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**DETERMINANTS OF DEPRESSIVE SYMPTOMS AMONG ADOLESCENTS IN
SENIOR HIGH SCHOOLS IN THE LA DADEKOTOPON DISTRICT OF THE
GREATER ACCRA REGION**

BY

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DECLARATION

I do hereby declare that apart from people's knowledge that I have acknowledged, this research is the result of my dedication hard work under supervision.

I take full responsibility for this work.



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DEDICATION

I dedicate this work to my family for their support and commitment throughout the course of this work.

ABSTRACT

Background: Depression among adolescents is a major public health issue because of the seemingly high prevalence, possibility of reoccurring and the damage of functioning in the affected person. About 5% of global prevalence rate of major depression is estimated to be among children 10-17. The purpose of this study was to determine the prevalence of depressive symptoms among adolescents and associated factors in the senior high schools.

Method: The study employed a cross-sectional design to determine the prevalence of depressive symptoms, associated factors among 537 adolescents (10-19 years) in Senior High Schools in the La Dadekotopon Municipality. Respondents were systematically selected using their school's register. Data were collected with the use of a standard depressive symptom assessment tool, the Kutcher Adolescent Depressive Scale (KAD-11) and analyzed quantitatively using STATA software (version 15). A p-value of <0.05 was assumed was used to determine statistical significance, while odds ratio and their 95% confidence intervals were used to assess the strength of association.

Results: The prevalence of high depressive symptom was 41% (95%CI: 0.367-0.450). The prevalence was higher among (43.9%, CI: 0.381-0.498) females and also among adolescent aged 17 and above (44.6%, CI: 0.391-0.503) and those with unemployed parents (70.5%, CI:0.553-0.821). Risk factors found to be significantly associated with depressive symptoms were relationship with caregiver, not cordial (AOR:3.77, 95% CI:1.56-9.13), needs rarely met (AOR:2.60, 95%CI:1.00-7.05, $p<0.05$), poor academic performance (AOR:9.32, 95%CI:2.83-30.66, $p<0.05$).

Conclusions: The major factors significantly associated with depressive symptoms were family, individual and school related. Thus, interventions should be implemented in comprehensive screening and programs in schools to diagnose those vulnerable students early, offer immediate treatment and give the appropriate support.

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LIST OF ABBREVIATIONS

CESD	-Centre for Epidemiological Studies Depression Scale
DALYs	-Disability-Adjusted Life Years
NIMH	-National Institute of Mental Health
WHO	-World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Depression is a mental condition which is common and linked to sadness, loss of pleasure, the feelings of guilt or low self-worth, distressed sleep and feelings of tiredness and deprived concentration (WHO 2012). According to the World Health Organization (WHO) report on mental health, more than 350 million people world-wide are faced with depression and it is the foremost cause of disability in the world (WHO 2012). In 2000, it was the 4th common cause of loss of disability-adjusted life years (DALYs) globally, and it is projected to become the second by the year 2020 (World Bank, 2000).

Adolescents' depression is an issue of general concern worldwide because of the seemingly high prevalence, possibility of reappearance and the effect it can have in the affected individual (Akiskal, 2000). Five percent of global prevalence of major depression has been estimated among children 10-17 (Murray & Lopez, 2006). In some parts of the world, particularly United States, the rate has been reported to be as high as 8.3%, likewise reports from European countries (Amarson et al., 2004). In sub-Sahara Africa, specifically in Kenya, as high as 43.7% of depressive symptoms have been found with similar statistics reported in other studies globally (Ndeti et al., 2008). Depressive disorders of approximately 2% have been found to occur in elementary school students, and also between 4% to 8% of adolescents (Lewinsohn, Clarke, Seeley & Rohde, 2004).

The WHO considered adolescent as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19. Adolescents are faced with several

developmental milestones as they transition into adulthood and experience many adult lifestyles for the first time. Changes in the adolescent's life at this stage range from biological, physical, psychological, and social among others. The development of one's identity and the transition to abstract reasoning amidst other social, family and school demands can be challenging to the adolescent. The period of adolescence is critical for optimal health as studies have shown that several diseases have their onset from the adolescent years and progress to adulthood (Kim-Cohen, 2003).

Episodes of depressive episodes among children and adolescents are intermittent and can continue when they grow if the underwriting factors stay unaltered. Childhood depressive susceptibility is a prescient factor for depression in later years in individual (Arnarson et al., 2004). Many adverse happening also young people with depressive ailments and they also become at more risk of suicide, drug abuse, teenage pregnancy, bad performance at school, and reduced psychosocial functioning (Akiskal, 2000). Psychosocial issues related with depression are quite known in adults. Nevertheless, the level to which these features are related with adolescent depression has received very little attention (Lewinsoh et al., 2000). Many studies have found the following variables as possible risk factors for depression in the adolescent: female gender; living in a dysfunctional family; low level of parental education; traumatic life events and low social provision; smoking; low self-esteem and perceived body image. Others also include high self-consciousness; depression-related perceptions; school challenges and impaired intellectual competence and coping skills; physical disability and bad physical health (Ngin et al., 2018; Qin, Wang, & Hsieh, 2018; Suleiman et al., 2017). Goud, Ramesh, & Kumar, (2014) and Liu, (2017), also added some potential risk factors such

as over interpersonal dependence, difficult interpersonal behaviours, tension with parents; and early demise of a parent.

A UNICEF report on the State of the World's Children in 2011 categorized sub-Saharan Africa as the most challenging place for an adolescent to live. In the general population of Ghana, psychological distress is high, with 18.7% of the study population reported either moderate (11.7%) or Severe (7.0%) psychological distress in a study conducted by Sipsma et al. (2013). Among students, however, only some few studies had measured Depressive levels clearly in Ghana. For instance, Atindanbila and Abasimi (2011) in their study, did not report the levels of depression when investigating the relationship between depression and coping mechanism among students in Ghana. However, the authors showed that 16.1% of the students showed signs of mild depression (Atindanbila and Abasimi, 2011). In a more recent study, a rather high level of prevalence was reported- an overall prevalence of depression been 39.2%; with 31.1% of mild to moderate depression and 8.1% severe depressive symptoms (Asante & Andoh-Arthur, 2015).

The purpose of this research was to assess the depressive symptoms prevalence among adolescents in the public and private senior high schools in the La Dadekotopon district. The study also aimed at determining factors associated with depression symptoms among these adolescents, including socio-demographic, parental behavior as perceived by the adolescents and school factors.

1.2 Problem statement

Depressed disposition at younger ages relate with risk for development of depressive disorders later in life (Hankin, 2005). The WHO in a study in seventeen (17) countries in the

world revealed that depression disorders often start at a young age (WHO 2012). The mean age of experiencing first episode of major depression occurs in the middle twenties and, although the episode may occur at any time from early childhood through to old age, a considerable percentage of people have their first depression in childhood or adolescence (Fava & Kendler, 2000). Although in developed countries much studies have been done in the areas of adolescent depression, until recently, little was known about the case of adolescents in developing countries and in particular, Ghana (Asare & Danquah, 2016).

Young people between the ages of 10 to 19 years characterized by WHO as adolescents face diverse challenges especially growing up in the developing world. The changing roles of young people as they transition into adulthood can be over whelming to them, leading to mental health and other public health concerns. Depressive symptoms among youth are often attributed to the normal stress of adolescence; misdiagnosed as primarily conduct, attentional or substance abuse disorders; or seen as a stage the youths are going through (Clark, 2015). Assessing the prevalence of a major cause of disability (depression) in order to address the consequence of non-diagnosis is important in promoting adolescent health and safeguarding the health of the future generation.

Childhood and adolescent depression represent a quiet predicament for those students and their families, their schools, and for society as a whole. Nearly 11% of children and adolescents will have experienced some form of diagnosable depressive disorder by the time they 18 years (National Institute of Mental Health [NIMH], 2012). These adolescents exhibit significant depressive symptoms and functional impairment and are at increased risk for the later development of clinical levels of depression (Rudolf, 2009).

Depression is associated with significant impairment across numerous areas of functioning. Worldwide data suggest that virtually all depressed individuals experience disorder related functional impairment, and nearly two thirds experience severe impairment (Kessler et al, 2003; Merikangas et al 2010). Even individuals who report mild impairment as a result of their depression experience increased perception of the need for medical care, utilize health service more often and more likely to be hospitalized, at greater risk of suicide and are twice as likely to be unemployed as individuals without depressive symptoms (Mojtabai,2001). Depression is associated with substantial present and future morbidity. Although similarities between adolescent and adult depression exist, the use of antidepressants in adolescents is of concern and thoughts about clinical management are divided due to stigma associated with psychiatric units and access. Prevention strategies seems the best way out of reducing prevalence of adolescent depression and as makes the menace, a great public health concern.

La Dadekotopon District, just like most urban areas in Ghana, there is very little available information that describes the magnitude of depression among adolescents especially those in school (Osei AO. Prevalence of psychiatric illness in an urban community in Ghana. Ghana Med. J. 2003); therefore, descriptive baseline studies are necessary for planning adolescents' mental health program.

It is against this background that this study will be carried out to ascertain the prevalence and determinant factors of depressive symptoms in adolescents in the La Dadekotopon District in Ghana to inform policy and address challenges that adolescents face in this part of the world.

1.3 Significance of the study

This study is intended to identify the prevalence of depressive symptoms that are among senior high school level adolescents in the La Dadekotopon District of Greater Region, to identify their risk factors for depressive symptoms as well as their knowledge on ways of coping with adolescent developmental challenges. The study is also to inform the Ghana Education School Health Programme and the District Health Authority on ways to improve the health of adolescents. The outcome of this study will contribute to knowledge on depression among adolescents and provide context specific information for Ghanaian adolescents.

