PREVALENCE AND CORRELATES OF PSYCHIATRIC MORBIDITY AMONG ADOLESCENTS IN BO, SIERRA LEONE

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DECLARATION

I hereby declare that this research work titled Prevalence and Correlates of Psychiatric Morbidity among Adolescents in Bo Sierra Leone is original and was done by me under the supervision of Professor Olayinka Omigbodun, Professor of Psychiatry, College of Medicine, University of Ibadan, Nigeria.

The finding of this research work has never been presented in a part or whole to any other institution for any course work.

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CERTIFICATION

This is to certify that this proposal was written by Mr. Edwin Smart Johnny (**Matric No. 183525)** of the Centre for Child and Adolescent Mental Health, University of Ibadan, Nigeria for the award of Degree of Master of Science in Child and Adolescent Mental Health.

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ACRONYMS

ADHD	Attention Deficit Hyperactivity Disorder
CAMH	Child and Adolescent Mental Health
CD	Conduct Disorders
DISC	Diagnostic Interview Schedule for Children
DPS	Diagnostic interview Schedule
JSS	Junior Secondary School
LMIC	Low and Middle-Income Countries
MOHS	Ministry of Health and Sanitation
ODD	Oppositional Defiant Disorder
SLDHS	Sierra Leone Demographic Health Survey
SSS	Senior Secondary School
WHO	World Health organization

ABSTRACT

Background

Mental disorders have a significant impact on the adolescent's ability to function. Knowledge of the prevalence and correlates of mental disorders can help to inform appropriate service development for adolescents' mental health and reduce the possibility of future problems such as the need for special education, criminal activities, and physical illness. Despite the instability experienced in Sierra Leone, very few community studies have investigated the prevalence and correlates of mental disorders among adolescents. This study therefore aimed to estimate the prevalence, pattern and correlates of mental health symptoms and specific probable mental disorders among adolescents living in Bo, Sierra Leone.

Methodology

This was a descriptive study carried out in Bo, southern Sierra Leone. One community was chosen from the randomly selected wards that make up Bo town. A total of 341 adolescents aged 12-19years were recruited into the study. A socio-demographic questionnaire, the School Health Questionnaire and the Diagnostic Predictive Scales for Youths were used to collect information on the socio-demographic characteristics, psychosocial problems and probable mental disorders among the adolescents using the interviewer-administered method.

Data Analysis

Socio-demographic characteristics of, as well as the prevalence and pattern of mental disorders among the adolescents were analysed and presented in frequencies. Correlates of mental disorders found were examined using the Chi square statistics at a significant level of 5%.

RESULTS

The mean age of adolescents who participated in the study was 15.5($\pm$2.2) years while the ratio of males to females was 1:2. Majority (69.1%) of the adolescents were still in school while about a quarter (26.6%) had dropped out of school. Almost half (46.6%) of the adolescents had one or more diagnosis of a probable mental disorder. About one in every six (16.4%) adolescents had probable depressive disorder, over a third (37.5%) had probable oppositional defiant disorder and about one-fifth (20.8%) had probable conduct disorder.

A significantly higher proportion of adolescents who reported that they were from polygamous families and that their parents did not understand their problems and worries had depression compared to their counterparts form monogamous homes and whose parents showed understanding (22.6% Vs11.0%, p=0.004; 26.7% vs. 11.9%, p=0.001), . Similarly, adolescents who had once been described as slow or backward had probable oppositional defiant disorder compared to those who had never been described as slow or backward and this was statistically significant (52.9% vs 32.5%, p=0.006). Furthermore, adolescents who reported they did not like their family had higher rates of conduct disorder compared to those who liked their family ((37.5% vs 19.7%; p=0.040). Factors such as being from a monogamous home, living with

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biological parents and perceived parental understanding of adolescent's wellbeing were associated with reduced rates of mental disorders (p<0.05) in the adolescents.

Conclusion

Mental disorders are common among adolescents in Bo, Sierra Leone. A wide range of psychosocial factors including polygamous home setting, being described as backward or slow to learn, alcohol use and cigarette smoking were significantly associated with probable mental disorders while protective factors were found to include perceived parental concern about issues pertaining to the adolescent, monogamous home setting and living with parents.

Families and schools play important roles in the overall development of the adolescent. Therefore, practices that promote the mental wellbeing of the adolescents should be encouraged among families and school teachers should be encouraged.

Keyword:Depression, Oppositional defiant disorder, Conduct disorder

CHAPTER ONE

BACKGROUND

1.1 INTRODUCTION

Children and adolescents constitute 35–50% of the population in low and middle income countries (Kessler 2007; WHO 2005). According to the World Health Organization (WHO), mental disorders are leading cause of disability and underachievement in children and adolescents. Studies reveal that 1 in every 5 children and adolescents will develop a mental health problem at some point in their lifetime (Kessler *et al*, 2007). It has also been established that 50% of adulthood mental disorders begin in childhood **(Kleintjes and Flisher, 2010)**. Mental health problems are associated with a substantial burden, which has a huge impact on affected individuals, families and the society. Prevalence rates for adolescent mental disorders in developing countries range from 10% -20% in all settings (Kieling *et al,* 2010).

There are biological, psychological and social risk factors for mental health problems. Biological risk factors may include gender and age, psychological factors are problems of self-esteem, stress and disappointments while social factors include poverty, hunger and overcrowding (Yussuf and Buhari, 2008). An example of biological risk factors at play can be found in a study conducted among adolescents aged 14 and 15 years in selected schools in Jaffna district, Sri Lanka, Southeast Asia. Higher prevalence rates of mental disorders were found among boys and 15 year old participants (Arumaithurai, 2009). The types of mental health problems found among the study participants were conduct disorder, attention deficit hyperactivity disorder (ADHD), and emotional and peer relationship problems. In a study carried

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out among adolescents in the USA, higher prevalence rates of depressive disorders were found among white adolescents when compared to black American adolescents (Angold *et al,* 2002).

Important psychosocial correlates of child mental disorders in developing countries include parent-related factors such as low educational status, unemployment, marital problems, domestic violence and the presence of psychiatric disorder (Menelik, 2008). Personal factors in the child or adolescent that are associated with the presence of mental disorders include chronic physical illness, poor academic performance and adverse life events (Menelik, 2008).

Mental health problems have a significant impact on a child's ability to function socially, academically, and emotionally (Jayasinghe, 2010). The World Health Organization defines child and adolescent mental health (CAMH) as the capacity of the child and adolescent to achieve and maintain optimal psychological functioning and well being (WHO, 2008). The psychological and emotional well being of adolescents is directly related to their ability to function well in daily activities, relate with family and friends, cope with life stressors and adjust appropriately to varied situations. Unfortunately, adolescents who suffer from mental disorders are unable to reach their optimum level of competence and functioning (Menelik, 2008).

Mental health care service for young people is poorly developed in Sierra Leone. There is one psychiatric hospital in the country and a few uncoordinated scattered psychosocial care services in parts offered primarily by nongovernmental organizations (NGO) (Price, 2014). As a result of the dearth or absence of services for child and adolescent mental health, many young people with mental illness are either neglected or cared for by traditional healers (Alonso *et al,* 2014). The burden of communicable diseases still plaques Sierra Leone with outbreaks of diseases, including Cholera, Lassa fever, meningitis, poliomyelitis and malaria being recorded (Jones *et al,*

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2011). The current Ebola Virus disease outbreak in Sierra Leone has caused more than 4,000 adolescents to become orphaned and traumatized (UNICEF, 2014). An assessment of child trafficking in Sierra Leone estimated that 43% of young people aged 15-24 years were living in Difficult Circumstances (Treanchard, 2013). These children include street children, children with disabilities, children engaged in hard labour, prostitution, in conflict with the law and orphans that do not live in recognizable orphanages (Treanchard, 2013).

In better resourced regions of the world, psychiatric disorders are diagnosed, using the International Classification of Disorders version -10 (ICD-10) or the Diagnostic and Statistical Manual version IV (DSM-IV) classification systems usually by clinicians (AACAP, 2012). In most low and middle-income countries (LMIC), less-costly methods such as screening instruments, which infer the probability of a particular mental disorder in the general population, are used (Gureje *et al,* 1995). Early detection of mental disorders in youth can reduce the possibility of future problems such as the need for special education, criminal activities, and physical illness. Supporting adolescents' optimal social and emotional development will result in positive outcomes for individuals and society, including healthier behaviour, greater school success, improved self-esteem and good interpersonal relationships. Developing mental health services for young people with psychiatric disorders will create a relationship between the various sectors that serve youth with mental health needs in school, primary health care, juvenile justice and specialty mental health settings.

1.2 Justification

According to the world development index in 2009, Sierra Leone is one of the poorest countries in Sub-Saharan Africa (Morgan, 2012). The country has a history of continuous instability

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resulting from natural disasters and a civil war that lasted for ten years. Identifiable social problems such as violence, teenage pregnancy, drug and alcohol use among youths are like a vicious circle in Sierra Leone (Tucker and Palmer, 2012). Studies reveal that mental health problems among adolescents are higher in war stricken and poor socioeconomic environments (Lukumar, 2009). In a longitudinal study conducted among war-affected youths in Sierra Leone, it was reported that there were poor mental health outcomes among the youths that experienced chronic traumatic events, stigma, daily hardship and low self-esteem .Meanwhile protective factors such as being in school, working, or social support and community acceptance were contributing factors for improved mental health outcomes (Bancourt *et al,* 2005).

Majority of the available community surveys on mental health of adolescents worldwide were carried out in Europe, America and Asia (Singh and Mkize 2006). There are only a few community surveys done in Africa, a continent that has a population with or more than 50% as children and adolescents many who are neither in schools nor in institutions. Community surveys have the advantage of providing more representative data as they include adolescents who do not attend school and those who do not access mental health services (Srinath *et al,* 2005). Relatively, little is known about the mental health of children in Sierra Leone, a country with a high proportion of children and adolescents; 41.9% and 18.8% of the population are children aged 0-14years and adolescents 15-24 years respectively (Sierra Leone Demographic profile, 2014).In the absence of locally generated data in the community, it is difficult to predict how much social risk factors would impact on the mental health of adolescents. The few studies done so far after the ten-year civil conflict in Sierra Leone focused on adult mental health problems and were hospital based (palmer, 2004). No community study on adolescent mental health problems in Sierra Leone was found in the available searched literature.

Obtaining information on socio-demographic factors of adolescent's is vital for policy makers to enable efficient and appropriate planning for health programmes. In post Ebola Sierra Leone there is the need to estimate the prevalence and correlates of mental disorders in adolescents utilizing a community survey to capture in school and out of school youths.

1.3 AIM

The aim of this study was to estimate the prevalence, pattern and correlates of mental health symptoms and specific mental disorders among adolescents living in Bo, Sierra Leone.

1.4 Specific objectives

With regards to adolescents living in the community in Bo, Sierra Leone, the specific objectives of this study were to:

1. Describe the pattern of mental health symptoms and specific mental disorders
2. Determine the prevalence of some specific mental health disorders
3. Determine correlates of mental health symptoms and specific mental disorders

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LITERATURE REVIEW

2.1 The period of adolescence

The term adolescent was first used by an American Developmental and Educational Psychologist, G Stanley Hall in 1904(Steinberg 2001). Before then, there was no clear-cut definition for the period of life between childhood and adulthood (Zimmerman, 1997). According to Stanley Hall 'adolescent' represents an individual who is "sexually matured according to nature while remaining socially immature according to the needs of society (Arnett,1999)" It is a period of "storm and stress" in which young people go through some degree of emotional and behavioural upheaval before establishing a more stable equilibrium in adult-hood (Arnett, 1999). Several terms are used to describe people at this stage of life, such as: teenager', 'teen', 'young person 'and youth. (Arnett, 1999).   Society normally recognizes adolescents as being energetic, vibrant, impulsive, and full of potential (WHO, 2001 Christie and Viner 2005). Age-wise; the World Health Organization describes an adolescent as a person between 10-19 years of age. In Ugandan culture, adolescent boys are referred to as individuals between the ages of 10 and 18 (Neema *et al,* 2004). However, girls between ages 13 to 17 are referred to as adolescents but are regarded as women as soon as they marry, even if at age 12 or 13 years (Women Commission on Children for Refugee, 2001).

Adolescents thus have several names and contextual meanings in different cultures and settings. The varied classification of adolescents poses a challenge of how to focus on their specific needs in different countries. In the Sierra Leonean context, the distinction between adolescents, youths

and children is still not clear, in terms of role and age (Abdullah, and Fofana-Ibrahim, 2010). More cultural consideration is needed to understand the stated age, between 10 and 19 years. The Women's commission for refugee women and children in (2002) observed that in Sierra Leone younger adolescents are generally thought of as children and older adolescents as youths (khali, 2007). The society regards those who are not under parental custody, marriage or initiated into the secret societies like "poro" for boys and "bondo" for girls as adults. This is linked to the rite of passing into adulthood during the process describe as circumcision in this culture. For instance, in the Mende culture in southern Sierra Leone girls are forced into secret societies as early as 12 years or even less and are expected to get married at the end of the initiation period (Mgbako *et al*, 2006), when they undergo female genital cutting (FGC).

