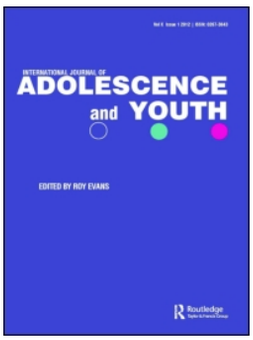

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Predicting risk and protective factors of generalized anxiety disorder: a comparative study among adolescents in Ghana

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ABSTRACT

In this study, we investigated psychosocial factors associated with Generalized Anxiety Disorder (GAD) among adolescents in two socioeconomically and ethnically different communities in Ghana. We examined two objectives; to test the predictors of GAD and to examine differences between the two groups on the predictors of GAD. We studied 300 adolescents aged between 13 and 19 years who responded to a six-scale questionnaire that measured GAD, parental perception, adolescent coping, adolescent religiosity, peer pressure, and self-esteem. We found a higher prevalence of GAD in Obuasi and consistent patterns of risks and protection in both communities. Non-productive coping and low parental involvement were found to be risk factors while self-esteem was found to be a protective factor against GAD. We discuss these findings in the context of socioeconomic and psychological differences among the adolescent population in Ghana.

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Generalized anxiety disorder; psychosocial risk factors; protective factors; adolescents; Ghana

Introduction

Anxiety and mood disorders are highly prevalent globally (Kessler, Chiu, Demler, & Walters, 2005) and among children and adolescents (Costello, Egger, & Angold, 2005; Crocetti, Erentaitė, & Žukauskienė, 2014; Moreno, Furtner, & Rivara, 2010). Approximately 20% of adolescents worldwide are known to experience mental health-related problems that include depression and suicide (McLoughlin, Gould, & Malone, 2015). There is increasing evidence that anxiety disorders in children and adolescents is comorbid with other internalizing and externalizing disorders (Essau, Lewinsohn, Lim, Moon-ho, & Rohde, 2018; Masi et al., 2004). When these disorders are not identified early and treated effectively, they become chronic and debilitating and tend to have long-term consequences in adulthood (Cummings, Caporino, & Kendall, 2014; McLeod, Horwood, & Fergusson, 2016; Pine, Cohen, Gurley, Brook, & Ma, 1998).

Developmental theories that explain aetiology of anxiety disorders, particularly in children and adolescents focus on three elements; temperamental vulnerability, parental and family factors, and environmental factors (e.g., Mian, Wainwright, Briggs-Gowan, & Carter, 2011; Rapee, 2002). These may be viewed within the context of Bronfenbrenner's ecological framework. This model suggests that behaviour outcome is a product of the bi-directional influence among inter-related proximal and distal structures (Bronfenbrenner & Ceci, 1994). Therefore, anxiety disorder is an outcome of the interplay between different interacting systems that include child's individual characteristics (e.g., child's temperament, self-esteem)- *distal* and external systems (e.g., family and peer relations, community).

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We see these characteristics and systems as predictive of anxiety which may cause or minimize the occurrence of anxiety in children or adolescents. Child anxiety research have identified risk factors such as temperament, genetics, and environment or contextual factors (Karevold, Røysamb, Ystrom, & Mathiesen, 2009; Mian et al., 2011; Rapee, Schniering, & Hudson, 2009). Available evidence suggests that causal factors of adolescent mental health problems can be classified as internal such as genetic predispositions and personality (Bienvenu & Stein, 2003), or external such as parenting and environmental factors (Kabiru, Beguy, Crichon, & Ezeh, 2010). Difficult contextual factors such as family circumstances and lack of social support that occur early in childhood make children more susceptible to developing anxiety disorders.

In non-Western countries, particularly in sub-Saharan Africa, the research on anxiety disorders is limited to causes, comorbidity and treatment. Our interest was to examine the multifaceted nature of causal factors that affect incidence of anxiety during the adolescent period by examining psychosocial indicators that increase the risk or mitigate the effect of risks for GAD.