1.4 Research Questions

1. What is the prevalence of depressive symptoms among adolescents in the senior high schools?
2. What are the risk factors for depressive among adolescents in the senior high schools?
3. What are the factors (socio-demographic, parental & school factors) associated with high depressive symptoms among the adolescent in the senior high schools?

1.5 General Objective(s)

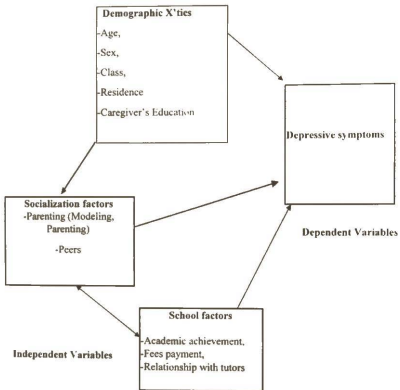
The general of this research was to determine the prevalence and associated factors of depressive symptoms among adolescents in senior high.

1.5.1 Specific Objectives

1. To determine the prevalence of depressive symptoms among adolescents in the senior high schools.
2. To assess the risk factors for depressive among adolescents in the senior high schools.
3. To determine the factors (socio-economic, parental & school factors) associated with high depressive symptoms among the adolescent in the senior high schools.

1.6 Conceptual framework

Figure 1.1: Conceptual Framework of the study
Socio-demographic factors



Source: Author's own construct

Figure 1.1 shows the conceptual framework showing the pathways of connection between the risk factors and the presence of depressive symptoms among adolescents. Adolescent socio-demographic factors such as age, sex, residence, class at school among others are the basic likely risk factors to depressive symptoms. The depression prevalence among female adolescents has been reported to be from two to five times higher than males (Afifi et al., 2006).

Adolescents may experience good or poor parental behavior which may influence their depressive symptoms. Also, school factors such as academic performance may also influence the depression status of the adolescent. Students or adolescents who may performance poor with academic work are likely to exhibit depressive symptoms than those having good performance. Other factors such as peer relationship and relationship with tutors are also likely determinant factors to adolescent depressive symptoms. Adolescent who have financial challenges in terms of paying school fees and other school related costs are also likely to have high depressive symptoms.

1.7 Scope of Study

The study sought to ascertain the depressive symptoms that adolescents 12 to 19 years in senior high schools using a cross sectional study design. The study also analysed the depressive symptoms and score them in categories to ascertain those with high scores of likely depression symptoms and those with low scores. This study therefore, did not diagnose depression in study participants but used scores adopted from the Kutcher Adolescent Depression Scale (KAD-11) to determine the level of symptoms of possible depression of a respondent. The study also focused on adolescents in the age group of 12 to 19 years and are

in formal learning in senior high schools.

1.8 Organization of report

Chapter one (1) of this thesis introduced the problem statement and described the specific problem addressed in the study. Chapter two (2) presents a review of literature and relevant research associated with the problem addressed in this study. Chapter three (3) outlines the methodology and procedures used for data collection and analysis. Chapter four (4) presents an analysis of the data and presentation of the results in graphs and tables. Chapter five (5) provides a summary and discussion of the researcher's findings and the implications for practice. Chapter six (6) concludes and gives necessary recommendations to relevant bodies and for future research on the study topic.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides a detailed review of relevant literature on depression among the adolescent and the determinants of depression symptoms among school going adolescent. The chapter in writing under major thematic areas relating to the study objectives. The following major areas are covered. Depression among the population, prevalence of depression symptoms among the adolescent, risk factors, associated factors and coping mechanism.

2.1 Depression

Depression is one of the conditions classified as mental disorders experienced by people. Depression has been studied over several decades with its onset, causes and types being center stage of most of these studies. Mental disorders account for a large proportion of the disease burden in young people in all societies. Most mental disorders begin during youth (12–24 years of age), although they are often first detected later in life (Patel et al 2007).

Depression is a common mental illness that is characterized by sadness, loss of interest or, pleasure, feelings of guilt or low self, worth, troubled sleep or feelings of tiredness, and low concentration (WHO, 2012). Depression is a leading cause of disability for both males and females.

The condition has affected about 350 million people globally and has been projected to 4% increment by 2020 (WHO, 2014), and represented 11% of the world burden of diseases (Herrman et al., 2005). The condition can reoccur in affected people, and can have a prolong effects and damaging to their social capabilities. Majority of the affected people do not receive

treatment and in some countries, it is as low as 1 in 10 (WHO 2012).

Depression in adulthood commonly preceded by adolescent depression. A study by Hankin 2005 revealed that most individuals experience their first depression sometime during adolescence. A recent prospective retrospective study, on an entire birth cohort of individuals was followed for 26 years, the great majority of people at age 26 (75%) had already had experience depressive disorder in childhood or adolescence. Just 25% had face the onset of depression when they grew (ages 21–26). Kessler et. al., in 2001 found that most adults with a psychiatric disorder (e.g., anxiety disorder, conduct problems) had faced symptoms prior to age 14 years, but the average age at onset for depression was 30.

Furthermore, young people and grown-ups display of depression similarly (King & Vidourek, 2012). Such as manifestations involve signs of losing interest in things that were normally enjoyed, sleeping issues, feeling of blue, guilt feelings and shame, changes in weight, easily angry, and suicidal thoughts. A cross-sectional study in Vietnam study Nguyen et al, (2013), reports that 18.7% of young people had the onset of a major depressive disorder at the time of the study making the condition a major public health issue among young people.

2.2 Prevalence of Depression among students

The depressive symptoms prevalence varies significantly from various studies because of differences in scales of measurement or assessment, methodology, demographic factors, and sample.

2.2.1 Global Prevalence of Depression

Research have shown psychological illness, mainly depression, as common illness among young people (Adewuya et al., 2006; Dahlin et. al., 2005). Findings from conditions reported at counselling centers put depression as one topmost five among adolescent. These emphasized that depression contributes to 39 percent of conditions, which is more than anxiety, issues with sexual relationships, and the self-esteem of young people from varies places (Erdur-Baker et a., 2006; Green, Lowry & Kopta, 2003).

Even though the depression prevalence in the adolescent population vis-a-vis the general populace has not been well studied. A couple of research have observed at the rate of depression among specific groups of adolescents such as students.

The prevalence of depression among student is 20% to 38% in research among high resource countries (Chyen et al., 2012; Merikangas et al., 2010). Again, CDC informed that nearly 28.5% of adolescent experience depression symptoms (Chyen et al., 2012). Many researches have reported that the rate of depression among student population is prevalent issues and continues to rise (Sarokhani et al., 2013). An example of a study done in Turkey showed that the prevalence of depression range from 10% to 40% among college students (Ustun & Kessler, 2002). Also, in Greece, a study indicated that adult students reported higher levels of symptoms of depression compared to the adult non-student population (Lowry & Kopta, 2003). Other studies shown that the most encountered problem by school counsellors was the depressive symptoms, which ranges from 27% and over, among (Mobley, 2008).

Findings from Chinese studies where a self-rating depression scale (SES) was used to examine among 2,128 high school people found 17.7% prevalence of depression (Zhu et al., 2014). Feng & Zhang (2005) rather reported a very high prevalence rate (45%) when they used both

the BDI and the Zung self-depression scale (SDS) among 2,643 students in 12 middle to high schools in Sichuan Province and Chongqing city with random sampling. Also, Wang & Ding used High schools in China and depression scale to examine 558 students, and found a 32.9% prevalence of depression (Wang et al., 2002).

The results of studies from 1908 to 2005, has been published in a systematic review of the rate of the condition in Canadian and US. They found higher levels of depression in the students compared to the general population (Dyrbye, Thomas & Shanafelt, 2006). However, one cannot base on this study and conclude that the prevalence of depression in students is higher than the general population. This is because the sample was only drawn from Canadian and US, and the sample of this systematic review only involved 40 studies during the period.

Adewuya et al. (2006), in Nigerian, the prevalence of depression among students, and found the rate of depression among Nigerian students was only 2.7%. Much lower compared to the rate of depression among Nigerian outpatients visiting general clinics (25%), or compared to an older population sample (over 60 years) (18.3%) in western Nigeria (Uwakwe, 2000).

2.2.2 The prevalence of depression in Ghana

In Ghana, a study on Mental Health conducted by the Kintampo Health Research Centre has identified depression as the leading Mental Health Problem in Ghana. The study proved that in Ghana now, about 80% of the population is suffering from different forms of depression (Kintampo Health Research Centre, 2012). The WHO (2011) reports showed that over 2 million Ghanaians suffer from moderate to mild mental disorders where 650,000 suffer from severe illness.

Among the general Ghanaian population psychological distresses is found to be high, with 18.7% of sample reported either moderate (11.7%) or severe (7.0%) psychological distress (Sipsma et al., 2013). However, few studies in Ghana had measured depressive levels explicitly among students especially the adolescent student. Atindanbila and Abasimi (2011) when investigating the relationship between depression and coping strategies, despite using the Beck Depression Inventory, did not report the levels of depression in their sample among students. However, the report showed that 16.1% of the students exhibit signs of mild depression (Atindanbila & Abasimi, 2011). A similar study used the BDI but did not report the prevalence of depression (Nyarko & Amissah, 2014). The emphasis of their study was to investigate likely association between cognitive distortions and depression among selected students in Ghana.

2.3 Factors associated with depressive symptoms among adolescent

2.3.1 Socio-demographic factors associated with depressive symptoms

This section looks at the socio-demographic factors influence the occurrence of depressive symptoms among the adolescent student.

2.3.2 Sex Differences

Studies on the influence of sex on depression symptoms have found significant variation in the level of depression experienced by boys and girls (Marcus, Yasamy, van Ommeren, Chisholm, & Saxena, 2012). Girls are reported to be experience depression more than guys. Because girls possess more preexisting risk factors than boys, they are more likely to become depressed in the face of the increased stressors that accompany adolescence (Lyons et al., 2006).