2.1.2 Stages and development of adolescent

Adolescence is a unique developmental period. It evolves from early adolescence which is between ages 11 to 13 years, to middle adolescence, 14 to 17 years and late adolescence or early adulthood between 18 to 20 years (National Adolescent Health Information Center, 2003). Normal adolescents develop across physical, psychological and emotional domains. These domains reflect their increased involvement in the social world, growing sense of identity, and preparation for the transition to adulthood (Steinberg and Morris 2001).

2.1.3 Physical development of adolescents

Biological changes are mainly related to the onset of puberty, the period when sexual organs mature, beginning earlier for girls than for boys. Girls begin puberty at about 11 or 12 years; while boys begin puberty two year later at 13 or 14 years (Barnes, 1975). The development of

primary sexual characteristics that involve organs and structures of the body relating to reproduction start at this stage (Cunningham *et al,* 2003) Secondary sex characteristics (developments that involve the visible signs of sexual maturity that do not involve sex organs directly) also become prominent during puberty (Demerath *et al*, 2004).

2.1.4 Psychological development of adolescents

Cognitive changes emerge as the abilities of adolescents to use formal operations to solve problems begin to evolve (Ernst, Pine and Hardin, 2006). During this period of growth, they develop the ability to think abstractly (AACAP, 2003). Jean Piaget (1896-1980) studied the intellectual development children, asserted that children enter this stage at the beginning of adolescence and develop the full capabilities of using principles of logical reasoning, which involve more adult type of thinking (Steinberg, 2001). As they move into subsequent stages of development, adolescents generate more abstractions, hypotheses, and possibilities from specific situations (Health Working Group, 2008). They also consider facts and opinions regarding information provided and approach problems in a systematic fashion (WHA, 2000).

2.1.5 Emotional development of adolescents

The adolescent develops emotional changes that are reflected in self-image, intimacy and relationships with adults and peer groups as well as social changes that involve transition into new roles in the society (Berger, 1999). Together with changes in cognitive development the adolescent perceptions of their parents change, viewing themselves as individuals that can be separated from their parents and preferring to spend less time with parents and families. Peers become more important during this time (Boyd-Franklin, 2000).

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At this stage of development, the adolescents begin to experience sexuality and express it in thought, fantasies and, desires (Youth Development, 2009). The increased interest in sexual activities is recognized in their concerns regarding physical and sexual attractiveness to others.

Teenagers take risks as a normal part of growing up and as a tool to define and develop an identity (American Psychological Association, 2002). Healthy risk taking provides a valuable experience for the adolescents, as it has a positive impact on development and includes participation in sports, the development of artistic and creative abilities. On the other hand, the use of and alcohol, unprotected sexual intercourse and poor relationships with peers can have a negative effect on the adolescent.

2.1.6 Demographic profile of adolescents

In 2009, there were 1.2 billion adolescents aged 10–19 in the world, forming 18% of the world's population. India had the largest national population of adolescents, (243 million), followed by China (207 million), United States (44 million), Indonesia and Pakistan both with 41 million (UNDP, 2011). Adolescent numbers have more than doubled since 1950 and the vast majority of them (88%) live in developing countries. Currently, more than half the world's adolescents live in either the South Asian or the East Asian and Pacific region, each of which contains roughly 330 million adolescents (World Population prospects, 2012). By 2050, Sub-Saharan Africa is projected to have more adolescents than any other region, marginally surpassing the number in the Asian regions (UNICEF, 2012). Although the proportion of adolescents in the world will continue to grow in absolute terms until around 2030, the adolescents' share of the total population is already declining in all regions except West and Central Africa and this will steadily diminish all over the world through 2050 (Clifton *et al,* 2007). One trend that will

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continue to intensify in the coming decades is that more adolescents will live in urban areas. In 2009, about 50% of the world's adolescents lived in urban areas (World Children, 2012). By 2050, this number will rise to almost 70 per cent, with the strongest increases occurring in developing countries (UNDP, 2013).

In developed countries, adolescents spend significantly more time with their peers in school. While in developing countries the situation is different, many adolescents work to help their parents or earn their living (Zinkina and Korotayev, 2012). This is evidenced by the proportion of adolescents that are in the class room during school hours and the high number of adolescents living or working on the street (WHO, 2013). In urban areas, girls and boys are more involved in petty trade such as hawking, while in rural settlements girls are found doing domestic work and the boys working mines or farms (Social Life of youth, 2013).

2.2 Prevalence and pattern of mental disorders in adolescent

Studies on mental disorders among adolescents reveal a wide prevalence rate ranging, from 1·81% to 39·4% (Kieling *et al*, 2010). The reasons for the wide margin are attributed to differences in exposure rate to risk and protective factors and inconsistency in research methods such as using non standardized instruments in different settings and cultures (Kathleen *et al* 2011). The results from studies of youth from different parts of the world indicate that about one out of every four to five youths is estimated to meet the lifetime criteria for a Mental Disorder (Omigbodun *et al,* 2008).

2.2.1 International studies on the prevalence of mental disorders

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A number of studies have been carried out in developed countries to determine the prevalence of psychiatric morbidity in adolescents. The results of these studies indicate that about one out of every three to four adolescents meet the lifetime criteria for a mental disorder (Costello *et al.,* 2004).

In the metropolitan city of Hong Kong, a total of 541 Chinese adolescents were recruited from thirty-six schools by random selection from a list of all local high schools (Luung *et al*, 2008) The study was aimed at determining the lifetime prevalence of mental illness among these adolescents and was conducted using the Youth and Parent versions of DISC-IV (Diagnostic Interview Schedule for Children-Version 4) (Luung *et al,* 2008). The mean age of the participants was 13.8 ±1.2 years with prevalence rates were as follows: anxiety disorders (6.9%), Depressive disorders (1.3%), Attention Deficit/Hyperactivity Disorder (ADHD) (3.9%), Oppositional Defiant Disorder (ODD) (6.9%), Conduct Disorder (CD) (1.7%), and substance use disorders (1.1%). In terms of gender differences more girls (44.7%) were found compared to boys (31.7%) to present with disorders, and particularly anxiety disorders ((Luung *et al*, 2008). However, an overall prevalence estimate of 16.4% for DSM-IV disorders was reported in this sample of Chinese adolescents (Leung *et al.,* 2008).

Similarly, Schmid, Goldbeck, Nuetzel and Fegert (2009) conducted a study to assess the lifetime prevalence of behavioural and emotional symptoms as well as mental disorders in a German residential care population. A total of 689 children and adolescents participated in the study from 1,227 residential care institutions in Eastern Baden-Wuerttemberg, Germany and the participants ages ranged from 4 – 18 years. The prevalence of mental disorders according to the diagnostic criteria of ICD-10 was 59.9% with a predominance of externalizing and disruptive disorders such

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as conduct disorder (15%), combined ADHD and conduct disorder (29%), depression (40%), drug and alcohol abuse (39%), and enuresis nocturnal (26%). (Goldbeck, 2009) Despite the limitation of a small sample size in this study, it was noted that children and adolescents in youth welfare and residential care are neglected and are at a high risk of mental illness in the population (Schmid *et al.,* 2009)**.**

In a national survey of 10,123 adolescents aged 13–18 in the USA, the lifetime prevalence of mental disorders was examined using the modified version of the fully structured World Health Organization Composite International Diagnostic Interview. The result of the study was presented by sex, age groups and disorders with severe impairment. Females were twice like to experience mental disorders than males (Kathleen *et al,* 2010). Prevalence of all mood disorders increased uniformly with age, with a nearly two-fold increase from the 13–14-year age group to the 17–18-year age group. (Kathleen *et al,* 2010).

2.2.2 Prevalence studies on adolescent mental health from Africa and the sub-regions

Although there is a dearth of studies on the African continent, quite a number of studies have been carried out to establish the prevalence of mental disorders among children and adolescents in Africa. For instance, in Nairobi Kenya, Khasakhala, Ndetei, Mutisi, Mbwayo, and Mathai conducted a study to determine the prevalence of depressive symptoms among adolescents using a stratified sample of 17 public secondary schools with the Child Depression Inventory (CDI) and the Egna Minnen Betrafande Uppfostran (EMBU). The result revealed that the prevalence of depressive symptoms was (26.4 -29%) and the prevalence rate was found to be higher in girls than it was in boys, the result was found to be similar to findings reported in other regions of Kenya and other countries in Africa (Khasakhala *et al.,* 2012).

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In southern Nigeria, a cross-sectional survey was conducted among undergraduate students that were randomly selected from different classes using a self-administered questionnaire. The sample included 820 university undergraduate students. The result of this study indicated a prevalence of 7.0% for severe depression and 25.2% for moderate to severe depression (Peltzer and Olowu , 2013)**.** In another study conducted in the eastern part of Nigeria to evaluate the prevalence of conduct disorder, 885 urban secondary school children, aged 9-18 years and a mean age of 13 years were recruited ((Peltzer and Olowu, 2013). A structured questionnaire based on Vanderbilt ADHD Diagnostic Teacher Rating Scale for oppositional defiant and conduct disorder symptoms was used. A total of 140 respondents were diagnosed with conduct disorder, giving a prevalence of 15.82% while a sex ratio of male to female with the conduct disorder was found to be about 4:1 (Frank-Briggs and Alikor, 2008).

In South Africa, a systemic review that focused on the most common mental disorders present in clinical practice record in the Western Cape was conducted. Subjects included the general population such as; adult, children and adolescents in Western Cape Town. The diagnoses were based on the Diagnostic and Statistical Manual for Mental Disorders (DSM 1V). The overall prevalence of mental disorders obtained was 25.0% for adults and 17.0% for children and adolescents. For children and adolescents, the common disorders found were generalized anxiety disorder (11.0%), posttraumatic stress disorder (8.0%) and major depressive disorder (8.0%) (Kleintjes *et al*. 2006).

2.2.3 Mental health studies in Sierra Leone

According to the Sierra Leone Ministry of Health and Sanitation, mental health problems of young people in Sierra Leone constitute a substantial burden of disease (Daoh, 2004). In order to

develop a mental health plan and policy, immediately after the war the Ministry of Health and Sanitation conducted a national mental health survey. The results from the study revealed that the prevalence rates of mental disorders were: psychosis was 2%, severe depression and substance abuse 4 %, while intellectual disability and epilepsy were 1% (Palmer, 2008).

The precise prevalence of mental illness among adolescents in the country has not been ascertained yet but there are few studies on child mental disorders such as epilepsy, post traumatic disorder, depression and substance abuse (Mental health policy for Sierra Leone, 2012).

One of the studies conducted relating to adolescents was a longitudinal study on mental health problems and outcome of child soldiers using the Child War Trauma Questionnaire (CWTQ) to assess individual war experiences (Betancourt et al., 2004). The results showed that females had significantly higher scores for depression than males (Betancourt et al., 2004). Similarly, in Sierra Leone, substance abuse is reported to account for 60% of all the problems youths encounter (Daoh, 2004) and is found to be a predisposing factor for mental health problems among youths (Mental Health Coalition Sierra Leone 2014). Studies have shown that more males (45%) than females are involved in substance abuse and the majority 90% live in capital city and urban areas in Sierra Leone (Vanderbrick, 2011). Marijuana and alcohol are the commonest substances abused by youth in Sierra Leone. (Kargbo *et al* 2014).

2.3. Correlates of mental disorders in adolescents

There are a number of factors that affect the mental health of adolescents (Offord, 1998). These can be divided into risk and protective factors .Risk factors are characteristics or behaviours of

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the individual and the environment that increase the likelihood of experiencing mental health problems, while the protective factors are characteristics or behaviours of the individual and environment that increase the likelihood of experiencing a positive wellbeing.(Whitlock, and Schantz, 2008) protective factor include exercise, good relationship with parents among others Center for Disease prevention and Control 2007) The tendency to develop mental health problem depends on the balance between risk and protective factors which is called 'resilience' (Whitlock, and Schantz, 2008). Resilience reflects a person's capacity to master and or 'survive' in spite of difficult situations and it differs from person to person (Patel and Sumathipala, 2001). Developing resilience in spite of adverse circumstances depends on individual factors, family and environmental influences or to an extent the developmental stage of the child or adolescent (Abiodun, 2003)

2.3.1 Traumatic experiences and mental health

Traumatic events have been described as actions or demands that come from external sources in the form of a variety of environmental stimuli or internal factors related to physiological change and development (Rutter, 2005). Many studies have established that experiencing a trauma is a risk factor for developing mental illness (Kar and Bastia, 2006 and Omigbodun *et al.,* 2008). Exposure to traumatic events has been associated with mental disorders of youths such as oppositional defiant disorders, conduct disorder, bed wetting and depression (Kar and Bastia, 2006). In a case control study of youths in Uganda and other war affected African countries, it was revealed that traumatic experiences were associated with poor school performance leading to serious consequences in adult life (Thabet, and Vostanis, 2004).