In Western and higher income countries, common risk factors found to be associated with GAD among adolescent populations include individual characteristics such as gender, birth order, self-esteem, and external characteristics such as parents' educational level, dietary and siesta habits, and number of children per parent (Duchesne & Ratelle, 2016; Fernandez-Berrocal, Alcaide, Extremera, & Pizarro, 2006; Jin et al., 2014). Warm and engaged parenting are effective for optimum behaviour development (McLeod, Wood, & Weisz, 2007; Wolfradt, Hempel, & Miles, 2003). Adolescents' perception of their parents as warm or friendly, as involved or indifferent, or as controlling in their daily interactions have psychological outcomes on self-confidence, anxiety, self-esteem, and tendency to be influenced by peers (Merikangas et al., 2010; Yap, Pilkington, Ryan, & Jorm, 2014). McLeod et al. (2007) found that parental control was more predictive of anxiety than rejection and subdimensions of rejection, autonomy and warmth had different effects on anxiety.

In African cultures, parenting is more controlling and parental engagement is aimed more at enforcing socialization practices that ensure compliance. This is often a hindrance to the development of autonomy and wellbeing (Bornstein & Putnik, 2016; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). The implication may be for higher incidence of anxiety disorders among adolescents but the mechanism and outcomes are not the same.

Apart from relationships with parents, adolescents in LMICs face significant set of challenges: poverty, conflict, parental unemployment, early school dropout, and a myriad of other factors that are unique to the sociocultural environment (Kabiru et al., 2010). Peer pressure is a risk factor in adolescence with several other psychological outcomes, the most common being anxiety (Acquah, Wilson, & Doku, 2014; Cummings et al., 2014). Differences in self-esteem, peer pressure, and religiosity, although they affect mental health, have however not been extensively studied in Sub-Saharan Africa.

Aims of the current study

There is documented evidence of large treatment gap in mental health in less endowed and developing countries (Acharya et al., 2017; Lund et al., 2012) due mainly to limited resources and low accessibility to preventive mental healthcare. Examining GAD and its correlates among adolescents serves the purpose of providing contextually relevant insights into the risk and protective factors for adolescents. This is important in developing countries where the developmental trajectories of majority of adolescents take place within a difficult structural-material context such as family poverty, parental unemployment, school problems, peer pressure, and relationships (Abbo et al., 2013; Betts, Gullone, & Allen, 2009; Duchesne & Ratelle, 2016).

There is a vital need to provide the evidence on causal factors for the purposes of developing culturally sensitive psychosocial interventions for the treatment and minimization of adolescent

anxiety disorder. Intervention and preventive programs work best in situations where there is adequate understanding of causal and mitigating factors. Unfortunately, in LMICs there is inadequate research to provide the necessary foundation for preventive programs for adolescents. This study is a first step in this process; the provision of explanatory factors in GAD among adolescents.

In the present study, we focused on examining psychosocial factors that predict GAD symptomatology, comparing adolescents in two socioeconomically different communities, Accra and Obuasi. Obuasi is a community that has gone through significant economic decline in the last decade.

We predicted that adolescents in Accra will show lower GAD symptoms than adolescents in Obuasi. We also predicted that adolescent parental perceptions will predict GAD symptoms. Specifically, we expected that higher levels of parental autonomy, parental warmth and parental involvement will reduce GAD symptoms. Finally, we predicted that adolescent individual characteristics, i.e., higher levels of non-productive coping style and peer pressure, and lower levels of religiosity and self-esteem, will increase GAD symptoms.