Among adolescent, many researches in Western and Eastern nations have reported that female adolescents have more likelihood to have depression episodes than male adolescents; but other studies have reported different trends.

Again, studies have found that female adolescents have the higher likelihood to experience depression symptoms. Results from the American National Comorbidity Survey (NCS), which conducted among young people (13-18 years) to diagnose mental illnesses, found 32.9% were diagnosed as having anxiety disorders, and 14.1% have mood disorders, depression was the most common (Mistry, Benner, Tan, & Kim, 2009).

A study by Saluja and colleagues in 1996 found out that eighteen percent (18%) of youths reported symptoms of depression. A higher proportion of females (25%) reported depressive symptoms than males (10%). Prevalence of depressive symptoms increased by age for both males and females. In Kenya, a study by Khasakhala and others on the prevalence of depressive symptoms among Adolescents in Nairobi (Kenya) public secondary school found that the prevalence of clinically significant depressive symptoms was 26.4%. The occurrence was higher in girls than it was in boys $p < 0.001$ (Khasakhala et al, 2012).

A 4 year longitudinal study carried out by Galambos and her colleagues of a total of 1322 participants which comprised of 648 males, 674 females from adolescent's ages 12 to 19 years to investigate gender differences in and risk factors for depressive symptoms and major depressive episodes (MDEs) showed that although there was not a statistically significant increase in depressive symptoms in early adolescence, there was a robust gender difference in the levels of depressive symptoms and the prevalence of MDE (Galambos et al 2004).

2.3.3 Age and depression among adolescents

Some studies have specifically looked at the relationship between age and depression in students. In Malaysian schools, the results revealed that the prevalence of depression was higher in older student's vis-a-vis the younger students (Shamsuddin et al., 2013). The result also stressed in other studies; older school children have greater rates of depression in relation to beginners or first year students (Bostanci et al., 2005; Khawaja & Duncanson, 2008). On the other hand, studies by Bayram and Bilgel, (2008); Tomoda et al., (2000) have shown that students in their final year of secondary school have lower levels of depression compared to the newer ones. It can be explained that this difference in the above findings might be due to using different samples of students, and different methodology for determining depression. However, Lester (1990), did not find any significant difference in the level of depression in older students and younger students.

2.3.4 Relationship status and depressive symptoms

In 2013, Sarokhani conducted a meta-analysis study and systematic review of 35 studies between 1995 and 2012 from Iran, and found a prevalence rate of 39% for students who were single and 20% for those in relationship university (Sarokhani, 2013). This study concluded that depression is more widespread in single students than students in relationship in the schools. Moreover, the same relationship was mentioned in a study of Japanese and American students; depression is more common among single students than those in relationship (Inaba et al., 2005).

2.4 School Factors

2.4.1 Academic performance and depressive symptoms

Findings in this area indicate that academic work cause a high risk of mental health problems, especially depression in students (Ibrahim et al., 2013; Sharif et al., 2011). A study done in Turkey found that poor academic performance was reported among depressed students compared to students who do not report symptoms of depression (Bostanci et al., 2005).

Also, in the UK, Owens, Stevenson, Hadwin and Norgate (2012), on anxiety and depression on academic performance among students, found that depression has a negative relationship with academic performance. They examined and found that a higher level of depression was associated with poorer academic performance.

An investigation in Malaysia on among students aged 13 to 17 years using a indicated that students with lower than average grades (academic performance) were "three times more likely to have depression" (Latiff et al., 2016). The sample was collected in an urban area of Malaysia that did not represent adolescents from a rural area (Latiff et al., 2016).

2.5 The Kutcher Adolescent Depression Scale (KADS) in measuring depression

Depression is one of the prevalent mental disorders across Canada (Centre for addiction and mental health 2011. Kimbell et al., 2018). Thus most clinicians, practitioners and counsellors endeavor to screen and diagnose depression as early as possible by depending on reliable and valid tools for further therapeutic intervention. A recent review of the most frequently used depression scales by Shojaee et al. (2016) revealed that amongst the various tools available, the 11 item Kutcher Adolescent Depression Scale is one of the most appropriate scales possessing several vital characteristics for assessing depressive disorder in youth (Brooks et

al., 2003, Gesinde & Sanu, 2014, Levine, 2013, Roberge et al., 2013, Trujols et al., 2013]

Self-reporting instruments commonly used to assess depression in adolescents have limited or unknown reliability and validity in this age group. Validity and reliability of the KADS have been rated high among other tools for depression after it achieved a sensitivity and specificity rates of 92% and 71% respectively, a combination not achieved by other self-reporting instruments. (<https://doi.org/10.1089/104454602760219153>)

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter introduces the methods and design for the study. It presents information on the study design, study population, variables, sampling, data collection methods and procedures. Other things to be looked at also include quality assurance, data analysis, assumptions and ethical considerations.

3.1 Study Design

The study adopted a cross-sectional design using quantitative approach to determine the prevalence of depressive symptoms, associated factors among adolescents in Senior High Schools in the La Dadekotopon Municipality.

3.2 Study Area

The study took place in the La Dadekotopon municipality in the Greater Accra region of Ghana. The La Dade-Kotopon Municipal Assembly covers an area of 36sq km which represents almost 1.1% of the total land size of the Greater Accra Region. It is located between Latitudes 5° 32' 50" N and Longitude 0° 11' 15" W and Latitudes 5° 38' 0" N and Longitude 0° 7' 50" W. It is one of the six newly created Metropolitan, Municipal and District Assemblies in the Greater Accra Region in 2012. The Municipality is bounded on both North and West by Accra Metropolitan Assembly, on the East by Ledzokuku-Krowor Municipal Assembly and on the South by the Gulf of Guinea.

The total population of the Municipality, according to the 2010 Population and Housing Census, was 183,528 females (52.7%) while males formed 47.3 percent. The Municipality is entirely urban (100%).

With regards to sex ratio, for every 100 females, there are about 90 males within the Municipality. The Municipality has a total household population 179,251 with a total number of 51,154 houses. The average household size in the municipality is 3.6 persons per household.

La Dade-Kotopon Municipal Assembly used to be part of Accra Metropolis, the capital city of Ghana. La Dade-Kotopon therefore hosts a number of companies, financial, telecommunication, tourism, education, health institutions and other important establishments. There are 4 public senior high schools and 1 private senior high school making it a total of 5 senior high schools in the municipality.

3.3 Study Population

Adolescents between the ages of 10 to 19 years in senior high schools in the municipality constitute the study population. The study area has three (3) Public Senior High Schools and six (6) Private Senior High Schools.

3.3.1 Inclusion Criteria

- Adolescents who are enrolled in formal school settings included in the study.
- Students between the ages of 12 and 19 years were participants of the study.

3.3.2 Exclusion Criteria

- Adolescent within the age group specified but couldn't give consent or were not be able to give consent due to non-availability of parent or guidance.
- Those who were not well or mentally unstable to give accurate judgement

3.4 Sampling and sample size determination

The study used a 95% confidence interval and a 5% error margin with a 39.2 expected prevalence of depressive symptoms among adolescent. This proportion was reported by Oppong Asante & Andoh-Arthur (2015), in a study on the prevalence and determinants of depressive symptoms among first year university students in Ghana. With assumed students' population of 5000, design effect of 1.5 and employing sample size calculation using Epi-info 7 software, the minimum sample size for the study was to be 512 adolescents aged 10 to 19 years in senior high schools. However, a total of 537 questionnaires were administered to address for 5% potential non-response rate.

3.5 Sampling procedure

A multi-stage sampling technique was used for the study. In the first stage, random, simple random sampling was used to select three senior high schools out of the five senior high schools in the municipality. In the second stage, the total number of students from each school recruited for the study were determined using an equal proportion of the populations across the schools. That is, from each of the three schools, 151 respondents were selected. In the third stand, using the total number of students to be used from each school, systematic sampling technique was determined and used to select respondents per school. The students

were selected from all the three class of each school. Class register was used with a skipping interval of 8. Any eighth student on the list who meets the inclusion criteria was selected, otherwise, the next one on the list is selected to replace. This was done for all the class in the schools until all respondents were recruited for the study.

3.6 Data Collection Techniques and Tools

Three data collectors and one research assistant were trained on ethical considerations and questionnaire administration. The principal researcher and the three trained data collectors together collected data from each selected senior high school by administering a questionnaire which were adopted from the Kutcher Adolescent Depression Scale for screening for depression symptoms among adolescent. The Kutcher Adolescent Depression Scale (KADS), is a psychological self-rating scale developed to assess the level of depression in adolescents. Because of its primary function is to qualify the effectiveness of pharmacological treatments, it is structured so as to be sensitive to changes in depression severity over time. This makes the rating scale well suited for both research and clinical applications. While there are some variations, the 11 item version of KADS is the most commonly used and most thoroughly verified for efficacy in monitoring outcomes in adolescents who are receiving treatment for major depressive disorder. The electronic administered questionnaire contained the adopted 11-item Likert-like scale questions on depression symptoms as well as other variables to ascertain risk factors associated factors and coping strategies among the students.

3.7 Study Variables

The variables were the dependent and the independent variables that define the scope of the study.

3.7.1 Dependent variable

The dependent variable was the outcome of interest of the study, which is mainly:

- Depressive symptoms

3.7.2 Independent Variable

The independent variables are the factors which can potentially influence the existence of depressive symptoms among the students. They are also referred to as the predictors such as socio-demographic characteristics, parental factors, school factors among others.