The period of adolescence in itself is a critical period for traumatic exposure as the young person experiments. Traumatic experience could affect the adolescent's entire life in many ways (Gwadz *et al*.,

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2007). Some studies report that adults who experienced traumatic events during the period of childhood become sexual and physical abusers of their children (Khamis, 2005).

In Sierra Leone, over one-third (35%) of adolescents have experienced events ranging from the civil war that ended ten years ago to the present Ebola virus disease outbreak (African Development Bank ,2004). The children that were born during the war have grown up and are still suffering from the physical, psychological and emotional impact of the conflict (Betancourt, 2005). Other traumatic events recorded in recent times in Sierra Leone are high rates of motor bike accidents and other forms of road traffic-accidents, massive death of entire families due to the Ebola virus epidemic among others (Homound, 2014). Despite numerous studies done in other parts of Africa there are few studies on the exposure to traumatic events of Sierra Leonean youth and its implication for the mental health of youths.

2.3.2. Teenage pregnancy and mental health

Low- and middle-income countries have been reported to have a high burden of teenage pregnancy (WHO, 2003). Pregnant teenagers are at a higher risk of maternal depression in resource-constrained settings as a result of higher rates of malnutrition, frequent hospital admission and poor antenatal care (WHO, 2003). Maternal depression adversely affects the physical, cognitive, social, behavioural and emotional development of teenagers (WHO, 2008). Studies further reveal that after giving birth, teenagers continue to be depressed if their pregnancy is unwanted and unplanned or if they were abused while pregnant (Aderibigbe *et al.*2007). In Sierra Leone, physicians for human rights found that the prevalence of teenage pregnancy was 23% and that most teenagers suffer from acute signs of emotional distress especially girls who had a child at an early age (Alonso *et al.*, 2009).

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2.3.4 Physical Health Problems and mental health

The prevalence of major mental disorders is higher proportion in people affected by chronic diseases such as sickle cell, asthma, HIV, cardiovascular disease and brain trauma (Ani *et al.,* 2003). Physical illness has a direct and indirect impact on the mental health of adolescents (Belfer *et al,* 2009). World-wide up to 20% of children and adolescents suffer from disabling physical illnesses (WHO, 2000). Childhood psychiatric disorders such as anxiety, conduct disorder, learning disorder, mood disorders, Autism spectrum disorders and mental intellectual disability, among others, may be associated with co-morbid physical conditions (Fayyad, 2001).

HIV/AIDS is a devastating physical health disease that affects men, women and children in all parts of the world (Alghali and kaitibi, 2012). Children and adolescents infected with HIV/AIDS, often share other risks such as family loss, discrimination, poverty, inadequate housing and exposure to violence, all of which have been associated with increased rates of mental health problems during childhood (Kamau *et al,* 2012; Ogunbodede, 2004).

2.3.5 Academic performance and mental health

Academic performance can serve as both a protective and a risk factor for developing mental illness. To a greater extent, education has been shown to reduce mental health problems while improving mental health (Steele *et al*, 2012). There is growing evidence on the long-term value of promoting the positive mental health of young people, for example through the shaping of early childhood education, through positive parenting, and through more effective educational services and school programme. (Jané-Llopis and Braddock, 2008). Good mental health in childhood is a prerequisite for optimal psychological development, productive social

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relationships, effective learning, and ability to care for oneself, good physical health and effective economic participation as adults (WHO, 2005). In Sierra Leone, the number of children enrolled in primary school has increased tremendously since the end of the civil war, but the proportion of school-age children that complete primary education is still very low (UNDP, 2013). The educational attainment for boys is higher than girls and this is attributed to cultural beliefs in some areas of Sierra Leone that do not support the education of girls. (Grey *et al,* 2015). More so, a study conducted by Kamara (2014) revealed that a large proportion (98%) of the children in remand homes or in juvenile justice custody in Bo are children and adolescents that dropped out school or who did have any formal education (Kamara, 2014)

2.3.6 Low self-esteem and mental health

Guillon in (2003) described a **relationship between low self-esteem and psychiatric diagnosis in** 76 adolescents who were between age 12-20 years of age and were undergoing treatment in an inpatient unit after presenting with psychiatric disorders. Those suffering from depressive disorders, anxiety disorders, anorexia nervosa, personality disorders, or conduct disorder were compared with a control group of 119 adolescents drawn from a normal population. All the participants were assessed with the French translation of the Coopersmith Self-Esteem Inventory (SEI). Depression and low self-esteem were found to be direct correlates of psychiatric disorders (Guillon, 2003). The **relationship between low-self-esteem and psychiatric diagnosis** is a vicious cycle such that low self-esteem makes individuals susceptible to the development of psychiatric disorders while the presence of psychiatric disorders make an individual susceptible to low self-esteem (Silverstone, 2003). For instance, depressive disorders, eating disorders, and substance use disorders have been found to subsequently lower self-esteem (Silverstone,2003).

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2.3.7 Peer and family support

Adolescents living in economically deprived areas, who have lost both parents, whose parents are not educated and those living on the street have been recognized to have high level of depression and related mental issues (Chen *et al,* 2014). Poor interactions with peers and disturbances in supportive attachments have been found to be related to depressive symptoms among adolescents. However, improving social supports in families and neighborhoods may alleviate distress of adolescents (Abdulmalik *et al*, 2009). In a study of 94 adolescent inpatients in China, a careful distinction was drawn between family support and peer support as predictors of depressive symptoms and posttraumatic symptoms, anxiety and conduct problems (Chen *et al.*, 2014).

2.4 Relevance of the community study of mental disorders in adolescents in Bo, Sierra Leone

In reforming the health care system after the 10 years armed conflict in Sierra Leone several plans were drawn to rehabilitate adolescents exposed to armed conflict who were at a high risk of developing mental health problems (Mental Health policy of Sierra Leone 2012). To date, only a few psychosocial approaches were used to address the mental health needs in these groups (Mental Health policy of Sierra Leone .2012). The services   identified so far, are limited and have not been able to adequately address the mental health needs of adolescent (Mental Health policy of Sierra Leone 2012). Mental health problems of adolescents have been primarily the responsibility of the Community Based Organizations, Non-Governmental Organizations and the private sector (Enabling Access to Mental Health Sierra Leone, 2012). The interventions provided by these organizations are aimed at improving or reforming adolescents through

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counseling (Enabling Access to Mental Health Sierra Leone, 2012). There are no comprehensive and coordinated services that focus on the mental health of individual, family, school, and community. The World Health Organization reports that interventions are lacking in the areas of evaluation for mental health promotion, prevention, treatment, rehabilitation of youths in Africa (WHO, 2014). Mental health in Sierra Leone receives limited attention from policymakers and funding from Government (MOHS, 2013). This provides community generated evidence about the mental of adolescents in their homes. The information obtained could be used by policymakers to appropriately plan for adolescent mental health services.

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CHAPTER THREE

METHODOLOGY

3.1 Study area and setting

Bo Town is the second largest city in Sierra Leone, it is located in the Southern region, and the southern region has four districts namely; Bo, Bonte, Moyamba, and Pujehun. Each district is sub-divided into chiefdoms; Bo is a town in one of the chiefdoms called "Kakua chiefdom". It has 68 sections with a total population of 390,000 (Koroma *et al,* 2006).

All ethnic groups in Sierra Leone are represented in Bo district with the Mende making up the largest ethnic group (Sierra Leone demographic health survey, 2010). Christians and Muslims have an almost equal proportion in the population and they positively and socially interact leading to inter religious marriages. Bo has several economic activities such as trading, diamond mining and gold mining. The indigenous occupation of the people is subsistence farming with the production of rice, coffee, cacao and oil palm.

During the ten years civil war in Sierra Leone, Bo District experienced instability in different ways when compared to other districts. Rather than suffering from displacement, Bo district was a recipient of displaced persons from the less secure parts of the country.

Health wise, the Bo Government Hospital is the only tertiary hospital in Bo district. However, within the vicinity of Bo districts there are several primary health care units, clinic, and patent medicine stores owned by individuals or the government. In a comprehensive analysis of health profile of Sierra Leone, it is estimated that 75% of the inhabitants of Bo seek health care from

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religious and traditional healers (National Health Policy Final, 2009). Although there is no formal child and adolescent mental health programme in the entire country, there are several Non-Governmental Organizations and private institutions within the district that support young people with emotional and psychosocial problems after the war ended in 2002. These organizations include Defence for Children International, Save the Children, SOS village, National youth Coalition, and the Bo children's Hospital.

3.2 Study design

This was a cross-sectional descriptive community study with interviewer administered questionnaire targeting adolescents in Bo town community seeking to find out the prevalence and correlates of psychiatric morbidity.

3.3 Study population

The total population of Bo Town in the 2012 population census was 390,000, with children and adolescents making up 49% of the total population (SLDHS, 2012). This study was conducted among adolescents 12-19 years in Bo town community.

Exclusion criteria

1. All adolescents whose age was doubtful and who did not have any record to prove that they were within the stated age of 12-19 years

2. All adolescents who did not consent to participate in the study

3. Those who could speak neither English or Creole

4. Those who were severely ill

Inclusion criteria

1. All adolescents within the age of 12-19 years

3.4 Sample size determination

Studies conducted in sub-Saharan Africa estimate the prevalence of adolescent mental disorders to range from 15-30%. There is no known study in Sierra Leone to provide prevalence of psychiatric disorders in adolescents. Therefore, the determined prevalence of psychiatric problems was estimated from the prevalence of specific mental/behavioral disorders of adolescent in West Africa sub- region. The sample size was determined by the single proportion sample size determination using the formula:

$n = z^2pq/d^2$ Kish (1965)

Z = standard normal deviation corresponding to 5% level of significant (1.96)

P= Prevalence outcome of previous studies in sub-Saharan Africa is (15-20%) taking the upper limit of 20%

q= 1-p

d= level of precision (5%) = 0.05

Thus, $n = (1.96^2*0.2*0.8)/0.05^2 = (3.84* 0.2*0.8)/ 0.0025$

= 245

Anticipating 70% non-respondent rate, final sample size =

n_f = 245/0.7 = 350

3.4.1 power of the study

The power of the study was calculated from substitution of the calculated sample size into

the equation $n = \frac{(Z\alpha+Z\beta)^2}{d^2} \, pq$

p=prevalence determined from the study=0.164

q= is the compliment of 1-p

where α= level of error =0.05

Reading from the statistical table, β=0.5645=0.7123

Therefore, the power of the study =71.23%

3.5 Sampling technique

The study was conducted using a multi-stage random sampling method; that involved three stages as follows:

Stage 1- selection of ward

One out of the 6 wards in Bo was selected by the table of random number.

Stage 2-selection of houses

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According to the 2012 survey conducted by Sierra Leone Demographic and Health Survey (SLDHS), the selected ward had a total of 2,125 houses. This serves as the sampling frame for the study. In order to select houses from this ward, a sample interval was derived by dividing the total number of houses in the sample frame by the sample size (350). Hence, the first house on the sample frame and every 6th   house were recruited into the study. All the selected houses were marked before the interview was done in order to avoid double counting.

Stage 3 Selection of adolescents

One adolescent in every selected house was randomly recruited into the study.