Methodology

Population of the study and sample

The study was done in the Accra Metropolitan area in the Greater Accra Region and Obuasi Municipality, a once prominent mining town in the Ashanti Region. Accra, being the capital is cosmopolitan in nature and attracts inhabitants with diverse ethnic and socioeconomic backgrounds. Accra has a diverse demographic group with a significantly high child and adolescent population estimated to be at about 56% (Ghana Statistical Service (GSS), 2014). Adolescents have better access to quality education and other opportunities not easily accessible in the rest of the country. Employment rates are higher than the rest of the country and so are opportunities for economic engagement. Obuasi, on the other hand, is home to the once richest goldmine in the world. It is a largely urban community surrounded by several satellite peri-urban and rural communities. Falling global gold prices led to the closure of the mine in 2014 and subsequently an economic downturn in the community. Adolescents in Obuasi therefore are faced with significant economic challenges that likely have adverse effects on wellbeing.

Two Junior High Schools and two Senior High Schools were selected based on convenience in each setting. A total of 300 questionnaires were administered to the participants (147 in Accra and 153 in Obuasi). The age of respondents ranged from 13 to 19 years with a mean of 16.09 years (SD= 1.75). There were slightly more females (50.7%) than males. Forty-six per cent (46%) of the respondents were in Junior High School, 62.3% and 17% lived with both parents and mother, respectively, and 14% lived with nonbiological parents.

Measures

A set of measures were used to measure anxiety, perception of parenting scale, self-esteem, adolescent coping, religiosity and peer pressure. The measures selected are described in Table 1.

Data collection

Data were collected via the self-report measures. This study was approved by the Ethics Committee for the Humanities (ECH) of the University of Ghana. Permission was also sought from the District Office of the Ghana Education Service, the agency mandated to administer public schools and the respective school authorities also provided consent. All participants signed the consent before completing the questionnaire.

Table 1. Description of measures.

Measures	Description
Screen for Child Anxiety Related Emotional Disorders (SCARED) (Birmaher et al., 1999)	The Screen for Child Anxiety Related Emotional Disorders (SCARED) is a self-report screening questionnaire for anxiety disorders. It is intended for adolescents 8–18 years old. The 9-item GAD subscale was used in this study. The items are measured on a 4-point Likert scale ranging from 0 = Not true to 3 = Always true. It's internal consistency for the total scale range from.74 to .89.
Perceptions of Parents Scales (POPS)(Robbins, 1994)	Parent Perception Scale (POPS) assesses children's perceptions of their parents' autonomy, warmth, and involvement. The scale has 42 items: 21 each for mothers and fathers. Items are measured on a 7-point Likert scale which ranged from 1 (strongly disagree) to 7 (strongly agree). The college-student version of the POPS, intended for use with participants who are late adolescents or older, was used in this study. We calculated 3 subscale (autonomy, warmth, involvement) by summing up respective scores for mother and father.
Rosenberg Self-Esteem scale (RSE) (Rosenberg, 1965)	The 10-item RSE is reported to be the most broadly used self-esteem scale and assesses a person's overall valuation of his or her worth as a human being. This scale has been used in Ghana with reasonable psychometric results. It measures a person's positive and negative feelings about themselves on a 4-point Likert scale that ranges from 1 (Strongly agree) to 4 (Strongly disagree).
Adolescent Coping Scale (ACS) (Frydenberg & Lewis, 1993)	The ACS is based on the transactional model of stress and coping developed by Lazarus and Folkman (1984). It measures coping based on strategies employed. ACS has 18 items and 3 subscales; a) reference-others coping which represents the use of strategies aimed at looking for support from others; b) non-productive coping which reflect inability to cope and as such the adoption of avoidance strategies; and c) productive/ problem focused coping which represents a style of coping marked by working at a problem while remaining optimistic, fit, calm, and socially connected. The strategies are rated on a 5-point Likert scale from 1 = never to 5 = always).
Jessor's Value on Religion Scale (Jessor & Jessor, 1977)	The Wallace adapted version had 28 items, however 8 items were deemed irrelevant to the current study and were taken out completely resulting in a 20-item self-rated measure of the values adolescents place on religion and its role in their daily lives. It was rated on a 4-point Likert scale (1 = not important, 2 = a little important, 3 = pretty important, and 4 = very important).
Peer Pressure Questionnaire (PPQ) (United States Department of Health and Human Services, 2005).	The Peer Pressure Questionnaire (PPQ) was adapted from the National Institute of Child Health and Human Development (NICHD) study of Early Child Care and Youth Development (United States Department of Health and Human Services, 2005). Respondents are required to tick one answer to each statement that best applies to them concerning how much they go along with their friends on a 3-point likert scale ('agree', 'disagree' or 'maybe').