- socio-demographic factors (age, sex, grade)
- parental (household income, parental occupation, relationship)
- School factors (academic performance, teacher relationship, peer relationship, fees financing, studentship status)

Table 3.1: Variable table of the study

Variable	Operational Definition	Indicator	Scale of Measurement	Techniques
Age	The age of students at the time of the study	0-14 years	Numeric	Questionnaire
Sex	The sex of student which is denoted by female or male	Male Female	Nominal scale	Questionnaire
Grade/class	Level or stage at school	Form 1, 2, 3	Ordinal scale	Questionnaire
Caregiver's income	Monthly income of caregiver	Amount in Ghana cedis	Numerical	Questionnaire
Caregiver's occupation	The employment status	Self-employed, Public worker, Private, unemployed	Nominal	Questionnaire
Occupation	Type of work respondents do	Working, not working.	Nominal scale	Questionnaire
Relationship with caregiver	The nature of relationship with caregiver	Biological parent, adopted, other family relative,	Nominal	Questionnaire
School factors	Characteristics of the school experience	Academic performance, relationship with teachers and peers, fees	Nominal	Questionnaire
Depressive symptoms	The status of depressive symptoms	High or low Exist or does not exist	Binary/dichotomous	Questionnaire

3.8 Pre-testing of questionnaires

Pre-testing of the questionnaire was conducted among 25 adolescents. Senior High School students in the Ledzokuku Krowor municipality were used. The Ledzikuku Kluwo municipality has similar demographic characteristics as that of La Dadekotopon. The finding from the pretesting informed some changes that were made to the questionnaires.

3.9 Data Handling and Quality

The data collected were kept safe; the use of electronically administered questionnaire via google form made submitted responses impossible to be assessed by unauthorized persons. Trained data collectors were used to collect the data. Each data collector was given an android mobile phone which had the data collection link on it and assigned to a group of respondents. Questions from the questioners were read to each correspondent with available response options. Every answer from the respondent is entered as said and finally submitted when all questions were answered. This ensured that high quality data collection was achieved.

3.10 Data Analysis

Filled questionnaires was cross-checked for completeness and internal consistency. Raw data was cleaned, entered and analyzed using STATA statistical software Release 15. (StataCorp LP, College Station, TX, USA). Descriptive statistics such as, frequencies, proportions, mean and standard deviation were used in describing the population. Pearson's Chi-square was performed to test for association between the independent variables and depressive symptoms. That is, a univariate, bivariate and multivariate analyses of personal, school and relationship factors associated with the levels of depression symptoms was done.

The prevalence of depression was determined using the responses to KAD-11. Individual scores were added up to obtain the aggregate score that ranged from 0-33. Adolescent who scored less than 9 were classified as exhibiting low depressive symptoms, while those who scored, 9-20 were classified as having moderate depressive symptoms, and a score of 21 and above were labeled as having high depressive symptoms.

Multiple logistic regression was used to determine the strength of the associations through odds ratio. The outcome of interest was the presence of depression which was measured as KAD-11 score ≥ 9 . A p -value < 0.05 was considered as statistically significant with 95% confidence interval.

3.11 Ethical Considerations

The following ethical issues were considered in the study:

- Ethical clearance was obtained from the Nugochi Memorial Institute Institutional Review Board.
- Permission was obtained from the Municipal Education Authority to cover the schools. Additionally, permission was sought from the municipal assembly for entry into the study area.
- Informed consent was also sought from the respondents before they participated in the study.
- Privacy during data collection as well as confidentiality of respondents' information was ensured.
- The study data was stored and locked under protection.

Informed Consent / Assent

Study participants who were 18 years and above were informed about the study and given the power of choice, without undue inducement or any form of constraint or coercion to decide their participation or otherwise in the study. Students who agreed to be part of the study were made to sign a consent form to that effect. Study participants below age 18 years were allowed to express their willingness to participate in the research after they expressed proper understanding of the research and activities expected of them as a support to the parental or teacher consent received on their behalf. Anonymity of respondents were assured as there was no means of identifying students who responded to the questions by name.

Parental/teacher Consent

Study participants who were below the age of 18 years for legal consent were given parental consent forms explaining the purpose of the study and confidentiality to be given to their parents or guardians or a teacher for their agreement to their ward's participation in the study. Students whose parents consented were given the students assent forms for their participation to be signed as well.

3.12 Quality control

This section provides procedure and means for ensuring the data comes out clean, accurate and reliable. These procedures involve training of data collectors and pre-testing of tools.

3.12.1 Training of field investigators and Research assistants

Three data collectors (with a minimum qualification of diploma) and one research assistant (degree holder) were selected to undergo data collection training. The training covered the understanding of all indicators in the questionnaire and translating of the questionnaire

questions into languages the respondents can understand if the need be.

The general ethics of research, involving voluntary participation, informed consent and confidentiality was explained to them. The training will take two days and were held at the study sites.

CHAPTER FOUR

RESULTS

4.0 Introduction

Under this chapter, the presentation of the findings from this study is provided. The data was analyzed based on the objective set for the study. The analysis was based on 537 valid responses obtained through questionnaire administration. The chapter begins with the presentation of demographic characteristic of respondents.

4.1 Demographic characteristics

The adolescents were aged between 12 and 19 with a mean age of 16.6 ± 1.64 . Females were the majority (51.8%) which was little above the percentage for males. Similarly, those within the age of 17 and 19 years formed the majority (55.4%) as compared to respondents 12 years and to 16 years (44.5%). With respect to their grade or class at schools, nearly half of the adolescents (46.4%) were in SHS 2 whereas those in form1 and form 3 formed almost a quarter presentation each (27.4% and 26.3% respectively.) More than two thirds of adolescents were Christians (78.8%) and the other religions constituted the difference of less than 20%. Almost 80% of the respondents were from public senior high schools, and the occupational status of caregivers of respondents were observed as; most of them were self-employed (47%) followed by public sector workers who made up (26%), and private employees making up (16%). Those on retirement and those unemployed constituted 3% and 8% respectively.

Table 4.1: Background characteristics of adolescents in SHS

Variable	Frequency	Percentage
Age group		
≥15	239	44.5
≥19	298	55.5
Sex		
Female	278	51.8
Male	259	48.2
Grade/Class		
Form 1	147	27.4
Form 2	249	46.4
Form 3	141	26.3
Religion		
Christianity	423	78.8
Islam	95	17.7
Traditional	10	1.7
Others	9	1.9
Ethnicity		
Akan	267	49.7
Ewe	95	17.7
Ga/Dangbe/Krobo	132	24.6
Others	43	8.0
Type of School		
Private	111	20.7
Public	426	79.3
Religion with caretaker		
Adopted	42	7.8
Biological parent	406	75.6
Other family relative	89	16.6
Occupation if caretaker		
Private employee	88	16.4
Public worker	137	25.5
Retired	18	3.4
Self-employed	250	46.6
Unemployed	44	8.2
Personal health rating		
Excellent	143	26.6
Very Good	297	55.3
Average	74	13.8
Below Average	18	3.4

4.2 Prevalence of depressive symptoms among respondents

The first objective for this study looked at the prevalence of depressive symptoms among senior high school students. This was assessed using eleven-item Kutcher's Adolescent Depression scale (KAD-11). An individual total score of 9 and above was classified as having the presence of depressed symptoms. After summation of results, the least total score for an individual would be 0 and the highest 33.

Table 4.2 shows the detailed results with their frequency and proportion.

Table 4.2: Eleven-item depressive scale assessing depressive symptoms among respondents

No	Items	Hardly Ever (0)	Much of the time (1)	Most of the time (2)	All of the time (3)	Mean/ STD
1	Low mood,	299 (55.8)	163 (30.4)	58 (10.8)	16 (3.0)	0.61+0.80
2	Irritable,	290 (54.0)	158 (29.4)	75 (14.0)	14 (2.6)	0.65+0.81
3	Sleep Difficulties -	308 (57.4)	145 (27.0)	71 (13.2)	13 (2.4)	0.61+0.81
4	Feeling Decreased Interest	287 (53.5)	161 (30.0)	69 (12.9)	20 (3.7)	0.67+0.84
5	Feelings of worthlessness,	313 (58.3)	134 (25.0)	67 (12.5)	23 (4.3)	0.63+0.86
6	Feeling tired,	269 (50.1)	162 (30.2)	86 (16.0)	20 (3.7)	0.73+0.86
7	Trouble concentrating	284 (53.0)	151 (28.1)	86 (16.0)	16 (3.0)	0.69+0.84
8	Feeling that life is not very much fun, Feeling worried,	299 (55.7)	146 (27.2)	74 (13.8)	18 (3.4)	0.65+0.84
10	Physical feelings of worry like	276 (51.4)	161 (30.0)	83 (15.5)	17 (3.2)	0.70+0.84
11	Thoughts, plans or actions about suicide or self-harm	370 (68.9)	116 (21.6)	39 (7.3)	12 (2.2)	0.43+0.72

As shown in Table 4.2, the KAD-11 scale assessing the presence of depressive symptoms among respondents. The majority (55.8%) indicated hardly ever do they experience low mood, sadness or feeling down whereas 30.4% and 10.8 respectively indicated 'much' and

'most' of the time (mean 0.61 ± 0.80). Also, 54.0% indicated that they hardly ever experience irritability or feeling pissed (Mean 0.65 ± 0.81). The detailed of the rest is presented in Table 4.2.

4.2.1 Overall prevalence of the presence of depressive symptoms among adolescents

The outcome of this study is the existence of depression symptoms which was determined by aggregate of individual score which greater or equal to 9. A total individual score of ≥ 9 was classed as high depressive symptoms whilst a score less than 9 was also classified as low depressive symptoms (Zhou et al., 2016).

Figure 4.1 presents the prevalence among the low and high group of depressive symptoms.

($\chi^2=7.10$, CI 6.50-7.71)

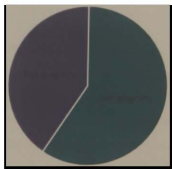


Figure 4.1: Prevalence of depressive senior among respondents

As observed from Figure 4.1, 41% of the respondents showed high level of depressive symptom with a mean of 7.10 and confidence interval (6.50-7.71).

4.2.2 Classification of levels of depression symptoms

The table below presents the three levels of classification of the presence of depression.

