness, and more likely to express feelings by action than by words, while movement towards independence during late adolescences is characterised by firmer identity, ability to delay gratification, ability to think ideas through and ability to express ideas in words (Rice and Dolgin, 2002).

Findings of this study also indicated that psychosomatic symptoms had a significant positive association with common mental illness, controlling for age, gender and parental education – age and gender did not moderate this effect. This implies that, for instance, although males reported more common mental illness, this is not necessarily so as a result of the psychosomatic symptoms they experience as males, but it may be due to several other factors not considered in this particular study such as the quality and quantity of social

support they perceive or receive as males. Similarly, younger youth reported more common mental illness but this is not necessarily as a result of the psychosomatic symptoms they complain about at their age. Also, this suggests that although young people may attribute their current common mental health problems to a multiplicity of factors, psychosomatic symptoms play a crucial role. These may have been precipitated by social factors such as poverty or some physiological mechanism that fails to perform the specific function it was designed to perform and the failure of the mechanism causes the young person real harm in the form of common mental illness (Wakefield, 1992).

The relatively high prevalence and the fact that psychosomatic symptoms have a strong association with common mental illness suggests that more attention needs to be allocated for younger and male adolescents, for example, to have sufficient and adequate time to sleep. An extensive amount of evidence suggest that inadequate sleep quality and quantity are causally linked to sleepiness, compromised emotional information processing, inattention, and probably other cognitive and behavioural deficits that impact daytime functioning, with potential implications for long-term development (Jarrin et al., 2014; Soffer-Dudek et al., 2011). A recent study conducted with Ghanaian adolescents found that 49% of boys and 61% of girls had inadequate sleep and this was essentially due to a number of factors including daytime tiredness (Doku et al., 2013). Consequently, adolescents should be educated or informed about the importance and benefits of adequate sleep and the right times to sleep. Lifting restraints and burdensome tasks by parents and teachers should also be encouraged to help young people to get more time to sleep well, as inadequate sleep underlie the emergence of several psychosomatic symptoms and common mental illnesses.

This study is not without limitations. First, the data were collected from only second-year and third-year students, this potentially restricts the ability to generalise the findings to much younger adolescent samples. Second, there was a lack of information regarding the participants' psychosomatic complaints prior to the study, which might have inflated the experience of somatic feelings that reflect somatic symptoms. However, as this was a non-clinical sample and participation was voluntary, it is assumed that no participant was suffering from severe psychosomatic symptoms prior to the study. Third, the use of self-report measures suggests that participants' responses may have been biased as self-report data are usually susceptible to personal biases and distorted recall. Finally, psychosomatic

symptoms are believed to have some genetic/familial predispositions (Karvonen et al., 2006), but this study was unable to consider this factor due to time constraints.

Conclusion

Overall, there is a paucity of studies on the role of age and gender in the association between psychosomatic symptoms and common mental illness in Ghanaian youth, and more widely, African youth. This study was unique as it identified the role of age and gender in the effects of psychosomatic symptoms on common mental illness among Ghanaian adolescents. Although there were significant age and gender differences in psychosomatic symptoms and common mental illness, being male or female and younger or older did not moderate the association between psychosomatic symptoms and common mental illness. Thus, this study highlights the fact that psychosomatic symptoms are prevalent and are highly associated with common mental illness in Ghanaian adolescents.

Conflict of interests

No conflicting interests

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