Results

Analyses

Three hierarchical levels of analyses were conducted. First, descriptive statistics were computed and these included means, normality and internal consistency analyses. Second, we calculated exploratory factor analyses to ensure that the measures were valid and loaded appropriately onto their respective factors. We considered this necessary because most of the measures have not been used in Ghana prior to this research. Finally, we calculated a regression analysis to determine the relative explanatory power of each predictor. Missing data analysis revealed that, for our measured variables, there were no cases that have data points missing.

Descriptive statistics, assessment of normality, and reliability

Normality of scores was based on a Skewness and Kurtosis value between +2 and −2 (Gravetter & Wallnau, 2014). As shown in Table 2, values for Skewness and Kurtosis are all within acceptable limits. Internal consistency was evaluated using Cronbach's alpha, and mean inter-item correlation (MIC). Alpha coefficients were interpreted as follows: <.60 = insufficient; .60 to .69 = marginal; .70 to .79 = acceptable; .80 to .89 good; and .90 or higher = excellent (Barker, Pistran, & Elliot, 1994; Nunnally & Bernstein, 1994). We obtained reasonable internal consistency coefficients measured by Cronbach's alpha for all the measures in the study.

Factor analysis

Using Principal Axis Factoring (PAF) with varimax rotation, we examined the construct validity of Parental Perception and the Adolescent Coping scales. Factor loadings were set at 0.30 for all the scales (Tabachnick & Fidell, 2007). The assumption of sampling adequacy was assessed using Kaiser-Meyer-Olkin (KMO) test and the number of factors to be extracted was determined using eigenvalues greater than 1 and scree plot (Cattell & Vogelmann, 1977; Fabrigar, MacCallum, Wegener, & Strahan, 1999).

Parental perception scale

Sampling adequacy using KMO test was found to be significant (KMO = .842, $\chi^2 = 1408.329$, $p < .001$). Three factors were extracted after inspecting eigenvalues of two factors exceeding 1 and the scree plot, where it was observed to have levelled out after the second factor, explaining a cumulative variance of 61.35%. The extraction of three factors is consistent with the three-factor model of the parental perceptions scale. The items on the sub-scales recorded high internal consistencies; parental autonomy support (6-items; α = .80), parental warmth (9-items; α = .81) and parental involvement (5-items; α = .81).

Adolescent coping scale

There was **s**ampling adequacy (KMO = .715, $\chi^2 = 600.996$, $p < .001$). Three factors were extracted after inspecting eigenvalues of two factors exceeding 1 and the scree plot. It was observed to have levelled out after the second factor. These are consistent with Frydenberg and Lewis' proposed three-factor structure and recorded high internal consistencies; non-productive coping (5-items; 0.81), reference-other coping (6-items; 0.87) and problem-focused coping (5-items; 0.86). The three factors explained a cumulative variance of 63.15%. Sixteen (16) out of the 18 items loaded on the three factors. Two items, Item 14 (I find a way to relax; e.g. listen to music, read a book, play a musical instrument, and watch television) and item 16 (I criticize myself) had factor loadings less than 0.30. Consequently, they were deleted from the scale, leading to a test of 16 items.

Table 2. Descriptive statistics of scores and reliability of scales.