See Figure 3.1 below.
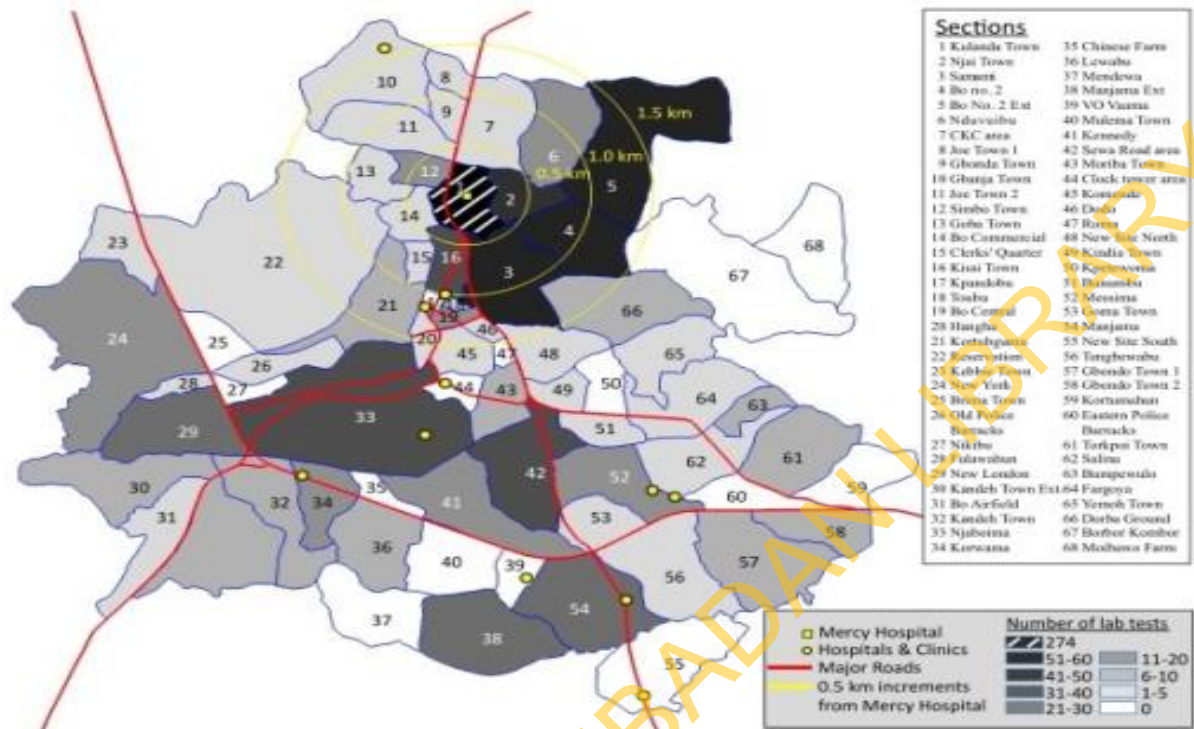
Stage 1
- *selection of cluster*
- One out of the 6 cluster in Bo was selected

Stage 2
- *-selection of houses*
- the selected ward had a total of 2,125 houses(SLDHS
- dividing the total number of houses by the sample size (350)
- Every 6th House

Stage 3
- *Selection of adolescents*
- All adolescents in every selected house were recruited into the study.

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Figure 3.1: Outline of Sampling Technique

3.6 The instruments

The following instruments were used to collect data, in this study

1. Socio-demographic Questionnaire (Omigbodun et al., 2008)

2. The School Health Questionnaire

3. Diagnostic Predictive Scale for Youths

1**. Socio demographic Questionnaire by (Omigbodun *et al* 2008**) - This is a 40-items questionnaire designed to obtain information about respondent's personal, family and school life (Onigbodun *et al,* 2008). It is written in both Yoruba language (one of the third most common native languages in Nigeria) and English language.

2. The School Health Questionnaire developed by the World Health Organization and the Center for Disease Control for Global School Based Health Surveillance System. This is an instrument that has a set of questions that can be used to obtain socio-demographic and health data of the adolescents.

3. Diagnostic Predictive Scale (DPS) is a short-form of screening instrument derived from the Diagnostic Interview Schedule for Children (DISC) which is an assessment tool that is based on DSM–IV diagnostic criteria. The DPS is a self-reporting instrument designed to identify youths aged 9-18 years who are likely to meet diagnostic criteria for one or more mental disorders (Lucas *et al,* 2009) and it is often used in school settings. However, due to its flexibility it can be

used in community surveys. Its adaptability and validity has been tested in previous studies for adolescents in African and Asian settings (Omigbodun *et al* 1996, Ahmad *et al.* 2007). The instrument has 77 items in the inventory that refer to the past 12 month's cluster of symptoms of psychiatric problems. The instrument has up to 17 sections, each with 3 to 15 questions. The questions included in the screening ask about the frequency of behaviour and feelings related to anxiety disorders (simple phobia, social phobia, agoraphobia, obsessive compulsive disorder, and separation anxiety disorder), eating disorders, major depressive disorder, ADHD, oppositional defiant disorder, conduct disorder, suicidal ideation, alcohol and drug use, and general health problems.

3.6.1 Translation of the instrument

The questionnaire was translated into the common spoken Creole language in Sierra Leone for respondents to comprehend its content and respond well to the questions. It was further back translated into English to ensure that concepts in translated version were not missing.

3.7 Ethical consideration

 Ethical approval was sort from the Ethical and Scientific Review Committee in Sierra Leone and Ministry of Health and Sanitation Sierra Leone. The local authorities were contacted for permission while assent was taken from the adolescents. Both verbal and written consent were obtained from their parents or guardian. Detailed explanation was provided to family heads regarding the purpose, methods of the study, confidentiality issues and the shared benefits of the research for both the adolescent and researcher.

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3.8 Study procedure

Participants were selected through the multi-stage technique described above; consent was obtained from the participants' parents/caregivers. Research assistants that were fluent in both English and Creole were employed in data collection. The assistants had training in the use of the instruments. The instruments were administered in the local dialect, Creole by both the research assistants and the investigator. Each interview took about 20-30 minutes. An average of 10 interviews was done each day. The data was collected from April 2015 to June 2015, from the hours of 4: 00 pm to 6: 30pm when parents and guardian were expected at home. During the weekends and the interviews were done between 10:00am to 6; 00 pm. The participants were interviewed alone, in a private space.

3. 9 Data management

Data collected was entered and analyzed using the Statistical Package for Social Sciences (SPSS) Version 20. Socio-demographic characteristics of the respondents were presented in frequencies and percentages. Evaluation of adolescents' responses on dietary behaviour, sexual and traumatic experiences as well as protective factors were examined and presented in frequencies and percentages. In addition, the prevalence and patterns of mental health symptoms and specific disorders among respondents were presented in frequencies and percentages. Also association between specific mental disorders and selected variables (socio-demographic variables, family and school related information, dietary behaviours, sexual and traumatic experiences as well as protective factors) were examined using the Chi square statistics at a significant level of 5%. Bivariate analysis was computed to test for association between psychiatric diagnosis and socio

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demographic characteristics. Binary logistic regression was done for all significant variables from bivariate, 95% confidence interval with 0.05 significance was utilized in analysis.

Analysis of mental health morbidity

Questions assessing the presence of mental disorders such as Depression, Oppositional Defiant Disorder, Conduct Disorders were rated as 'yes' (positive response) and 'no' (negative response). A score of 1 was assigned to every positive response and 0 to every negative response. Hence psychiatric diagnoses were made as follows:

Probable Depressive Disorder

There were 6 items in the questionnaire assessing the presence of depressive symptoms in respondents. A score of 5 and above was indicative of probable depression while any score less than 5 implied an absence of probable depression in the respondent.

Probable oppositional Defiant Disorder (ODD)

A total of 7 items assessed the presences of ODD in the respondents. A score of 4 and above was indicative of probable ODD while any score below 4 implied an absence of ODD.

Probable Conduct Disorder (CD)

A total of seven items assessed the presence of CD in respondents. A score of 3 and above was indicative of probable CD while a score lower than 3 implied the absence of probable CD.

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CHAPTER FOUR

RESULTS

This chapter presents findings on the prevalence and correlates of mental health symptoms and mental disorders among 341 adolescents in Bo, Sierra Leone in four sections. Section one depicts socio-demographic characteristics of the adolescents in this study, apportioned into personal, family and school information. Section two describes dietary, sexual, traumatic and protective factors in the lives of the adolescents. Section three provides information on the prevalence and pattern of mental health symptoms and some specific mental disorders. The last section (section four) presents the correlates of some specific mental disorders in the adolescents.

Section 1

4.1. Socio-demographic characteristics of the adolescents

4.1.1. Age, sex and religion of the adolescents

The socio-demographic characteristics of the participants are shown in Table 1 below. The age of the adolescents in this study ranged from 12-19 years with a mean of 15.5($\pm$2.2) years. More than 60% of the adolescents were male and over half (52%) reported that they were Christians. Majority (92.2%) of the respondents agreed that the teaching of their religion influenced their behaviour very much.

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Table 1: Age sex and religion of the adolescents

N=341

Variables	Frequency (n)	Percentage (%)
Age (years)	110	32.4
12-14	113	33.2
15-16	117	34.4
17-19	340	100
Total		
Sex	211	62.4
Male	127	37.6
Female	338	100
Total		
Religion		
Christianity	178	52.5
Islam	161	47.5
Total	339	100
Influence of religion on behaviour		
Just a little /not at all		
Very much/much	26	7.8
Total	308	92.2
	334	100

4.1.2. Family related information of the respondents

Tables' 2a & 2b describe the family information of the respondents. Over half (53.2%) of the adolescents were from monogamous families and 309 (91.4%) of them affirmed that they had siblings. Over half (53.1%) of the adolescents reported that their parents did not attain upto secondary school education and 137(41%) of them were living with their parents. Over half (59.4%) of the adolescents stated that their parents/guardians lived in rented apartments. Just over a quarter (26%) of the adolescents reported that they were engaged in some form of activity to earn money while 105 (32.2%) of them reported they were beaten more than once by their parents or guardians (See Tables 2a & 2b).

Table 2a: Family related information of the respondents
N=341

Variables	Frequency (n)	Percentage (%)
Family type		
Monogamous	181	53.2
Polygamous	159	46.8
Total	340	100
Marital /status of parents		
Married	238	70.2
Separated/divorced	64	18.9
Father dead	21	6.2
Mother dead	6	1.8
Both parents dead	10	2.9
Total	339	100
Do you have siblings?		
Yes	309	91.4
No	29	8.6
Total	338	100
Educational level father		
No formal education/Koranic/primary	165	53.1
Secondary school	48	14.5
Post secondary (non-university)	22	6.4
University degree and above	76	20.
I don't know	20	6
Total	331	100
Educational level mother		
No formal education/Koranic/primary	195	60.9
Secondary education	66	17.8
Post-secondary (non-university)	10	3
University degree and above	39	11.1
I don't know	24	7.2
Total	334	100

Table 2b: Family related information of the respondents

Variables	Frequency (n)	Percentage (%)
Where are your parents staying?		
Bo	266	78.7
Elsewhere	68	20.1
Don't know parent/s whereabouts	4	1.2
Total	338	100
Who you live with?		
Both Parents	137	41
Mother only	70	21
Father only	24	7.2
Grand parents	21	3
Grand mother	13	3.9
Grand father	6	1.8
Other	63	1 6.6
Total	334	100
Kind of house parents/guardian live in		
Owner occupied	134	40.6
Rented house	196	59.4
Total	330	100
Do you do any kind of work to earn money?		
Yes	88	26
No	250	74
Total	338	100
In the last 30 days		
How many times have you been beaten by parent/guardian?		
Never	193	64.8
1 time and above	105	35.2
Total	298	100

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4.1.3. School related information of respondents

Table 3 displays school related information of the respondents. Over three quarters (87.7%) of the adolescents reported that they had 'ever been to school' and over two-thirds (69.1%) were still in school. More than a quarter (26.6%) of the respondents reported that they dropped out of school at primary level and 95.5% of those who had left school stated that they would like to return to school. A little above one fifth (21%) stated that they were described as backward or slow to learn while in school. (See Table 3)

Table 3: School related information of respondents

N=341

Variables	Frequency (n)	Percentage (%)
Ever been to school		
Yes	305	89.7
No	35	10.3
Total	340	100
Currently in school		
Yes	228	69.9
No	98	30.1
Total	336	100
Level stopped or dropped out of school		
Primary	69	26.6
JSS/SSS	190	73.4
Total	339	100
Would you like to go back to school?		
Yes	231	95.5
No	11	4.5
Total	242	100
Do you like school?		
Yes	225	72.6
No	85	27.4
Total	310	100
Ever described as backward/slow to learn		
Yes	70	21
No	263	79
Total	333	100

Section 2

4.2. Dietary, sexual, traumatic events and protective factors in the lives of the adolescents

4.2.1 Dietary, drug and alcohol use and sexual intercourse

Majority (91%) of the adolescents reported that they have 2 or more meals per day. With respect to the last 30 days preceding the time of questionnaire administration, more than half (58.2%) of the adolescents reported that they never went hungry and over three-quarters (92.3%) stated that they did not take any drink containing alcohol.

Majority (95.2%, 93.8%) of the adolescents reported that they had never used any psychoactive substance nor smoked cigarettes in their lifetime. One out of every 25 (4%) adolescents admitted that they tried their first cigarette when they were between ages 10-19 years.