Table 4.3: Levels of depression

Levels	Frequency	Percent	St. err	95%CI
Low depression	318	59.2	.0212	0.550- 0.633
Mid-depression	200	37.2	.020	0.332- 0.414
Severe depression	19	3.5	.008	0.026- 0.545
Total	537	100.0		

As shown in Table 4.3, more than half (50 %) was classified as having low depression symptoms, whilst 37.2% and 3.5% were also classified as having mid and severe depression respectively.

4.3 Risk factors for depression among respondents

The second objective of this study examined the risk factors to depression among adolescents in senior high schools. The risk factors examine included socialization factors (such as modeling, parenting and peers); school factors (such as academic performance, fees payment, relationships with tutors and peers); health risk behaviors (such as alcohol, drug abuse and sexual activities).

The results are presented in tables and charts as follows.

Table 4.4: Risk factors for depressive symptoms among respondents

Variables	Frequency	Percentage
Living arrangements		
Living with both parents	416	77.5
Not living with both parents	121	22.5
Violence in the home		
Injured by parent	54	10.1
Not injured by parent	483	89.9
Afraid of Caregiver		
Not afraid of parent	454	84.5
Afraid of parent	83	15.5
Relationship with caregiver		
Cordial	423	78.8
Not Cordial	71	13.2
Not certain	43	8.0
Feel comfortable to share my views with caregiver		
Agree	391	72.8
Not Agree	146	27.2
Relationship with teachers		
Cordial	385	71.7
Not Cordial	100	18.6
Not certain	52	9.7
Relationship with your peers,		
Cordial	457	85.1
Not Cordial	40	7.5
Not certain	40	7.5
On free SHS		
Yes	393	73.2
No	144	26.8
Having any financial difficulties with your schooling		
Yes	180	33.5
No	302	56.2
Don't know	55	10.2

Table 4.4 shows that the majority of the respondents lived with both parent (77.5%) whilst 22.5% did not. Also, only 10.1% indicated having been injured by the parent before and 15.5% stated they are afraid of their parents. In terms of relationship with parents, teachers and peers, respondents described it as cordial (78.8%, 71.7% and 85.1% respectively).

The majority of 73.2% were on free SHS and also, 33.5% indicated having financial difficulties regarding schooling.

Figure 4.2 shows the frequency at which need are met by caregivers.



Figure 4.2: Frequency at which respondents need are met by caregivers

Figure 4.3 show respondents' descriptions of their academic performance.

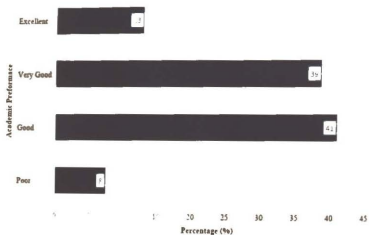


Figure 4. 3: Description of academic performance

They described their academic performance as excellent (12.9%), very good (38.7%), Good (41.0%) and poor (7.5%). (Figure 4.3).

4.3.1 Health risk behaviors

Among the health risk behaviors studied were the use of drugs and the use of alcohol among respondents. The result is contained in Figure 4.4 below.

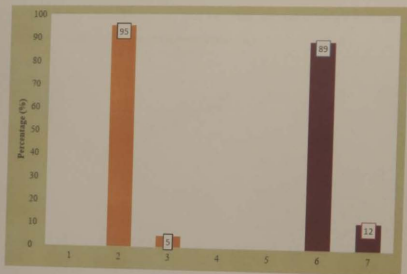


Figure 4.4: Health risk behavior among respondents

As shown in Figure 4.4, only 5% of the respondents indicated that they use did not. Also, alcohol use was also observed among 12% of the respondents.

4.4 Factors associated with high depressive symptoms among respondents

Third objective assessed the factors associated with the presence of high depressive symptoms among senior school students. The factors examined included socio-demographic, parental & school factors. Chi-square test was used and where appropriate Fisher's exact test performed. P-value of $p < 0.05$ was the significant level used.

Table 4.5: Socio-demographic factors associated with high depressive symptoms among respondents

Variable	Depressive symptoms		P-value
	Low	High	
Age group			
≥15	153 (64.0)	86 (36.0)	0.043*
≥19	165 (55.4)	133 (44.6)	
Sex			
Female	156 (56.1)	122 (43.90)	0.130
Male	162 (62.60)	97 (37.5)	
Grade/Class			
Form 1	94 (64.0)	53 (36.1)	0.024*
Form 2	132 (53.0)	117 (47.0)	
Form 3	92 (65.3)	49 (34.8)	
Religion			
Christianity	272 (64.30)	151 (35.7)	<0.001*
Islam	38 (40.0)	57 (60.0)	
Traditional	3 (30.0)	7 (70.0)	
Others	5 (55.6)	4 (44.4)	
Ethnicity			
Akan	178 (66.7)	89 (33.3)	0.003*
Ewe	54 (56.8)	41 (43.2)	
Ga/Dangbe/Krobo	65 (49.2)	67 (50.8)	
Others	21 (48.8)	22 (51.2)	
Type of School			
Private	68 (61.3)	43 (38.7)	0.623*
Public	250 (58.2)	176 (41.3)	
Relation to caregiver			
Adopted	19 (45.2)	23 (54.8)	<0.001*
Biological parent	264 (65.0)	142 (35.0)	
Other family relative	35 (39.3)	54 (60.7)	
Occupation of caregiver			
Private employee	60 (68.2)	28 (31.8)	<0.001*
Public worker	76 (55.5)	61 (44.5)	
Retired	11 (61.1)	7 (38.9)	
Self-employed	158 (63.2)	92 (36.8)	
Unemployed	13 (29.6)	31 (70.5)	
Individual Self-health assessment			
Excellent	101 (70.6)	42 (29.4)	<0.001*
Very Good	178 (59.9)	119 (40.1)	

Average	34 (46.0)	40 (54.1)
Below Average	5 (21.7)	18 (78.3)

Note: *-measured association is statistically significant at $p < 0.05$

Table 4.5 presented that all the socio-demographic factors showed a statistical significance to the presence of high depression among respondents except for sex ($p=0.130$) and type of school ($p=0.623$). Age group, religion, ethnicity occupation of caregivers all had p-values less than 0.05 (0.043, <0.001 , 0.003, <0.001 respectively).

4.4.1 Parental and school factors associated with the presents of depressive symptoms

Parental as well as school factors were also examined to determine their association with depression among the respondents. The result is contained in Table 4.6.

Table 4.6: Parental and school factors and their associations with high depression among respondents

Variables	Depressive symptoms		P-value
	Low	High	
Living arrangements			
Living with both parents	275 (66.1)	141 (33.9)	<0.001*
Not living with both parents	43 (35.5)	78 (64.5)	
Violence in the home			
Injured by parent	20 (33.0)	34 (63.0)	<0.001*
Not injured by parent	298 (61.7)	185 (38.3)	
Afraid of Caregiver			
Afraid of parent	28 (33.7)	55 (66.3)	<0.001*
Not afraid of parent	290 (63.9)	164 (36.1)	
Relationship with caregiver			
Cordial	287 (67.9)	136 (32.2)	<0.001*
Not Cordial	20 (28.2)	51 (71.8)	
Not certain	11 (25.6)	32 (74.4)	
Frequency of meeting needs from caregiver			
Rarely	71 (57.7)	52 (42.3)	<0.001*
Sometimes	75 (41.0)	108 (59.0)	
Often times	172 (74.5)	59 (25.5)	
Feel comfortable to share my views with caregiver			
Agree	272 (69.6)	119 (30.4)	<0.001
Not Agree	46 (31.5)	100 (68.5)	
Academic performance level			
Poor	15 (37.5)	25 (62.5)	<0.001*
Good	110 (50.0)	110 (50.0)	
Very Good	134 (64.4)	74 (35.6)	
Excellent	59 (85.5)	10 (14.5)	
Relationship with teachers			
Cordial	245 (63.6)	140 (36.4)	0.001*
Not Cordial	53 (53.0)	47 (47.0)	
Not certain	20 (38.5)	32 (61.5)	
Relationship with your peers,			
Cordial	297 (65.0)	160 (35.0)	
Not Cordial	15 (37.5)	25 (62.5)	
Not certain	6 (15.0)	34 (85.0)	
On free SHS			
Yes	225 (57.3)	168 (42.8)	<0.001*
No	93 (64.6)	51 (35.4)	
Having any financial difficulties with your schooling			
Yes	112 (62.2)	68 (37.8)	<0.001*
No	190 (62.9)	112 (37.1)	
Don't know	16 (29.1)	39 (70.9)	

Drink Alcohol			
No use of alcohol	286 (60.2)	189 (39.8)	0.195
Use Alcohol	32 (51.6)	30 (48.4)	
Take drugs			
No use of drugs	310 (60.7)	201 (39.3)	0.002*
Use drugs	8 (30.8)	18 (69.2)	

At a significant level of $p < 0.05$, almost all of the variables were statistically significant with high depressive symptoms. That is living arrangement (< 0.001), violence in the home (< 0.001), relationship with caregiver (< 0.001) and relationship with peers and teachers were all significant. Only use of alcohol had no statistical significance with high depressive symptoms ($p = 0.195$). (Table 4.6).

4.4.2 Multivariate analysis of factors significant with high depressive symptoms

A binary logistic regression analysis was performed among factors that were significant at the bivariate stage to determine the odds of association with high depression among the respondents. High depressive symptom was the outcome of interest. The detailed results are contained in table 4.7.