Variables	Cronbach's alpha (α)	Min.	Max.	M	SD	Skewness	Kurtosis
GAD	.898	.00	31.00	14.74	6.26	.105	−.532
Parental Perception	.812	50.00	126.00	91.41	15.40	−.359	−.245
Parental Autonomy	.802	15.00	53.00	35.40	6.95	−.059	−.241
Parental Warmth	.811	8.00	35.00	26.32	6.06	−.879	.157
Parental Involvement	.805	11.00	42.00	29.69	6.34	−.321	−.159
Adolescent Coping	.875	27.00	73.00	47.37	8.28	.433	.687
Problem-focused Coping	.862	7.00	30.00	17.41	4.32	.516	.267
Non-productive Coping	.808	6.00	28.00	14.89	4.07	.419	.173
Reference other Coping	.865	7.00	22.00	15.07	3.24	−.018	−.526
Adolescent Religion	.859	28.00	80.00	64.29	8.48	−.936	1.506
Peer Pressure	.833	12.00	25.00	19.00	2.81	−.006	−.626
Self Esteem	.846	12.00	33.00	21.32	4.39	.036	−.613

Results from the internal consistency and factor analyses suggested acceptable coefficients for the measures to be used in subsequent analyses.

Psychosocial predictors of GAD symptoms among adolescents

Hierarchical multiple regression analysis was done to examine the effects of the independent variables on GAD. At the first step, the following variables were entered in the regression analysis: age, gender (males = 1), location (Obuasi = 1), education level (JHS = 1), family structure (living with both parents = 1). Parental factors (parental perceptions) that influence adolescence were entered in step 2. Adolescent coping mechanisms in step 3, and factors that influence adolescents' social behaviours (religiosity, peer pressure, and self-esteem) were entered in step 4. The results are summarized in Table 3.

The results showed all the independent variables together had a significant effect on GAD ($F = 9.183$, $p < .001$) accounting for a moderate 35.6% of the variance in GAD. Gender, location and family structure were significant predictors of GAD explaining 17% of the variance. We found females scored higher on GAD symptoms than male adolescents ($\beta = .293$) and adolescents in Obuasi experience higher GAD symptoms ($\beta = .159$). We also found that adolescents living with both parents had lower scores on GAD symptoms compared with other family structures. Age and level of education did not account for significant variance in GAD. Of note however is that the variables entered at the first step accounted for almost one-half of the total variance in GAD. Of the parental perception variables, only parental involvement was significant ($\beta = -.191$). Together, parental perception factors accounted for 6.1% of the variance in GAD. The coping variables – problem-focused coping, non-productive coping, and reference other coping were entered at the third step. While all three coping variables accounted for 9.8% of the variance in GAD, only non-productive coping was significant ($\beta = .323$). Adolescent religiosity, peer pressure and self-esteem entered at the fourth step did not account for significant variance but self-esteem was a significant predictor ($\beta = -.2.012$). Contrary to the prediction, higher self-esteem was associated with GAD symptoms.

To test for the moderator effects of parental factors, three variables were created (a product of location and parental variables) and entered at the fifth step. Together they did not account for significant effect. However, the location and parental autonomy moderator was significant ($\beta = .790$). A subsequent analysis that tested for moderator effects of coping did not show significant effects. Both moderator analyses are therefore not discussed any further.

In summary, we found that being a female, living in Obuasi, use of non-productive coping, and higher self-esteem increased the likelihood of higher GAD scores. Living with both parents and high parental involvement were found to reduce the GAD symptomatology.

Table 3. Summary of hierarchical multiple regression of predictors of adolescents' GAD symptoms.