Less than half of the adolescents affirmed that (42.9%) have had sexual intercourse. About half (49.7%) of them who had sexual intercourse admitted that they were forced into the sexual act. (See Table 4)

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Table 4: Dietary factors, drug and alcohol use and sexual intercourse

N=341

Variables	Frequency	Percentage
Number of times you went hungry in the last 30 days		
Never/rarely	196	58.2
Sometime	122	36
Most of the time	10	3
Always	9	2.8
Total	337	100
Number of meals in a day		
1 meal a day	30	9
2 meals a day	150	45.2
3 meals a day	152	45.8
Total	302	100
How many times used psychoactive drugs in your life time		
0 times	320	95.2
More than one time	16	4.8
Total	336	100
Alcohol consumption in last in your life time		
0 times	312	92.3
More than one days	26	7.7
Total	338	100
Age when you first tried a cigarette		
Never smoked	304	93.8
7-9 years	7	2.2
10-19 years	13	4.0
Total	324	100
Ever had sexual intercourse		
Yes	145	42.9
No	193	57.1
Total	338	100
Age at first sexual intercourse		
Never had sexual intercourse	177	55.0
11-14 years	25	7.8
15 years and above	120	37.2
Total	332	100
Has an adult ever forced you to have sexual intercourse with them?		
Yes	165	49.7
No	167	50.3
Total	332	100

4.2.2 Major life events

In Table 5 below, 141 of the adolescents (44.8%) admitted that someone close to them had died. Ninety-three (28.1%) reported that they had been in a situation where they were afraid they would lose their lives and 81 (24.2%) reported that they had experienced a natural disaster such as fire or flood in their lifetime. However, 270 (79.9%) admitted that they were afraid of contracting the Ebola virus disease while 20 adolescents (5%) were diagnosed with Ebola virus disease.

Of the 97 (29%) adolescents who reported knowing someone who was infected by the Ebola virus disease, 17 (11.7%) of them said the persons were family members while 54 (37.2%) of them said the persons were friends. (See Table 5)

Table 5: Major life events

N=341

Variables	Frequency(n)	Percentage (%)
Has anyone close to you died		
Yes	141	44.8
No	174	55.2
Total	315	100
Ever been in a situation when you were afraid you would lose your life or severely harmed		
Yes	93	28.1
No	238	71.9
Total	331	100
Ever experienced natural disaster		
Yes	81	24.2
No	254	75.8
Total	335	100
Has anyone you know had Ebola virus disease		
Yes	97	29
No	238	71
Total	335	100
Who was the person		
Family	17	11.7
Friend	54	37.2
Other	74	51.1
Total	145	100
What happened to the person		
Dead	29	11.7
Survived	74	29.8
Don't know	145	58.5
Total	348	100
Ever afraid you would catch the Ebola virus disease		
Yes	270	79.9
No	68	20.1
Total	338	100
Have you ever diagnosed with the Ebola virus disease		
Yes	17	5
No	320	95
Total	337	100

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4.2.3 Protective factors

Two hundred and thirty six (76%) said in the last 30 days their parents/guardian feels worried or concern about the way they feel and act and (70%) said their parents/guardian understand their problems and worries (See Table 6).

Table 6: Protective factors

N=341

Variables	Frequency	Percentage
In past 30 days how often did your parents/guardian understand your problems and worries?		
Never/rarely	101	30.0
Others	236	70.0
Total	337	100
How often did your parents/guardian feel worried or concerned about the way you were feeling?		
A lot/some	253	76.0
Hardly/not all	80	24.0
Total	333	100
How often did your parents/guardian get annoyed /upset with you because of the way you were feeling or acting?		
A lot/some	224	66.7
Hardly/not at all	112	33.3
Total	336	100
How often did the way you were feeling or acting make it difficult to do school work or cause problems with your grades?		
A lot/some	237	72.0
Hardly/not at all	92	28.0
Total	329	100

Section 3

4.3. Prevalence and pattern of mental health symptoms and specific disorders

4.3.1 Encopresis and Enuresis Symptoms

With respect to the last 1 year time before questionnaire was administration, (88.5%, 95%) of the respondents answered 'no' to the questions: "have you wet your bed at night?" and "have you passed faeces on yourself?" respectively (see Table 7).

Table 7: **Encopresis and Enuresis Symptoms**

N=341

Variables	Yes (%)	No (%)
In the last one year have you:		
Wet your bed at night	32(9.4)	308(90.6)
Wet your pant during the day	39(11.5)	301(88.5)
Pass faeces on your self	17(5)	320(95)

4.3.2 Depressive symptoms

Two hundred and fourteen (62.9%) of the adolescents reported that there were times when nothing made them happy. Ten (12%) of them had thought seriously about killing themselves and 152 (45.6%) said there were times when they could not think clearly/fast as usual (See Table 8).

Table 8: Depressive Symptoms N=341

Variables	Yes (%)	No (%)
In the last 1 year, has there been time:		
When nothing made you happy	214(62.9)	126(37.1)
You had less energy than you usually do	197(58.6)	139(41.4)
When you felt you could not do anything well or that you were not as good looking/smart as others	141(42)	195(58)
Seriously thought of killing self	42(12.7)	296(87.3)
Doing little things made you feel really tired	227(68.2)	106(31.8)
You could not think clearly/fast as usual	152(45.60	181(54.4)

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4.3.3 Oppositional Defiant Symptoms

One hundred and twenty-four (36.7%) of the respondents said they had 'carried out revenge' in the last one-year, and 167 (50.5%) said they were 'easily annoyed/irritable'. One hundred and fifty-five (47.0%) of the respondents said 'yes' to the question "Have you done bad things to people on purpose?" and 156 (46.3%) of had done things just to annoy people/make them angry. (See Table 9)

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Table 9: Oppositional Defiant Symptoms

N=341

Variable	Yes (%)	No(%)
In the last 1 year, has there been time:		
You carried out revenge	124(36.7)	214(63.3)
Refused to do what your parents /teacher told you to do	93(27.4)	244(72.4)
You were easily annoyed/irritable	167(50.5)	164(49.5)
You did bad things to people on purpose	155(47)	175(53)
You blamed someone else for your mistakes or for things you did that you should not have done	123(36.4)	214(63.6)
You did things just to annoy people/make them angry	156(46.3)	181(53.7)
People complained because you were swearing or used dirty language	135(41.2)	193(58.8)

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4.3.4 Conduct Symptoms

Fifty-six of the respondents (16.7%) admitted they had stolen from a shop when they thought no one was watching and 43 (13.3%) had snatched a purse or jewellery. One hundred and forty-nine, (43.8%) had been cruel to an animal or hurt it on purpose and 23 (6.8%) affirmed that they had broken into a house, building or shop in the last one year. (See Table 10)

Table 10: Conduct symptoms

N=341

Variable	Yes (%)	No (%)
In the last 1 year, has there been time:		
You stole from a shop when you thought no one was looking	56(16.7)	279(83.3)
You lied to get money/something else you wanted	124(42)	196(58)
You snatched someone else purse or Jewellery	43(13.3)	280(86.7)
You broke or spoilt some place on purpose	38(11.4)	295(88.6)
You stole from anyone when they were not around/not watching	60(17.6)	281(82.4)
You were physically cruel to an animal and hurt it on purpose	149(43.8)	191(56.2)
You broke into a house, building or car	23(6.8)	315(93.2)

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4.3.5 Prevalence of Probable Depressive Disorder, Probable Oppositional Defiant Disorder and Probable Conduct Disorder

The prevalence of adolescents with probable depression, oppositional defiant disorder and conduct disorder are shown in table 11 below. Adolescents with five or more symptoms of depression, four or more symptoms of oppositional defiant disorder and 3 or more symptoms of conduct disorder were categorized as having probable depression, probable oppositional defiant disorder and probable conduct disorder respectively. Fifty-six (16.4%) of the adolescents had probable depressive disorder, 128 (37.5%) had probable oppositional defiant disorder and 71 (20.8%) had probable conduct disorder. One hundred and fifty nine (46.6%) had one or more diagnosis (See Table 11).

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Table 11: **Prevalence of Probable depressive Disorder, Probable Oppositional Defiant Disorder and Probable Conduct Disorder**

N=341

Variables	Frequency	Percentage
Depression		
No Depression <5	285	83.6
Yes depression ≥5	56	16.4
Total	341	100
Oppositional defiant		
No ODS<4	213	62.5
Yes ODS ≥4	128	37.5
Total	341	100
Conduct symptoms		
No conduct symptoms <3	270	79.2
Yes conduct symptoms ≥3	71	20.8
Total	341	100
Prevalence of diagnosis (depression/ODS/Conduct)		
No Diagnosis	182	53.4
1 Diagnosis	84	24.6
2 Diagnoses	54	15.8
3 Diagnoses	21	6.2
Total	341	100

4.3.6 Association between Probable Depressive Disorder, Probable Oppositional Defiant Disorder and Probable Conduct Disorder

Among adolescents with probable depressive disorder, a significantly higher proportion had probable oppositional defiant disorder compared to those who did not have probable oppositional defiant disorder (29.7% vs. 8.5%; p<0.001). Similarly, among adolescents with probable depressive disorder, the proportion of those who had conduct symptoms were significantly higher than those who did not have probable conduct disorder (36.6% vs. 11.1%; p<0.001). (See table 12)

Table 12: Association between probable depressions, oppositional defiant and conduct disorder N=341

	Probable Depressive Disorder				
Variables	**Non (%)**	**Yes n (%)**	**Total**	**X^2**	**p**
Probable Oppositional Defiant Disorder					
No	195(91.5)	18(8.5)	213(100)	26.272	**<0.001**
Yes	90(70.3)	38(29.7)	128(100)		
Probable Conduct Disorder					
No	240(88.9)	30(11.1)	270(100)	26.651	**<0.001**
Yes	45(63.4)	26(36.6)	71(100)		

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Section 4

4.4. Correlates of some Specific Mental Disorders in the Adolescents

4.4.1 Correlates of Probable Depressive Disorder

Only the statistically significant correlates of probable depressive disorders were reported.

Respondents who were from polygamous family had a higher percentage (22.6%) of probable depressive disorder compared to those from monogamous families (11.0%), and this was significant (p=0.0040. Those who were described as slow to learn or backward had a higher proportion (27.1%) of probable depressive disorder compared to those who were not described as slow or backward (13.4%) (p=0.019). The use of alcohol was found to be associated with probable depressive disorder (34.6% vs. 14.7%; p=0.008). Respondents who experienced any natural disaster had higher rate (30.9%) of probable depression compared to those who had never experienced a natural disaster (11.4%), (p<0.001). A higher proportion of those whose reported that their parents never or rarely understood their problems and worries had probable depression compared to those who reported their parents understood their problems and worries (26.7% vs. 11.9%), p=0.001. (See Table 13 for statically significant correlates of probable depression)

Table13: Correlates of Probable Depression
N=341

Variables	Probable Depression				
	Yes n (%)	No n (%)	Total	X^2	P
Family type					
Monogamous	20(11.0)	161(89.0)	181(100)	8.267	**0.004**
Polygamous	36(22.6)	123(77.4)	159(100)		
Marital status of parent					
Married	31(13.0)	207(87.0)	238(100)	7.487	**0.024**
Separated	17(26.6)	47(73.4)	64(100)		
Father/mother/both dead	8(21.6)	29(78.4)	37(100)		
Do you like your family					
Yes	45(14.3)	269(85.7)	314(100)	12.228	**<0.001**
No	10(41.7)	14(58.3)	24(100)		
Educational level of mother					
No formal education/Koranic	31(23.5)	101(76.5)	132(100)	9.195	**0.002**
Others	19(10.7)	159(89.3)	178(100)		
Type of house lived in					
Owner occupied	11(8.2)	123(91.8)	134(100)	12.753	**0.002**
Rented house	43(21.9)	153(78.1)	196(100)		
Beaten by parent/guardian					
Never	23(11.9)	170(88.1)	193(100)	7.117	**0.008**
1 time and above	25(23.8)	80(76.2)	105(100)		
Are you currently in school					
Yes	43(18.9)	185(81.1)	228(100)	3.772	0.052
No	10(10.2)	88(89.8)	98(100)		
Do you like your school					
Yes	44(19.6)	181(80.4)	225(100)	14.447	**<0.001**
No	2(2.4)	83(97.6)	85(100)		
Described as backward or slow					
Yes	19(27.1)	51(72.9)	70(100)		
No	35(13.4)	227(86.6)	262(100)	7.919	**0.019**
Number of meals in a day					
1 meal a day	14(46.7)	16(53.3)	30(100)	22.823	**<0.001**
2 meals a day	22(14.7)	128(85.3)	150(100)		
3 meals a day	18(11.8)	134(88.2)	152(100)		
Alcohol use					
0 times	46(14.7)	266(85.3)	312(100)	6.956	**0.008**
Others	9(34.6)	17(65.4)	26(100)		
Smoke cigarette					
Never smoked	45(14.8)	259(85.2)	304(100)	13.464	**0.001**
7-9 years	4(57.1)	3(42.9)	7(100)		
12-19 years (Others)	5(38.5)	8(61.5)	13(100)		
Experienced a natural disaster such as flood or fire					
Yes	25(30.9)	56(69.1)	81(100)	17.178	
No	29(11.4)	225(88.6)	254(100)		**<0.001**
In past 30 days parents/guardian often understand my problems and worries					
Never/rarely	27(26.7)	74(73.3)	101(100)	11.449	**0.001**
Others	28(11.9)	208(88.1)	236(100)		

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4.4.2. Correlates of Probable Oppositional Defiant Disorder
Only the statistically significant correlates of probable oppositional disorders were reported.