Table 4.7: Multivariate logistic regression analysis among significant factors to high depression among respondents

Variable	P-value	COR (95%CI)	P-Value	AOR (95%CI)
Age group				
≥16	Ref	1	Ref	1
≥17	0.042*	1.43 (1.01-2.04)	0.001*	2.23 (1.37-3.62)
Grade/Class				
Form 1	Ref	1	Ref	1
Form 2	0.034*	1.57 (1.03-2.40)	0.201	1.43 (0.83-2.48)
Form 3	0.818	0.95 (0.58-1.53)	0.063	0.52 (0.26-1.04)
Religion				
Christianity	Ref	1	Ref	1
Islam	<0.001*	2.70 (1.70-4.30)	0.186	1.50 (0.82-2.75)
Traditional	0.026*	4.20 (2.06-16.64)	0.911	1.12 (0.15-8.43)
Others	0.589	1.44 (0.38-5.46)	0.386	0.42 (0.06-3.00)
Relation to caretaker				
Adopted	Ref	1	Ref	1
Biological parent	0.01*	0.44 (0.23-0.85)	0.633	1.26 (0.49-3.25)
Other family relative	0.52	1.27 (0.60-2.69)	0.480	1.44 (0.53-3.95)
Occupation of caretaker				
Private employee	Ref	1	Ref	1
Public worker	0.057	1.72 (0.98-3.030)	0.005*	2.83 (1.38-5.81)
Retired	0.563	1.36 (0.47-3.92)	0.829	0.87 (0.24-3.14)
Self-employed	0.402	1.25 (0.74-2.10)	0.045*	2.01 (1.02-3.98)
Unemployed	<0.01*	5.11 (2.18-11.96)	<0.001*	15.42 (5.02-47.22)
Self-health assessment				
Average	Ref	1	Ref	1
Below Average	0.039*	3.06 (1.00-9.40)	0.071	3.52 (0.90-13.81)
Very Good	0.029*	0.57 (0.34-0.95)	0.829	0.93 (0.47-1.82)
Excellent	0.004*	0.35 (0.19-0.64)	0.504	0.77 (0.36-1.66)
Living arrangements				
Living with both parents	Ref	1	Ref	1
Not living with both parents	<0.001*	3.54 (2.28-5.49)	0.141	1.67 (0.84-3.29)
Violence in the home				
Injured by parent	Ref	1	Ref	1
Not injured by parent	0.005*	0.37 (0.20-0.65)	0.930	1.04 (0.42-2.54)
Afraid of Caregiver				
Afraid of parent	Ref	1	Ref	1
Not afraid of parent	<0.001*	0.29 (0.17-0.48)	0.669	0.85 (0.40-1.81)
Relationship with caregiver				
Cordial	Ref	1	Ref	1
Not Cordial	<0.001*	5.38 (3.01-9.62)	0.003*	3.77 (1.56-9.13)
Not certain	<0.001*	6.14 (2.93-12.87)	0.061	2.60 (1.00-7.05)
Frequency of meeting needs from caregiver				
Often times	Ref	1	Ref	1
Sometimes	<0.001*	4.20 (2.70-6.55)	0.001*	2.82 (1.54-5.16)
Rarely	0.0013*	2.14 (1.33-3.42)	0.015*	2.34 (1.18-4.71)
Feel comfortable to share my views with caregiver				
Agree	Ref	1	Ref	1
Not Agree	<0.001*	5.00 (3.20-7.70)	0.053*	1.83 (0.99-3.38)
Academic performance level				
Excellent	Ref	1	Ref	1

Very Good	<0.001*	3.26 (1.55-6.86)	0.001*	4.54 (1.86-11.07)
Good	<0.001*	5.90 (2.76-12.60)	<0.001*	7.82 (3.17-19.30)
Poor	<0.001*	9.83 (3.37-28.72)	<0.001*	9.32 (2.83-30.66)
Relationship with teachers				
Cordial	Ref	1	Ref	1
Not Cordial	0.005*	1.56 (1.00-2.43)	0.250	0.67 (0.34-1.33)
Not certain	0.052	2.80 (1.53-5.13)	0.428	0.71 (0.30-1.67)
Relationship with your peers				
Cordial	Ref	1	Ref	1
Not Cordial	<0.001*	3.09 (1.57-6.9)	0.059	1.56 (0.98-2.47)
Not certain	<0.001*	10.52 (4.16-26.57)	<0.001*	0.99 (0.995-0.997)
Having any financial difficulties with your schooling				
Yes	Ref	1	Ref	1
No	0.879	0.97 (0.66-1.42)	0.001*	2.56 (1.43-4.56)
Don't know	<0.001*	4.01 (2.03-7.96)	0.009*	3.14 (1.34-7.38)
Take drugs				
No use of drugs	Ref	1	Ref	1
Use drugs	0.0025*	3.47 (1.47-8.20)	0.321	1.85 (0.55-6.21)

*-Measured association was significant; CI-confidence interval; COR-Crude/unadjusted Odds Ratio; AOR-Adjusted Odds Ratio; Ref-reference group

Table 4.7 showed the adjusted and the unadjusted binary logistic regression of factors that were significantly associated with high depressive symptoms among respondents. From the adjusted regression, some findings were made. Compared to respondents below the age of 17 years, those 17 years and above were 2.2 time more likely to experience high depression, holding all other factors constant ($P=0.001$, AOR-2.23; 95%CI:1.37-3.62). Also, with reference to respondent whose caregivers are private employees, those whose caregivers were unemployed high 15 times higher odds of experiencing high depression ($p=0.001$, AOR-15.42; 95% CI:5.02-46.220).

Furthermore, compared to respondents who has had cordial relationships with their caregivers, those who did not or not certain were respectively 3.7 and 2.6 times more likely to experience high depression. In terms of academic performance, those whose describes their performance as poor had 9 times high odds to experience high depression compared to those

who describe it as excellent holding all other factors constant ($p < 0.001$. AOR-9.32; 95% CI: 2.83-30.66).

4.4.3 Poisson regression of factors significantly affecting depression score among respondents

A Poisson regression was performed on selected significant variables to determine the sensitivity prevalence ratio of depression among respondents of different characteristics.

Table 4.8 provides the detailed results.

Table 4.8: Results from Poisson regression analysis

Variable	Standard error	P-value	Coefficient (95% CI)
Age group			
≥16	Ref	Ref	1
≥17	0.034	<0.001*	0.30 (0.23-0.37)
Grade/Class			
Form 1	ref	Ref	1
Form 2	0.040	0.595	-0.02 (-0.01-0.06)
Form 3	0.475	<0.001*	-0.25 (-0.03- -0.13)
Self-health assessment			
Average	Ref	Ref	1
Below Average	0.070	0.079	0.12 (-0.01-0.26)
Very Good	0.054	<0.001*	-0.48 (-0.59- -0.37)
Excellent	0.045	<0.001*	-0.21 (-0.30-0.13)
Relationship with caregiver			
Cordial	Ref	Ref	1
Not Cordial	0.056	0.001*	0.19 (0.08-0.30)
Not certain	0.049	<0.001*	0.62 (0.52-0.72)
Living arrangements			
Living with both parents	Ref	Ref	1
Not living with both parents	0.037	<0.001*	0.42 (0.36-0.51)
Violence in the home			
Injured by parent	Ref	Ref	1
Not injured by parent	0.047	<0.001*	-0.24 (-0.34- -0.15)

*-Measured association was significant; CI-confidence interval; Ref-reference group

As shown in Table 4.8, most of the determinants in the regression analysis showed significant at a p-value of <0.05 . For every year increase in the age of a respondents, his or her depression score will be increased by 0.30 (95% CI: 0.23-0.37) and this was significant at $P<0.05$. Similarly, there is a change decrease in the depression score of respondents according to unit change in their class or health status.

CHAPTER FIVE

DISCUSSIONS

5.0 Introduction

In this Chapter, the findings from the study are discussed in accordance with the stated research objectives. The study was conducted to assess the level of depressive symptoms among senior high school students in the La Dadekotopon District of the Greater Accra Region, Ghana. The discussions here in, were done to compare and relate these findings with other findings from previous studies done locally or globally.

5.1 Socio - Demographic Characteristics of Respondents

The findings of this research indicated the age group of the respondents were in the age group of 10-19 years old with an average age of 16.6. The majority of respondents were between ages 10 and 19; this may correspond to the age characteristics of senior high school students in Ghana. In Ghana, the age bracket of high school education is mostly from the age 10 and 19 years (GSS, 2012). This finding also showed that most of them were (73.8%) of the respondents were in the first and second years of senior high school education. The first year is found as the most critical stage of high education since it is at the time when the adolescent has just been introduced to a new educational system which is quite different, complex and more challenging than the junior high school (Asare & Danquah, 2016). The higher proportion (53.4%) of depressive symptoms observed among second year students may be attributed to the experience from as first years as found also in (Kaabi et. al., 2017). Female respondents were little higher than Males (51.8% vrs. 48.2%). This study found that

depressive symptoms were higher among female adolescents than that of their male counterparts (43.7% and 37.5%). A study conducted in Canada among adolescents between the ages of 12 to 19 years show a higher prevalence among females than male respondents which was 21.4% in females and 10.7% in males (Galambos et al. 2004). A longitudinal study conducted by Peterson and colleagues in 2009 revealed that more girls (59%) had the higher likelihood of depressive symptoms than boys (40%) because they experience more challenges in adolescence than boys (Petersen et al, 2009).

This study also found that the majority of the respondents were living with both their biological parents and thus only few stayed with people other than their parents.

5.2 The prevalence of depressive symptoms among adolescents in senior high schools

The prevalence of depressive symptoms among the respondents were assessed. A set of conditions adopted from Kutcher's 11-item Adolescent Depression scale (KAD-11) was used. A cutoff score of ≥ 9 (Zhou et al., 2016) was classified as having high depressive symptoms while those having a lower score was also classified as having low depressive symptoms. The study found the prevalence of depressive symptoms among the study participants to be at 41% which is quite threatening considering the recent surge of suicide deaths in Ghana reported by various educational institutions and the media. Depression has therefore been found as one of the factors leading to deaths, serious illness and other mental conditions if not properly managed (Saluja, G., et al, 2004). The current prevalence (41%) observed under this study relates with the prevalence of clinically significant depressive symptom of 39.2% reported by (Asante & Andoh-Arthur, 2015) in Ghanaian students in 2015. Around 50.6% was reported among students in Cambodia in a cross-sectional study (Ngin et al., 2018).