Model		*B*	*SE*	Beta	t	*p*
1	Age	.151	.262	.042	.576	.565
	Gender (male = 1)	−3.665	.673	−.293	−.5448	.000
	Location (Obuasi = 1)	2.907	.671	−.293	4.335	.000
	Education (JHS = 1)	−1.021	.912	−.081	−1.120	.264
	Family structure (living with both parents = 1)	−1.563	.699	−.121	−2.237	.026
2	Parental Autonomy	−.095	.055	−.105	−1.727	.085
	Parental Warmth	−.003	.063	−.003	.042	.967
	Parental Involvement	−.188	.063	−.191	−2.980	.003
3	Problem-Focused Coping	.079	.080	.055	.998	.319
	Non-productive Coping	.497	.088	.323	5.652	.000
	Reference Other Coping	.043	.110	.022	.394	.694
4	Adolescent Religion	.018	.040	.025	.460	.646
	Peer Pressure	−.010	.120	−.004	−.081	.936
	Self-esteem	−.164	.081	−.115	−2.012	.045

Discussion

We examined psychosocial factors considered risk or protective in GAD symptomatology among adolescents in two different contexts; in Accra, a very urban community and in Obuasi, a peri-urban mining town in the Ashanti region. We found that while prevalence of GAD varied slightly between the two communities, predictors of high or low GAD were not very different. Of note too was that the mean GAD score in this study was higher than reported cut-off points in previous studies (Birmaher et al., 1999). This is the first report of the use of the SCARED in Ghana and therefore there are no benchmarks against which to measure our current scores. We interpret these scores cautiously.

After the effects of gender, location, and family structure, we identify non-productive coping, low parental involvement and high self-esteem as the predictors of GAD. We did not directly measure socioeconomic characteristics but Accra is the economic nerve centre of the country and therefore employment and income levels are relatively more favourable than the rest of the country (Oteng-Ababio, 2016). Falling gold prices and other economic challenges led to the closure of the mines in Obuasi, the main employer which subsequently led to employee lay-offs. These have placed significant economic strain on Obuasi. These challenges led to an upsurge in unregulated, illegal and dangerous small-scale mining in and around Obuasi typically among young people. Often, difficult economic circumstances also affect children and adolescents who are invariably forced to drop out of school to either work to fend for themselves or support the family (Ampomah & Gyan, 2014). Poverty or economic strain has a direct link to psychopathology and the evidence also supports the same association among children and adolescents (Baer, Kim, & Wilkenfeld, 2012; Costello, Compton, Keeler, & Angold, 2003; Wolff, Santiago, & Wadsworth, 2009). Baer et al. (2012) specifically argued that among poor mothers the incidence of GAD is a direct response to environmental deficits and therefore should not be considered a psychiatric problem. Among adolescents, it leads to psychosocial and economic challenges such as parental neglect, child labour, poverty, high school dropout, and high incidence of youth and adolescent crime all of which contribute to high incidence of psychopathology, primarily because there are no adequate buffers to mitigate strain (Chen & Chan, 2016; Haber & Toro, 2004; Hatcher et al., 2019).

There is a relationship between economic circumstances and parental factors like parental involvement. High parental involvement is a protector linked to school engagement, academic achievement, self-esteem, low anxiety-related symptoms, and reduced depression. Incidence of parental neglect is also associated with poor mental health outcomes among adolescents (Benoit Allen et al., 2016; Bilsky, Knapp, Bunaciu, Feldner, & Leen-Feldner, 2016; Griffith & Grolnick, 2014; Marbell & Grolnick, 2013). The two most common parenting styles that have consistently been associated with a GAD diagnosis in adolescence are overprotective or over-controlling and negative or highly critical (Bilsky et al., 2016). In a previous study in Ghana, it was reported that sixth graders whose parents grant some level of autonomy and become more engaged in school activities, are less likely to be depressed (Marbell & Grolnick, 2013). The argument is that allowing children some autonomy involves the provision of skills that ultimately helps them cope with everyday challenges.