Female respondents had a higher proportion of probable oppositional defiant disorder compared to males (44.9% vs. 33.2%; p=0.031). Similarly 52.9% of the respondents who were ever described as 'slow or backward had probable oppositional defiant disorder compared to those never described as 'slow to backward or learn' (32.5%), (p=0.006). Those who experienced a natural disaster had a higher proportion (58.0%) with probable oppositional defiant disorder compared to those who had never experienced a natural disaster (31.5%) (p<0.0010). (See Table for statically significant correlates of probable oppositional defiant disorder).

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Table 14: Correlates of Probable Oppositional Defiant Disorder
       N=341

Probable Oppositional Defiant Disorder					
Variables	Yes n (%)	No n (%)	Total	X^2	p
Gender					
Male	70(33.2)	141(66.8)	211(100)	4.632	**0.031**
Female	57(44.9)	70(55.1)	127(100)		
Educational level of mother					
No formal education/Koranic	62(47.0)	70(53.0)	132(100)	8.954	**0.003**
Others	54(30.3)	124(69.7)	178(100)		
Beaten by parent/guardian					
Never	45(23.3)	148(76.7)	193(100)	34.099	**<0.001**
1 time and above	60(57.1)	45(42.9)	105(100)		
Are you currently in school					
Yes	98(43.0)	130(57.0)	228(100)	8.906	**0.003**
No	25(25.5)	73(74.5)	98(100)		
Do you like your school					
Yes	96(42.7)	129(57.3)	225(100)	18.493	**<0.001**
No	14(16.5)	71(83.5)	85(100)		
Ever described as backward or slow to learn					
Yes	37(52.9)	33(47.1)	70(100)	10.105	**0.006**
No	86(32.5)	177(67.5)	262(100)		
How many meals do you have in a day					
1 meal a day	20(66.7)	10(33.3)	30(100)	11.531	**0.003**
2 meals a day	51(34.0)	99(66.0)	150(100)		
3 meals a day	56(36.8)	96(63.2)	152(100)		
Have you ever experienced a natural disaster such as flood or fire?					
Yes	47(58.0)	34(42.0)	81(100)	18.362	**<0.001**
No	80(31.5)	174(68.5)	254(100)		
In past 30 days how often did your parents/guardian understand your problems and worries?					
Never/rarely	49(48.5)	52(51.5)	101(100)	7.203	**0.007**
Others	78(33.1)	158(66.9)	236(100)		

4.4.3. Correlates of Probable Conduct Disorder

Only the statistically significant correlates of probable conduct disorders were reported. Respondents who practiced Islam religion had higher rates of probable conduct disorder compared to those who practiced Christianity (28.6% vs. 13.5%; p=0.001). Adolescents who reported they did not like their family had a higher rate of (37.5%) of conduct symptoms compared to those who liked their family (19.7%; p=0.040). Among adolescents with probable conduct disorder, 21.8% of them reported that they did not like their school compared to 7.1% who said they liked their school (p=0.002). (See Table 15 for statistically significant correlates of probable conduct disorders)

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Table 15: Correlates of Probable Conduct Disorder
N=341

| Variables | Probable conduct disorder | | | | |
	Yes n (%)	No n (%)	Total	X^2	p
Type of Religion					
Christianity	24(13.5)	154(86.5)	161 (100)	11.746	**0.001**
Islam	46(28.6)	115(71.4)	178 (100)		
How religion affects you					
Very much	57(18.5)	251(81.5)	308(100)	5.954	**0.015**
Just a little	10(38.5)	16(61.5)	26(100)		
Marital status					
Married	35(14.7)	203(85.3)	238(100)	19.138	**<0.001**
Separated	24(37.5)	40(62.5)	64(100)		
Father/mother/both dead	12(32.4)	25(67.6)	37(100)		
Do you like your family					
Yes	62(19.7)	252(80.3)	314(100)	4.236	**0.040**
No	9(37.5)	15(62.5)	24(100)		
Beaten by parent/guardian					
Never	30(15.5)	163(84.5)	193(100)	6.244	**0.012**
1 time and above	29(27.6)	76(72.4)	105(100)		
Are you currently in school					
Yes	54(23.7)	174(76.3)	228(100)	4.557	**0.033**
No	13(13.3)	85(86.7)	98(100)		
do you like your school					
Yes	49(21.8)	176(78.2)	225(100)	9.158	**0.002**
No	6(7.1)	79(92.9)	85(100)		
Alcohol use					
0 times	59(18.9)	253(81.1)	312(100)	5.647	**0.017**
Others	10(38.5)	16(61.5)	26(100)		
Have ever had sexual intercourse					
Yes	23(15.9)	122(84.1)	145(100)	4.049	**0.044**
No	48(24.9)	145(75.1)	193(100)		
In past 30 days how often did your parents/guardian understand your problems and worries					
Never/rarely	32(31.7)	69(68.3)	101(100)	10.434	**0.001**
Others	38(16.1)	198(83.9)	236(100)		
How often did your parents/guardian feel worried or concerned about the way you were feeling					
A lot/some	42(16.6)	211(83.4)	253(100)	10.882	**0.001**
Hardly/not all	27(33.8)	53(66.2)	80(100)		

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4.4.4: Predictors of Probable Depressive Disorder, Probable Oppositional Defiant Disorder and Probable Conduct Disorder

A binary logistic regression was computed to determine the predictors of probable depression; probable oppositional defiant disorder and probable conduct disorder. Respondents who had two or more meals a day were less likely to have probable depression. Adolescents whose parents were separated were more likely than those whose parents are married to have conduct symptoms and respondents who had experienced any natural disaster were more likely to have conduct symptoms (See Table 16).

Table 16: Predictors of probable depression, oppositional defiant disorder and conduct disorder

N=341

Variables	OR	S.E.	p	95% C.I.	
				Lower	Upper
Probable depression					
How many meals do you have in a day					
1 meal a day*					
2 meals a day	0.162	0.842	**0.030**	0.031	0.841
3 meals a day	0.162	0.801	**0.023**	0.034	0.777
Probable oppositional defiant disorder					
Beaten by parent/guardian					
Never*					
1 time and above	3.637	0.352	**<0.001**	1.825	7.250
Have you ever experienced a natural disaster such as flood or fire					
Yes*					
No	0.392	0.383	**0.015**	0.185	0.831
Probable conduct disorder					
Marital status					
Married*					
Separated	3.087	0.443	**0.011**	1.295	7.357
Father/mother/both dead	1.422	0.61	0.564	0.43	4.703
Have you ever experienced a natural disaster such as flood or fire					
Yes*					
No	0.435	0.418	**0.046**	0.192	0.986

*Reference categories

4.4.5 Binary logistic regression for predictors of probable depression, oppositional defiant disorder and conduct disorder

Adolescents who had probable oppositional defiant disorder were more likely than those who did not have this disorder to have probable depression (OR=1.161, 95% CI; 1.642:6.206). Respondents who had probable conduct disorder were more likely than those who did not have probable conduct disorder to have probable depression (OR= 1.057, 95% CI; 1.474:5.617).(See Table 17)

Table 17: Binary logistic regression for predictors of probable depression, oppositional defiant and conduct disorder
N=341

Variables	OR	SE	P value	95% CI	
				Lower	Upper
ODS					
No*					
Yes	1.161	0.339	**0.001**	1.642	6.206
Conduct symptoms					
No*					
Yes	1.057	0.341	**0.002**	1.474	5.617

*Reference categories

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter presents the discussion of findings from a community-based study of the prevalence and correlates of mental health symptoms and specific mental disorders among adolescents in Bo, Sierra Leone.

In Sierra Leone, school and community-based studies show disparity in the distribution of adolescents across the different age groups. For instance, a community-based study that investigated the prevalence of substance abuse and its correlates among youth aged 10-20 years in southern Sierra Leone, youth aged 17-20 years old were of a greater proportion in the study sample when compared to those who were 10-16 years old (Kaitibi and Amela, 2006). In Makeni, northern Sierra Leone, a cross sectional study was conducted among public school students to assess the knowledge of youths on HIV/AIDs. The age range of students was 9-25 years old with majority of the participants aged 9-14 years old (Kongui *et al*, 2003). The results of the present study, conducted in southern Sierra Leone, had adolescents evenly distributed across the various age groups of adolescence. Early adolescents (12-14 years) consisted of (32.4% of the study sample), middle adolescents (15-16 years) were (33.2%), and late adolescents (17-19 years) were also about one third ((34.4%). The age spread of this community study of adolescents is in keeping with the demographic trend reported by the Sierra Leone National Health Survey (SLNHS) (2008). This report had noted that youths in Bo community and indeed in the whole of southern Sierra Leone were evenly distributed across age groups.

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The 2008 population survey in Sierra Leone revealed that the sex ratio in the country was equal (SLNHS, 2008, Central Intelligence Agency, 2015). However, in the current study, the male to female ratio of participants was approximately 2:1. A possible reason for this may be the fact that the interview was conducted between the hours of 4pm to 6pm, a time when girls and women may have been in the market trying to sell their goods or involved in other house hold chores. Studies have shown that the majority of the women in Sierra Leone are traders and often times, female children are more likely to accompany their mothers to the market than the male children.

A large proportion of participants in this study affirmed that they were in school and majority of those who had left school reported they had completed six years of primary education. The current level of youth literacy in the country reported by the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2012) was 62.72%. It may also be a reflection of the disparity in the effectiveness of the educational system in regions of the country. Studies suggest that the educational system in the southern region is more effective when compared to other regions of the country (National Survey, 2012).

A large proportion of the participants in this study reported that they lived with persons other than their biological parents. In Sierra Leone, as with other African countries, it is common practice for parents to send their children to live with other members of the extended family who are considered to be financially more buoyant in order to cut down on the cost of caring for the child. This practice is called extended fostering and is reported in most parts of West Africa.

5.1.1 The prevalence and pattern probable mental disorders among the adolescents

Approximately one in every 6 adolescents (16.4%) in this study met the criteria for probable depression in the last one year preceding the time of questionnaire administration. Although studies that estimate the prevalence of depression among adolescents in Sierra Leone do not exist, a comparison of the findings of this study with findings in other parts of West Africa showed a higher prevalence rate of depression (16.4% Vs 6-12%). For instance, studies from Southwest Nigeria reveal a prevalence of 6-12% for depression (Adewuya, Ola and Aloba, 2007, Omigbodun and Olatawura, 2008, Adeniyi, Okafor and Adeniyi, 2011). This variation may be attributed to the location of the study, the methodology employed, and the age of participants in the study (Rey, Bella and Jing, 2012). The high rates of depression recorded in the current study may be as a result of the recent epidemic of the Ebola Virus Disease in the country that led to the death of thousands of people, the restriction of movement of over half of the population of Sierra Leone and also a pervasive fear of contracting the Ebola Virus Disease among the people. This fear of contracting Ebola Virus disease was reported by majority of the adolescents.

Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD) are behavioural disorders. The 12-month prevalence rate of probable CD among adolescents in this study was 37.5 %. This finding is similar to the findings of 36% prevalence rate of CD among senior secondary school adolescents in Nigeria (**Omotunde and Philomena, 2014**). Studies from developed countries report a much lower prevalence of conduct disorders ranging from 1.5-14% among children and adolescents. The high prevalence of CD recorded in this study and other parts of Africa may be as a result of the high rate of unemployment in Sierra Leone, as well as other African countries.

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Furthermore, the Ebola Virus crisis in Sierra Leone had stiffened business activities, which would have made it more difficult for the adolescents to cope with their financial responsibilities. Another possible reason for this high prevalence may be the absence of behavioural intervention centres for adolescents with challenging behaviour. Youths who are detained in police custody for misconduct and other related criminal activities and are sent back to the community after a period of time without any behavioural intervention.

The 12-month prevalence rate of ODD among adolescents in this study was 22.0%. This is in keeping with studies from other parts of the world that report a prevalence of 20% for ODD (Steiner and Remsing, 2007). This may be a reflection of the typical nature of the adolescent period, which is characterized by the desire to gain peer approval and a subtle resentment of parental authority.

The results of this study show a steady pattern of co-morbidity. About one out of every five (22.0%) of adolescents had more than one diagnosis. For instance, among adolescents with probable depression, a significantly higher proportion had probable oppositional defiant disorder compared to those who did not have oppositional defiant disorder. Among adolescents with probable depression, the proportion of those who had conduct symptoms were significantly higher than those who did not have conduct symptoms Mental disorders are characterized by a high rate of co-morbidity, in that individuals may present with more than one disorder at a given time (Kessler *et al*., 1998).