Additionally, almost one third of Qatari adolescents in secondary schools have depression 34.5%. In other previous studies, a rather low prevalence was reported. For example, in Trinidad, a study on Depression among Adolescents, aged 13–19 Years, attending Secondary Schools, found prevalence of depression to be 25.3% (Maharaj et. al., 2008) and 26.4% was found by Khasakhala et al (2012), among secondary school students in Nairobi, Kenya. Similarly, in Dubai, as low as about 17.5% of students have elevated depressive symptoms (Ali et al., 2014).

5.3 Assessment of adolescent risk factors for depressive symptoms among senior high school students

Risk factors for depressive symptoms can be found from diverse sources, however, this study examined sociodemographic as well as parental and school factors that were likely risk factors for depressive symptoms.

Among the demographic risk factors that were studied, the age group of the adolescent and the occupational status of the caregiver were found to be significantly associated with depression. Thus, more depressive symptoms were found among those 17 years and above than adolescent less than 17 years. Compare to those less than 17 years, adolescents 17 years and above 2.2 times more likely to experience high depressive symptoms (AOR: 2.33, 95% CI: 1.37-3.62; $p < 0.05$). A similar study done in Ghana by Acquah et al (2014), also found a similar pattern of depression among different age groups. Also, in Kenya it was found that more older adolescent than younger ones were likely to be depressed in a study conducted among secondary school students (Khasakhala et al., 2012).

Another significant factor observed under this study is the occupation of the caregiver that an adolescent had. Similar to what may be generally known, the unemployed caregiver a respondent had the higher depressive symptoms he or she reported. The study found that participants who had unemployed caregivers experience more depressive symptoms compared to those who had caregivers who were privately employed. It can be generally perceived that the well employed a caregiver was the adolescent may have the less depressive symptoms because there will be other assurance of economic needs. The high level of depression among respondents with caregivers who were not employed may be partly due to economic reasons rather than others challenges that may arise over sharing the existing family resources. In Ghana (de-Graft Aikins, 2007) cited economic hardship as a contributing factor to depression and other chronic diseases. In this current study, respondents whose caregivers were unemployed were 15 times more likely to be depressed compared to those whose caregivers were working (AOR: 15.42, 95%CI:5.02-47.22)

Other socioeconomic factors such as sex of the respondents, living with both parents and not significant association in the study. This was inconsistent with similar studies from Ghana and Malaysia (Ashraful et.al., 2018; Asante & Andoh-Arthur, 2015b).

5.4 Parental and school factors associated with high depressive symptoms among adolescents

The study also examined parental and school factors to ascertain their relationship with depression. It was found that caregiver ability to meet needs and kind of relationship with the caregiver had a significant association with depressive status. Thus, those who had parent who rarely meets the needs were more likely to be depressed compared to those parents often

times meet their needs (AOR: 2.34, 95%CI: 1.18–4.71). Similarly, those who did not have cordial relationship with their caregivers, also experience high level of depression compared to those who had cordial relationships. Similar findings were reported by Ali et al., (2014); Zinn-Souza et al., (2008) in Brazil and Dubai respectively among senior high school students. The findings of this study could mean that students who had less parental care and were unable to meet needs by their caregivers had challenges coping with the developmental challenges they experience as adolescents. Additionally, this revealed the adolescent who feel comfortable to share their views with their caregivers stand a better chance of low depressive symptoms. Comparatively, adolescents who were not able to share their views with their parents experienced higher odds of depression and this was significant at $p < 0.05$. Similarly, in Uganda, a study conducted on the prevalence and risk factors of symptoms of depression, anxiety syndromes among secondary school students, reported that student's ability to share their views or to be involved in a decision making was a significant factor to reduced depression symptoms. These findings were also consistent with Saluja, G. (2004), reports where in the United States similar low odds were found among student who have good communication with their parents. Effective communication between parents and their children especially the adolescent helps to open good relationship among them. These relationships also helps the adolescent to be able to build confidence in the adolescents hence give them the ability to be able to share their views with the parents (Goud et al., 2014). Sharing of views will also enable the parents to understand their adolescent and be able to detect early issues that they may face.

In terms of influence of school factors on depressive symptoms, this current study observed that, performance of the adolescents in school and their relationship with their peers were

found to have a significant association with high depressive symptoms. Depressive symptoms were observed to be high odds among adolescent who described their academic performance as poor compared to those who described it as excellent (AOR: 9.32; 95%CI 2.83-30.66). It is therefore a common place that in Ghana, most students who perform poorly in school may feel bad about it, because there are extremely high importance placed on academic performance without equal importance and regard on a child's talents or giftedness if it is not related to academics. Findings from a study in Ghana revealed that high demands of academic performance on school children manifest as mental health symptoms of depression and anxiety including substance abuse (Asare, et al., 2016).

Furthermore, having financial difficulties in settling school charges and other financial obligations in the school was associated with high depressive symptoms. Adolescents who difficulty with financial obligation were 2.6 times more likely to exhibit high depressive symptoms as compared to those who had not. It was found in a related study that lack of funding of education due to economic issues was an important vulnerability to depressive symptoms during adolescent schooling especially in low resource countries (Burwell et al, 2006).

This study found no signification association with risky health behaviors such as use of drugs and alcohol intake and depressive symptoms. Meanwhile, other previous studies have found a positive relationship between alcohol use, drugs use and increasing depression and anxiety and adolescents. In some situation high depression levels results to the use of drugs and alcohol as a coping mechanism. In other situations, drug and alcohol intake may results in increased depression among the adolescents (Hill, 2004; Lee et. al., 2013). In most cultures and societies, the adolescent stage is characterized with substance abuse and excessive alcohol intake.

5.5 Limitations of Study

A section of the population was studied due to time and financial constraints.

Inability to control the study environment. The data collection being done in senior high schools presented us with the difficulty of having restricted time frames and durations in engaging the study participants.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study revealed high prevalence of depressive symptoms among the adolescents in senior high schools in the municipality. There were also disparities to the prevalence of depressive symptoms among the adolescents, particularly according to sex and age group. That is, more females than males reported high depressive symptoms and those aged 17 years and above were also found to have increased in depressive symptoms.

The parental and relation risk factors to adolescent depression found include not having a cordial relationship with parent, when needs are not met frequently and when an adolescent does not feel comfortable sharing views with the caregiver. These factors increase their risk and had significant association with high depressive symptoms

Furthermore, school risk factor to adolescent depression found were poor performance at school, not having cordial relationships with peers and having difficulties in terms of funding education. These factors were also significant factors to higher depressive symptoms among the adolescent.

It can therefore be seen from the study that adolescent with unfavorable individual, parental and school conditions in Ghana have a higher likelihood of being depressed as compared to their counterparts.

6.2 Recommendations

The following recommendations are made based on the findings from this study. The recommendations are directed to the appropriate body or authority.

Ministry of Education and Ghana Education Service

The ministry and Ghana Education Services must strengthen school health system to give attention to student's mental health to help the student experiencing depression symptoms.

The guidance and counseling units in schools should be strengthened for student to patronise and the guidance and counseling units can initiate activities that are geared towards improving student's psychological health even when students are unable to directly patronize these units. Effective coping mechanisms should be taught as part of School Health Programs activities to enable adolescents have the ability to cope with their challenges as they grow up.

Public Health and Policy Makers

Resources should be increased to promote mental health in Ghana and also focus on improving adolescent mental health as studies have shown a very high prevalence of depressive symptoms and again, that the emergence of several diseases in adulthood develop from adolescence.

Research

Further studies should also be made to explore adolescents' parents' depressive symptoms and its relationship with the adolescents own mental health and wellbeing.

Again, future study should focus on adolescent's own internal fight and battling and its association with depressive symptoms.

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APPENDICES

QUESTIONNAIRE

Determinants of Depressive Symptoms among Adolescents in the Senior High Schools (SHS) at La Dadekotopon District of the Greater Accra Region, Ghana.

ID: _____ QUESTIONNAIRE NUMBER: _____

DATE: _____ ASSESSMENT COMPLETED BY: _____

Section A: Demographic Characteristics

No	Variables	Response	Code
1	Age		
2	Sex	1. Sex 2. Female	
3	Grade/class	1. Form 1 2. Form 2 3. Form 3	
4	Religion	1. Christianity 2. Islam 3. Traditionalist 4. Other, specify.....	
5	Ethnicity	1. Akan 2. Ga/ Adangbe/Krobo 3. Ewe 4. Others, specify....	
6	School type	1. Public 2. Private	
7	Relationship with caregiver	1. Biological parent 2. Adopted 3. Other family relative	
8	Caregiver's occupation	1. Self-employed 2. Public worker 3. Private employee 4. Unemployed 5. Retired	

9	Caregiver Income	1. Below Ghc 500 2. Ghc 500-1500 3. Above Ghc 1,500 4. No Income 5. Don't know	
10	Number of Siblings		

Section B: Depressive symptoms among adolescents 11-ITEM Adolescent Depression Scale

No	Items	Hardly Ever (1)	Much of the time (1)	Most of the time (2)	All of the time (3)
1	Low mood, sadness, feeling blah or down, depressed, just can't be bothered				
2	Irritable, losing your temper easily, feeling pissed off, losing it				
3	Sleep Difficulties - different from your usual (over the years before you got sick): trouble falling asleep, lying awake in bed.				
4	Feeling Decreased Interest In: hanging out with friends, being with your best friend; being with your partner / boyfriend / girlfriend; going out of the house; doing school work or work; doing hobbies or sports or recreation.				
5	Feelings of worthlessness, hopelessness, letting people down, not being a good person.				
6	Feeling tired, feeling fatigued, low in energy, hard to get motivated, have to push to get things done, want to rest or lie down a lot.				
7	Trouble concentrating, can't keep your mind on schoolwork or work, daydreaming when you should be working, hard to focus when reading, getting "bored" with work or school				
8	Feeling that life is not very much fun, not feeling good when usually (before getting sick) would feel good, not getting as much pleasure from fun things as usual (before getting sick)				
9	Feeling worried, nervous, panicky, tense, keyed up, ANXIOUS				
10	Physical feelings of worry like: headaches, butterflies, nausea, tingling, restlessness, diarrhea, shakes or tremors				
11	Thoughts, plans or actions about suicide or self-harm				