Individual characteristics like coping styles have been shown to play an important role in the reporting of symptoms of psychopathology. We did not find support for adaptive coping style but we found that non-productive coping (avoidance, pretending, worrying, rumination) increased GAD symptoms. Use of negative coping strategies among adolescents is quite common. In previous research, it was shown that adolescents are less likely to use cognitive reappraisal of negative events. Compared to adults, they engage more in catastrophizing, self-blame and rumination, all of which significantly predict depression and anxiety (Garnefski, Legerstee, Kraaij, van Den Kommer, & Teerds, 2002). Dealing with adolescent stress may be associated with competence, something that develops from positive social interaction and parental involvement. When parents are absent or restrictive when present, adolescents are forced to use non-productive means to cope with everyday challenges. Apart from economic challenges, most issues in adolescence border on puberty and

sexuality, topics that are sensitive particularly in a conservative society like Ghana and therefore require a supportive atmosphere for parent–child engagement.

Finally, a related component of competence is self-esteem. Among adolescents, high self-esteem (e g. being satisfied with themselves, belief in their worth, etc.) constitutes an important resource against the risk of developing GAD. Self-esteem has been argued to play a dual role in the mental health of young people. Firstly, it is conceptualized as a positive mental health outcome that enables adaptive coping of the complexities of the adolescent stage while minimizing negative mental health outcomes such as anxiety (Rapee et al., 2009; Van Eijck, Branje, Hale, & Meeus, 2012). Research on self-esteem in LMICs including Ghana have found that it is generally low compared to Western societies (e.g., Anum, Akotia, & Akin-Olugbade, 2018). Low self-esteem in LMICs reflects cultures that do not encourage expression of individual pride. The mechanism involved in the relation between self-esteem and psychopathology therefore may not be the same for everyone.

This study is not without some limitations. First, the assessment of the constructs – GAD and the predictors – had to be made on the basis of self-reported evaluations, which has inherent biases. Some of the measures have not been used on the adolescent population in Ghana and therefore with no benchmarks for comparison, scores on the SCARED, for example, may be an under- or overestimation of GAD symptoms. Second, although we found significant effect for some measures, other factors could not explain the variance in GAD. It can therefore be argued that the relationships observed in this study could be caused by other factors, a common challenge in correlational studies. For example, genetics or types of personality or differences in the types of problems adolescents face are possible causes of GAD but were not measured. Finally, we are mindful of the fact that the study was conducted among a healthy general population and for which reason the results might change when considering a group that has been diagnosed with GAD.

Conclusion

To sum up, we examined GAD symptoms among adolescents within the context of two Ghanaian communities and found differences in GAD prevalence but not variations in risk and protective factors. We also found small gender-related differences in GAD symptomatology. We can explain higher GAD symptoms in Obuasi from differences in socioeconomic characteristics between the two communities. Our results confirm high anxiety levels among adolescents, influenced largely by low parental involvement and a non-productive coping style. There was a small but significant effect of self-esteem. The results imply that despite economic challenges, we can minimize GAD symptoms among adolescents through high parental engagement and adoption of a more positive and adaptive coping mechanism. These are risk factors that increase the likelihood of developing GAD. Interventions should focus on provision of adaptive coping skills and improvement in self-esteem.

The present study adds to the existing literature by (1) examining the effects of risks and protective factors on mental health among adolescents in one study in order to study their joint contributions to GAD and (2) comparing these factors between two different socioeconomic communities in Ghana. Further research is needed to study developmental trends across the adolescent span to inform aetiological factors and guide early interventions.

Authors' contributions

All Authors contributed equally in the conceptualization of the study and the writing of the manuscript.
All authors read and approved the final manuscript.

Availability of data and material

The data for this research can be made available upon reasonable request.

Consent for publication

All authors have given consent for publication.

Disclosure statement

No potential conflict of interest was reported by the authors.

Ethics approval and consent to participate

Ethical approval was obtained from the Ethical Committee for Humanities of the University of Ghana. The Study Number is ECH 105/16-17. All participants in the study signed an informed consent before participation.

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