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5.1.2 Correlates of mental disorders among adolescents in Bo community

In this study, a wide range of psychosocial factors such as polygamous home setting, physical abuse, separation of parents, experiencing a natural disaster, adolescents' perception of parents' misunderstanding of their problems and being described as backward or slow to learn were significantly associated with depression. Alcohol use and tobacco were also significantly associated with depression while socio-economic deprivation, as evidenced by the number of meals an adolescent had access to, was a significant predictor of depression. These associations have been reported by studies in other parts of the world. Similarly, in a study carried out in Trinidad among adolescents aged 13-19 years old, depression was significantly higher among adolescents who smoked cigarette and drank alcohol compared with those who did not (Maharaj *et al,* 2008).

In southwest Nigeria, Omigbodun et al., (2008), conducted a study to determine the prevalence and correlates of suicidal behavior among adolescents. Significant associations were found between suicidal ideation and psychosocial factors such as going hungry, ever had sex, sexual abuse, physical attack and involvement in physical fights (Omigbodun et al., 2008). Similarly, use of alcohol was significantly associated suicidal attempt and psychoactive substance use among youths (Omigbodun *et al.,* 2008).

The first Millennium Development Goal centres on the eradication of extreme hunger and poverty and one of the indicators selected is poverty and hunger (UNDP, 2000). Hunger and poverty have been proven to be widespread in Africa and Asia as major driving factors for children and adolescents not achieving academic success and the development of subsequent mental health problems (Omigbodun *et al,* 2010).

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In Sierra Leone, adolescents are greatly affected by hunger and poverty. For instance, many parents find it difficult to cope with the financial needs of the family (Ministry of Social Welfare Sierra Leone, 2012). Therefore, adolescents may need to take up jobs to support their families after school hours. Sometimes, adolescents have to walk a long distance to school because they cannot afford to go by car or bus, while others do not have the necessary textbooks (Ministry of Social Welfare Sierra Leone, 2012). Furthermore, quite a number of adolescents go to school hungry or hardly have access to at least one meal per day. All these could put a strain on adolescents' academic performance and will lead mental health problems such as depression, oppositional defiant disorder and conduct disorder (WHO, 2012).

Respondents in this study who experienced any natural disaster had higher rates of probable depression, compared to those who had never experienced a natural disaster. This is similar to the study conducted by (Omigbodun et al 2008) in Southwest Nigeria, which investigated the association between traumatic events and depressive symptoms among youths in Southwest Nigeria. In their study, depressive symptoms were reported in 28.1% of those who experienced traumatic situations and this was significant compared to those who had not experienced any traumatic event. The most common traumatic events reported were car accidents, fire incidents, violent crime, physical abuse, sexual assault and death of a family member (Omigbodun *et al.,* 2008).

Protective factors such as perceived parental concern about issues concerning the adolescent was found to be negatively correlated with all probable mental disorders investigated. Also, adolescents from monogamous families, whose parents were married and who reported that they lived with their parents were less likely to have a probable mental disorder compared to their counterparts from polygamous

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homes, whose parents were separated and who reported that they lived with persons other than their parents.

Polygamy is a common practice in many African cultures. Studies have shown that children from polygamous families are less cared for by their parents due to the large family size which may impact negatively on the mental health of the children in the home (Kailie and Kanu, 2009). Parental divorce or break-up is one of the areas that have been widely researched as an outstanding factor for child and adolescent mental health outcome (Barnes, Albrecht, and Olson, 2007). Children who grow up with both parents are more protected from mental health problems than those with single parents (Barnes *et al,* 2007).

The strengths of this study lie in the facts that it was a community-based study and as such, was able to reach both in-school and out-of-school adolescents. Also, this study is one of the very few community-based studies conducted to investigate the prevalence and correlates of mental disorders among adolescents in Sierra Leone and on the African continent at large.

However, limitations encountered in this study are as follows:

1. The sample size was adjusted to meet the time and nature of the study, as many of the respondents were hard to reach.
2. Although the instrument used for this study was translated to the local Creole language, some of the adolescents still had difficulty understanding the questions because of diverse dialect of the Creole language.
3. It was difficult to get parental consent for adolescents to participate in the study because of the stigma attached to mental health and disorders.

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4. Some participants who met inclusion criteria were not interviewed because their Ebola virus status was doubtful.

5.2 Conclusion

The results of this study show that mental disorders are common among adolescents in Bo, Sierra Leone. A wide range of psychosocial factors including polygamous home setting, physical abuse, separation of parents, experiencing frequent hunger, being described as backward or slow to learn, alcohol use and cigarette smoking were significantly associated with probable depression, conduct disorder and oppositional defiant disorder. Protective factors for adolescents in Bo were found to include perceived parental concern about issues concerning the adolescent, monogamous home setting and living with parents.

5.3 Recommendations

Adolescents have enormous mental health needs which cut across the age groups, therefore:

1. Provision of community mental health services for adolescents should be a priority.
2. Family and school play a key role in supporting the adolescent emotionally therefore school teachers should work with parents and guardians to protect them from future mental health problems.

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Appendix I

PREVALENCE AND CORRELATES OF PSYCHIATRIC MORBIDITY AMONG ADOLESCENTS IN BO, SIERRA LEONE

QUESTIONAIRE

Serial Number: __ __ __ __

Today's Date: __ __/__ __/__ __

SECTION I

SOCIODEMOGRAPHIC CORELLATES

Personal information

1. Where do you live?...

1.Usai yu tap?

2. What is your date of birth? Date of Birth: ---------/-------------------/-------------

2. Wetin na yu bat dey?

3. How old are you? ....

 3. Ɔmɔs ia yu ol?

4. Are you a boy or a girl?   (a) Boy   (b) Girl

4. Yu na bɔbɔ ɔ titi?   (a) Bɔbɔ   (b) Titi

5. Do you practise any religion?   No   Yes

5. Yu kin prey?   Nɔ   Yɛs

6. What is your religion?

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(a) Islam   (b) Christianity (c) Others specify…………………………………….

6. Wetin na yu rilijɔn?

(a) Muslim   (b) Cristɛn   (c) If na ɔda rilijɔn, duya nem am

7. How much does the teaching of your religion guide your behaviour?

 (a) Very much   (b) much   (c) Just a little   (d) Not at all

7. Ɔmɔs tɛm yu rilijɔn tiching kin gyde yu wey?

 (a) Bɔku bɔku   (b) bɔku   (c) lili wan   (d) natin atɔl

Family information

8. Family Type: (a) Monogamous   (b) Polygamous

8. Di kyn Fɛmili   (a) Mɔnogɛmi   (b)metmared/pɔligɛmi

9. Do you have brothers and / or sisters?   Yes   No

9. Yu gɛt brɔda ɔ sista dɛm?   Yɛs   Nɔ

10. If yes, where are they staying?   a) At home   b) On the street

 c) Others specify……………………………….

10. If yu se yɛs, usai dɛn de?   a) Na os   b) Na trit   c)   If na ɔdasai, duya nɛm am

11. Marital/ Status of Parents: (a) Married   (b) Separated/Divorced   (c) Father is dead

(d) Mother is dead (e) Mother & Father are dead

11. Yu mama n papa dɛm mared kɔndishɔn

(a) Mared   (b) Dɛm bin dɔn pat   (c) Mi papa dɔn dai   (d) Mi mama dɔn dai

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(e) Den ɔl tu dɔn dai

12. Who do you live with presently? (a) Parents (b) Mother   (c) Father (d) Grandparents   (e) Grandmother   (f) Grandfather   (g) Other specify……………………………………………

12. Na to udat yu de naw?

 (a) Mi mama ɛn mi papa   (b) Mi mama (c) Mi papa   (d) Mi granni en mi granpaa

 (e) Mi granni   (f) Mi granpaa   (g) If na ɔda pɔsin, duya nɛm am

13. Level of Father's Education

 (a) No Formal Education   (b) Koranic School   (c) Primary School   (d) Secondary School

(e) Post - Secondary (Non-University)   (f) University Degree and above   (e) I do not know

13. Usai yu papa tap pa buk lanin?

(A)   I nɔ lan buk atɔl   (b) Arabik skul   (c) prɛmari skul   (d) sɛkɛndri skul

(e) Post sɛkɛndri   (f) univɛsiti digrii   (e) ar nɔ no

14. Occupation of Father:………………………………………………………I do not know

14. Uskayn wok yu papa de du?   A nɔ no

15. Level of Mother's Education

 (a) No Formal Education (b) Koranic School   (c) Primary School   (d) Secondary School

(e) Post- Secondary (Non-University)   (f) University Degree and above (g) I do not know

15. Usai yu mama tap pa buk lanin?

(a) I nɔ lan buk atɔl   (b)Arabik skul   (c)prɛmari skul   (d) sɛkɛndri skul

 (e) Post sɛkɛndri skul   (f) univɛsiti digrii   (g) a nɔ no

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16. Occupation of Mother:…………………………………………………………… I do not know

16. De kayn wok wey yu mama de du: A nɔ no

17. Do you like your family?   Yes   No

17. Yu lɛk yu fɛmili?   Yɛs   Nɔ

18. If Yes Why? _____

18. If yu se yɛs wetin mɛk

19. If No, Why?   _____

19. If yu se nɔ wetin mɛk

20. Where is/are your parent/s staying?   (a) In Bo   (b) Elsewhere   (c) Don't know parent/s whereabouts

20. Usai yu mama ɛn papa de?(a) Na Bo   (b) Na ɔdasai (c) A nɔ no usai mi mama ɛn mi papa de

21. What kind of house does your parent/guardian live in?

  (a)   Owner occupied   (b)   rented house   (c)   others (specify)……..

21. Usekyn os we yu mama ɛn papa ɔ di pɔsin we de luk afta yu dɛm tap?

  (a) Dɛn yon os   (b) Na rɛnt os   (c)   If na ɔda kyn os, duya nɛm am

22. Do you do any kind of work to earn money? Yes   No

22. Yu kin du eni kyn wok fɔ mɔni ?   Yɛs   Nɔ

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23. If yes, please describe what you do _____

23. If yu se yɛs, duya tɛl mi wetin yu kin du

24. During the past 30 months how many times have you beaten by your parent or guardians

a)never   (b) 1 time   (c) 2 or 3 times   (d) 4 or 5 times (e) many times

24. Insay di las tati mɔnt dɛn, ɔmɔs tɛm yu perɛnt ɔ gadian dɛn bin bit yu?

(a) wande   (b) wan tɛm   (c) tu ɔ tri tɛm   (d) fo ɔ fayv tɛm   (e) bɔku tɛm.

School related question

25. Have you ever been to school?   Yes   No

25. Yu bin ɛva go skul?   Yɛs   Nɔ

26. Are you currently in school?   Yes   No

26. Yu stil de attɛnd skul ?   Yɛs   Nɔ

a). If yes, Name of School……………………………………………………………………

(a) If yu se yɛs, wetin na di skul in nem?

 b)   If No, why do you drop out of school?..

 (b) If yu se nɔ, wetin mɛk yu kɔmɔt skul?

27. What level are you or /did drop from school?   Primary   JSS Level   SSS Level

27. Usai yu tap pan di buk lannin?   Prɛmari   JSS   SSS

28 Would you like to go back to school?   Yes   No

28. Yu go lek for go bak na skul?   Yɛs   Nɔ

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29. Do you like your school?   Yes   No

29. Yu lɛk yu skul?   Yɛs   Nɔ

30. Have you ever being described as backward or slow to learn?   Yes   No

30. Dɛn dɔn wande se yu na buk mumu ɔ yu slo fɔ lan?   Yɛs   Nɔ

Dietary behaviour module

31. During the past 30 days, how often did you go hungry because there was not enough food in your home?

31.Insai dis 30 dey we pas soɔmɔs tɛm yuNɔ get chop fɔ eti?