Section C: Parental and School Factors

No	Questions	Responses	Code
1	Living arrangements	1. Living with both parents 2. Not living with both parents	
2	Violence in the home	1. Not injured by parent 2. Injured by parent	
3	Afraid of parents/Caregiver	1. Not afraid of parent 2. Afraid of parent	
4	Describe your relationship with caregiver	1. Cordial 2. Not Cordial 3. Not certain	
	How often are your needs met by caregiver/parent	1. Rarely 2. Sometimes 3. Often times 4. Always	
	I felt comfortable to share my views with caregiver	1. Agree 2. Not Agree	
4	How will you describe your academic performance	1. Poor 2. Good 3. Very Good 4. Excellent	
5	Describe your relationship with teachers	1. Cordial 2. Not Cordial 3. Not certain	
6	Describe your relationship with your peers,	1. Cordial 2. Not Cordial 3. Not certain	
	Are you on free SHS	1. Yes 2. No	
7	Do you have any financial difficulties with your schooling	1. Yes 2. No 3. Don't know	

Child Assent Form

Introduction

My name is Ms Stephana Sefa-Boateng and I am from the School of Public Health at University of Ghana. I am conducting a research study entitled Determinants of Depressive Symptoms among SHS Students in the La Dadekotopon District of the Greater Accra Region. I am asking you to take part in this research study because I am trying to learn more about depressive symptoms among adolescents and how they manage to cope or otherwise in such circumstances. This will take a maximum of 30 minutes to complete.

General Information

If you agree to be in this study, you will be asked to complete a questionnaire either on your own or with the help of a research assistant that will last between 20 and 30 minutes.

Possible Benefits

Your participation in this study will result in no direct benefit or compensation to you but should you lose any valuables in the course of your participation in the study, that will be replaced and the results as well as interpretation of data can be of benefit in designing health policies in respect to adolescent depressive symptoms and its management

Possible Risks and Discomforts

However, there are no identified risks or discomforts that may come with this study participation

Voluntary Participation and Right to Leave the Research

You can stop participating at any time if you feel uncomfortable. No one will be angry with you if you do not want to participate.

Confidentiality

Your information will be kept confidential. No one will be able to know how you responded to the questions and your information will be anonymous.

Contacts for Additional Information

You may ask me any questions about this study. You can call me at any time by calling me on 0244572258 or talk to me the next time you see me.

Please talk about this study with your parents before you decide whether or not to participate. I will also ask permission from your parents before you are enrolled into the study. Even if your parents say "yes" you can still decide not to participate.

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute

for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you

Can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.ug.edu.gh

VOLUNTARY AGREEMENT

By making a mark or thumb printing below, it means that you understand and know the issues concerning this research study. If you do not want to participate in this study, please do not sign this assent form. You and your parents will be given a copy of this form after you have signed it.

This assent form which describes the benefits, risks and procedures for the research titled Determinants of Depressive Symptoms among SHS Students in The La Dadekotopon District of The Greater Accra Region. Has been read and or explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate.

Child's Name:..... Researcher's Name:.....

Child's Mark/Thumbprint..... Researcher's Signature:.....

Date:

Date:

Parental Consent Form

Title: DETERMINANTS OF DEPRESSIVE SYMPTOMS AMONG SHS STUDENTS IN THE LA DADEKOTOPON DISTRICT IN THE GREATER ACCRA REGION

Principal Investigator: Ms Stephana Sefa-Boateng

Address: University of Ghana School of Public Health

General Information about Research

Dear parent, a wish to seek your approval in including your child in the list of participants in the study of determinants of depressive symptoms among adolescents. The study seeks to find out how many adolescents go through these depressive symptoms, what brings about these symptoms about the adolescents, and what they do to cope in such times. If you agree to this request, your child will be given some questions on a leaflet to answer either by him or herself, or with the help of a research assistant for about 20 to 30 minutes. Data from their response may be used as part of my assessment of the determinants of depressive symptoms among adolescents in senior high schools.

Possible Risks and Discomforts

This study will pose minimal or no risk to your children.

Possible Benefits

There is no direct benefit to you for being in the study; however, the study outcomes may lead to better understanding of determinants of depressive symptoms among SHS students of La Dadekotopon District, which may help in health policy development and program planning to improve the health status of such people.

Confidentiality

All data on your child will be anonymous and will be kept confidential. Their identifiable data such as name or date of birth will not be used in documents, reports or publications related to this research. I will keep all documents secured and locked in metal cabinet. When entering your survey responses into the computer, data will be entered without any information that will make the notice of your identity possible. The information your children will provide will be

kept strictly confidential and made available only to persons directly involved in the study (the researcher and supervisor). The response of your children will not be shown to other participants and the original paper survey forms will be destroyed once data entry is complete.

Compensation

Your child's participation in this study will not lead to any compensation package; however, if they lose something or incurred any loss due to your participation in this study, they will be compensated accordingly.

Voluntary Participation and Right to Leave the Research

Your child's participation in this study is completely voluntary and they reserve the right not to participate this is their right and such decisions will not be disclosed to anyone.

Contacts for Additional Information

If you have any concerns about the conduct of this study, your welfare or your child's rights as a research participant or if you wish to ask any questions, have some clarifications or explanations, you may contact me on (tel 0244572258, email sefaabena1@gmail.com)

Your Child's Rights as a Participant

This research has been reviewed and approved by the Noguchi Memorial Institute for Medical Research Institutional Review Board (NMIMR-IRB). If you have any questions about your child's rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.ug.edu.gh

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title (*name of research*) has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree that my child should participate as a volunteer.

Date

Name and signature or mark of parent or guardian

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the child's parent or guardian. All questions were answered and the child's parent has agreed that his or her child should take part in the research.

Date

Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date
Consent

Name Signature of Person Who Obtained

Information Sheet and Informed Consent

Part 1: INFORMATION SHEET

Introduction

I am **STEPHANA SEFA-BOATENG**, a student of the University of Ghana School of public health and I'm conducting a study on depressive symptoms among adolescents in senior high schools in the **La Dadekotopon District, Greater Accra**. I will be explaining everything about the study to you, and you will also receive a copy of the leaflet that explains clearly about this study that you are being asked to partake in. Please take all the time you need to read it carefully. You may ask me any questions about anything you do not understand at any time. You are a volunteer and you can choose not to take part; however, if you join, you may decide to quit at any time as you may deem necessary. There will be no penalty if you decide to do so.

Procedures

If you agree to be part of the study, a trained research assistant, will ask you to fill a questionnaire alone or with his assistance for approximately 20 - 30 minutes. As a participant, if you agree to participate in this study, data from your responses may be used as part of my assessment of the determinants of depressive symptoms among adolescents in senior high schools.

Possible Risk

This study will pose minimal or no risk to you.

Benefit

There is no direct benefit to you for being in the study; however, the study outcomes may lead to better understanding of determinants of depressive symptoms SHS student in the La Dadekotopon District, which may help in health policy development and programs planning to improve the health status of such people.

Confidentiality

All data will be anonymous and will be kept confidential. Your identifiable data such as name or date of birth will not be used in documents, reports, or publications related to this research. I will keep all documents secured and locked in a metal cabinet.

When entering your survey responses into the computer, all data will be entered without any information that will make it possible for your identity to be known. The information you provide will be kept strictly confidential and will be available only to persons related to the study (the researcher and the supervisors). The School of Public Health, University of Ghana, Legon, may also have access to study records upon their request.

Your responses will not be shown to other participants. The original paper survey forms will be destroyed once data entry is complete.

Voluntariness and Withdrawal

Your participation in the study is completely voluntary and you reserve the right not to participate, even after you have taken part, to withdraw. This is your right and the decision you take will not be disclosed to anyone. Please note however, that some of the information that may have been obtained from you without identifiers, before you chose to withdraw, may be used in analysis reports and publications.

Compensation

Your participation in this study will not lead to any compensation package to your participation, however, if you lose something or incurred any loss due to your participation in this study, you will be compensated accordingly.

Who to contact

If you have any concern about the conduct of this study, your welfare or your rights as a research participant or if you wish to ask questions, or need further explanations later, you may contact the principal investigator, Ms. Stephana Sefa-Boateng (Tel: +233 244572258, Email: sefaabenal@gmail.com).

Thank you!

Part 2. CONSENT DECLARATION

The above document describing the benefits, risks and procedures for the research title *(Determinants of Depressive Symptoms among Adolescents in the Senior High Schools (SHS) at La Dadekotopon District of The Greater Accra Region, Ghana)* has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date

Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date

Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date
Consent

Name Signature of Person Who Obtained

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH

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INSTITUTIONAL REVIEW BOARD



Post Office Box LG 581
Lagon, Accra
Ghana

8th May, 2019

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824

IRB 00001276

NMIMR-IRB CPN 074/18-19

IORG 0000908

On 8th May, 2019, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL : Determinants of depressive symptoms among adolescents in the Senior High Schools (SHS) At La Dadekotopon District of the Greater Accra Region, Ghana

PRINCIPAL INVESTIGATOR : Stephana Sefa-Boateng, MPH Cand.

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 7th May, 2020. You are to submit annual reports for continuing review.

Signature of Chair:

Mrs. Chris Dadzie
(NMIMR - IRB, Chair)