(a) Never   (b) Rarely   (c) Sometimes   (d) Most of the time   (e) Always

(a) I nɔ wan dey bi   (b) I nɔ kin bi nɔ mɔ   (c) sɔmtɛm dɛm de   (d) bɔku tɛm   (e) ɔl di tɛm

32. How many meals do you have in a day?

32. ɔmɔs tɛm yu kin eti per de

   (a)   1 meal a day   b) 2 meal a day   c) 3 meal a day
   (a)1 tɛm per de   (b) 2 tɛm per de   (c) 3 tɛm per de

Alcohol and other drug module

33. During your life, how many times have you used drugs like Indian hemp (Taffie), heroin, cocaine, Chinese capsule, or smoked dried pawpaw leaves?

a) 0 times (b) 1 or 2 times   (c) 3 to 9 times   (d) 10 or more times

33. Insai yu layf tɛm, ɔmɔs tɛm u dɔn tek drɔg lɛk taffie, kokein, bran- bran ɔ pɔpɔ lif?

(a) 0 tɛm   (b) 1 ɔ 2 tɛm   (c) 3 to 9 tɛm   (d) I pas 10 tɛm

34. During the past 30 days, on how many days did you have at least one drink containing alcohol?

 (a) 0 days   (b) 1 or 2 days   (c) 3 to 5 days   (d) 6 to 9 days

34. Insai dis 30 dey we pas so,ɔmɔs tɛm u dɔn drink rum?

(a) 0 tɛm   (b) 1 ɔ 2 tɛm   (c) 3 to 9 tɛm   (d) I pas 10 tɛm

35. How old were you when you first tried a cigarette?

(a) I have never smoked cigarettes (b) 7 years old or younger (c) 8 or 9 years old   (d) 10 or 11 years old   (e) 12 or 13 years old   (f) 14 or 15 years old   (g) 16 years old or older

35. Ɔmɔs ia yu bin ol we yu fɔs smok cigrɛt

 (a) A nɔ ɛva smɔk cigrɛt   (b)7 ia ol ɔ yu nɔ bin dɔn rich yet   (c) 8 ɔ 9 ia ol

 (d) 10 ɔ 11 ia ol   (e) 12 ɔ 13 ia ol   (f) 14 ɔ 15 ia ol   (g) 16 ia ɔ yu bin ol pas so

Sexual behaviour module

36. Have you ever had sexual intercourse?   **Yes   No**

36. Yu bin dɔn ɛva du mami ɛn dadi biznɛs?   **Yɛs   Nɔ**

37. How old were you when you had sexual intercourse for the first time?

(a) I have never had sexual intercourse   (b) 11 years old or younger   (c) 12 years old

(d) 13 years old   (e) 14 years old   (f) 15 years old (g) 16 years old or older

37. ɔmɔs ia yu bin ol we yu fɔs du mami ɛn dadi biznɛs?

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(a) A nɔ wan de du mami ɣn dadi biznɣs   (b) 11 ia ol ɔ yu nɔ rich so   (c) 12 ia ol

(d) 13 ia ol   **(e) 14 ia ol**   **(f) 15 ia ol**   **(g) 16 ia ol ɔ yu bin don ol pas so**

38. Has an adult ever forced you to have sexual intercourse with them?   No   Yes

38. Big pɔsin dɔn ɣva fos yu fɔ du mami ɣn dadi biznɣs?   Nɔ   Yɣs

39. If yes, who was it? _____

39. If yu se yɣs, na bin udat?

Major Life Events

40. What is the worst thing that has happened to you in your life?

40. Wetin na di badɔf tin we dɔn apin to yu na yu layf?_____

41. Has anyone close to you died?   No   Yes

41. Ɣni yu klos pɔsin don dai?   Nɔ   Yɣs

42. If yes, who was it?

42. If yu se Yɣs, na bin u dat?_____

43. Have you ever been in a situation when you were afraid you would lose your life or be severely harmed?   Yes   No

43. Yu bin dɔn ɣva de na kɔdishɔn we yu bin fred se yu go lɔs yu layf ɔ go damej badbad one?

     Yɣs   Nɔ

44. If yes, please describe_____

44. If yu se Yɣs, duyaa tɣl mi de kɔnditɔn we yu bin de

45. Have you ever experienced a natural disaster such as flood or fire?   Yes   No.

45. Yu bin dɔn ɣva gɣt ɔ de usai bibig trɔbul apin lɣk flɔdin ɔ faya?   Yɣs   Nɔ

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46. If yes, please describe _____

46. If yu se yɛs, duyaa tɛl mi we tin bin appin

47. Has anyone close to you had the Ebola Virus Disease?   Yes   No

47. Ɛnibɔdi we de nia yu dɔn wande gɛt Ibola?   Yɛs   Nɔ

48.Who was or were the person/s?   (a) Family   (b) friend   (c) others specify ....

48. Udat na bin di pɔsin   (a) Fambul (b) Padi (c) Ɔdawan.

49. What happened to the person/s know to you who have had Ebola Virus Disease?

a) Dead   b) Survived   c) sick   d) I don't know

49. Wetin bin apin to di pɔsin ɔ di pipul dɛn we bin gɛt dis Ibola tumbu (a) dɛn dɔn day

 (b) bin wɛl (c) sik (d) A nɔ no

50. Were you ever afraid that you might contact Ebola diseases   Yes   No

50.Yu dɔn wande fred se yu go gɛt di Ibola tumbu?   Yɛs   Nɔ

51. Have you ever been diagnosed with having Ebola Virus disease?   Yes   No

51. Dɛn dɔn wande tɛst yu ɛn yu gɛt di Ibola tumbu?   Yɛs   Nɔ

SECTION II

PSYCHIATRIC MORBIDITY

These questions are about feelings that young people sometimes have and things that may have happened to you IN THE LAST YEAR.			
52	In the last year, have you wet the bed at night?	Yes	No
52	Insay las ia, yu bin wande pisabed? ….	Yɛs	Nɔ
53	Have you wet your pants during the day?	Yes	No
53	Yu dɔn wande pis pan yusɛf? ….. …..	Yɛs	Nɔ
54	In the last year, have you passed faeces on yourself? I mean passed a small amount of faeces in your pants, on the floor, or somewhere not in the toilet.	Yes	No
54	Insay last ia, yu dɔn wande tɔylɛt pan yusɛf? I lɛk na smɔl wan sɛf pan yu pant, na grɔn ɔ ɛnisay we nɔto tɔylɛt.	Yɛs	Nɔ

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55	Has there been a time when nothing made you happy and you just were not interested in anything?	Yes	No
55	Ɛni tɛm bin de we yu nɔ bin gladi ɛn yu nɔ bin gɛt intrɛst pan ɛni tin?	Yɛs	Nɔ
56	Has there been a time when you had less energy than you usually do?	Yes	No
56	Ɛni tɛm bin de we yu nɔ bin gɛt bɛtɛ ɛnaji lɛk aw yu blant gɛt am?	Yɛs	Nɔ
57	Has there been a time when you felt you could not do anything well or that you were not as good-looking or as smart as other people?	Yes	No
57	Ɛni tɛm bin de we yu bin fil se yu nɔ go ebul fɔ du ɛnitin bɛtɛ, yu nɔ fayn, ɔ yu nɔ smat lɛk ɔda pipul dɛm?	Yɛs	Nɔ
58	Has there been a time when you thought seriously about killing yourself?	Yes	No
58	Ɛni tɛm bin de we yu tinkam fɔ kil yusɛf?	Yɛs	Nɔ
59	Has there been a time when doing even little things made you feel really tired?	Yes	No
59	Ɛni tɛm bin de we yu de du ivin smɔll tin sɛf kin mek yu taya?	Yɛs	Nɔ
60	Has there been a time when you couldn't think as clearly or as fast as usual?	Yes	No
60	Ɛni tɛm bin de we yu nɔ kin ebu fɔ tink bɛtɛ lɛk trade?	Yɛs	Nɔ
61	In the last year, have you carried out revenge by doing things like hurting people, spoiling their things or telling lies about them?	Yes	No
61	Insai las ia, yu bin tɔn dɛt gi pipul dɛm lɛk yu du dɛm bad ɔ yu pwɛl dɛn tins dɛm ɛn yu lai pan dɛm?	Yɛs	Nɔ
62	Have you refused to do what your parents or teachers told you to do?	Yes	No
62	Yu bin dɔn dinai fɔ du wetin yu mama ɛn yu papa tɛl yu fɔ du?	Yɛs	Nɔ
63	Have you been irritable or easily annoyed?	Yes	No
63	Yu bin dɔn ɛva vex ɔ kwik fɔ vɛx?	Yɛs	Nɔ
64	Have you done bad things to people on purpose?	Yes	No
64	Yu bin dɔn ɛva du pipul dɛm bad fɔ sɔntin?	Yɛs	Nɔ
65	Have you blamed someone else for your mistakes or for things you did that you shouldn't have done?	Yes	No
65	Yu bin dn ɛva blem smbdi fɔ di mistek dm we yu du ɛn tin dm we yu nɔ sɔpos fɔ du?	Yɛs	Nɔ
66	Have you done things just to annoy people or make them angry?	Yes	No

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66	Yu bin dɔ du tin to pipul dʒm fɔ mɛk dʒm vɛx?	Yɛs	Nɔ
67	Have people complained because you were swearing or used dirty language?	Yes	No
67	Pipul dʒm bin dɔn de kɔmplen yu bikɔs yu bin de swɛ ɔ uz dɔti languej?	Yɛs	Nɔ
68	Have you shoplifted-that is, stolen something from a shop when you thought no one was looking?	Yes	No
68	Yu bin dɔn tiff na shɔp we yu fil se nobɔdi nɔ de wach yu?	Yɛs	Nɔ
69	Have you lied to get money or something else you wanted?	Yes	No
69	Yu bin dɔn lai fɔ gɛt mɔni ɔ ɔda tin we yu bin want?	Yɛs	Nɔ
71	Have you snatched someone else's purse or jewellery?	Yes	No
71	Yu bin dɔn jɔg sɔmbɔdi in pɔs ɔ jiwɛlri?	Yɛs	Nɔ
72	Have you broken something or spoiled some place on purpose, like breaking windows, writing on a building, or slashing tyres?	Yes	No
72	Yu bin dɔn brok sɔntin ɔ pwɛl ples fɔ ɛni risin, lɛk fɔ brok windo, we yu de ryt pan bildin, ɔ yu bɔs taya?	Yɛs	Nɔ
73	Have you stolen from anyone when they were not around or were not looking?	Yes	No
73	Yu bin dɔn tiff ɛnbɔdi we dʒm nɔ bin de ɔ dʒm nɔ bin de luk?	Yɛs	Nɔ
74	Have you been physically cruel to an animal and hurt it on purpose?	Yes	No
74	Yu bin dɔn de wikɛd ɛn du bad to dɛn animal dʒm fɔ ɛn risin?	Yɛs	Nɔ
75	In the last year, have you broken into a house, a building, or a car?	Yes	No
75	Insai las ia, yu bin dɔn brok go insai os, bildin ɔ kaa?	Yɛs	Nɔ

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Protective Factors Module

76. During the past 30 days, how often did your parents or guardians understand your problems and worries?

(a) Never   (b) Rarely   (c) Sometimes   (d) Most of the time
(e) Always

76. Insai dis 30 dey we pas so, ustɛm ɛn ustɛm yu mama ɛn yu papa ɔ di pɔsin we de luk afta yu kin undastan yu prɔblɛm ɛn yu wɔrri?

 (a) I nɔ wan dey bi   (b) I nɔ kin bi nɔ mɔ   (c) sɔmtɛm dɛm de   (d) bɔku tɛm   (e) ɔl di tɛm

77How often did your parents feel worried or concerned about the way you were feeling

a) A lot of time   b) some of time   c) hardly ever   d) not at all

77. Ɔmɔs tɛm yu perɛnt dɛn bin wɔri ɔ kɔnsan bɔt aw yu de fil ɛn du tin dɛn.

   (a) Bɔku tɛm b)Sɔntɛm de c) Wan wan tɛm d)   No tɛm.

78. How often did your parents get annoyed or upset with you because of the way you were feeling or acting?
a) A lot of time   b) some of time   c) hardly ever   d) not at all
78.Ɔmɔs tɛm yu perɛnt dɛn bin vɛks pan yu bay aw yu de fil ɛn du tin dɛn
(a)Bɔku tɛm (b)Sɔntɛm de (c) Wan wan tɛm (d)   No tɛm.
79. How often did the way you were feeling or acting make it difficult to do schoolwork or cause problems with your grades?   a) A lot of time   b) some of time   c) hardly ever d) not at all
79. ɔmɔs tɛm, di we we yu bin de fil ɔ du tin mek I at fɔ du yu skul wok, ɔ mek yu nɔ gɛt bɛtɛ mak?
(a)Bɔku tɛm (b)Sɔntɛm de (c) Wan wan tɛm (d)   No tɛm.

THE END

Appendix II

> Centre for Child and Adolescent Mental Health
>
> University of Ibadan
>
> Nigeria,
>
> 1st April 2015.

Dear Parents/Guardians,

My name is Edwin Smart Johnny. I am postgraduate student from the Centre for Child and Adolescent Mental Health, University of Ibadan, Nigeria. I am conducting a research on adolescents. The aim of my research is to know the things that happen to young people,what they do, and how their feelings affect their mental health. These include their daily activities relation with others and how they cope and adjust to life issues. I will be asking your child/ ward Questions about him or herself, about the family and feeling that he/she had over the last one year.

You have the right not to allow your ward/child to take part in this study, or at any given time you may choose to withdraw your child/ward from the study. I will also like to assure that the information your child/ward will provide will be kept in confidence. I will leave my contact if you want to know the result of the research or have any further question.

Yours sincerely

....

Edwin S. Johnny

Researcher

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Parent /legal guardian Permission

I have read (someone has read to me) this letter and I am aware that I am being asked to provide permission for my child/ward to participate in a research study. I have had the opportunity to ask question and have them answered to my satisfaction. I voluntarily agree to permit my child/ward to participate in this study,

Name..

Relationship to subject...

Signature..

Date..

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Appendix III
Letter of convey of ethical Approval