PREVALENCE AND CORRELATES OF MENTAL DISORDERS AND MALNUTRITION AMONG SCHOOL-GOING ADOLESCENTS IN THE EASTERN REGION OF FREETOWN, SIERRA LEONE

BY

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DECLARATION

I hereby declare that this dissertation titled "Prevalence and Correlates of Mental Disorders and Malnutrition among School-going Adolescents in the Eastern Region of Freetown, Sierra Leone" is original and was carried out by me in design and execution under the supervision of Professor Olayinka O. Omigbodun, Principal Investigator and Director, Child and Adolescent Mental Health, University of Ibadan and Dr. Olurotimi Adejumo, Department of Child and Adolescent Psychiatry, University College Hospital. This research has not been published or presented in part or whole in any forum or institution for a Degree or Diploma and I duly appreciate the efforts of researchers/authors highlighted in the references.

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Signature **Date**

CERTIFICATION

We certify that this research titled "Prevalence and Correlates of Mental Disorders and Malnutrition among School-going Adolescents in the Eastern Region of Freetown, Sierra Leone'' was conducted by the candidate under our supervision. The research procedure and writing of dissertation was also under our supervision.

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DEDICATION

This work is dedicated to my wife Mrs. Sarjoh Bah.

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ACRONYM

ADHD	Attention Deficit Hyperactivity Disorder
AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
BDI	Becks Depression Inventory
BMI	Body Mass Index
CAMH	Child and Adolescent Mental Health
CD	Conduct Disorder
DISC	Diagnostic Interview Schedule for children
DALY	Disability Adjusted Life Years
DPS	DISC Predictive Scale
GSHS	Global School-Based Health Survey
HIV	Human Immunodeficiency Virus
HMIC	High and Middle Income Countries
JSS	Junior Secondary School
LMIC	Low and Middle Income Countries
LSD	lysergic acid diethylamide
MEST	Ministry of Education, Science and Technology
mhGAP	Mental Health Gap Action Programme
mhLAP	Mental Health Leadership and Advocacy Programme
NICE	National Institute for Health and Care Excellence
NGO	Non Governmental Organisation
OR	Odd Ratio
ODD	Oppositional Defiant Disorder
ProMIND	Profiles on Mental Health in Development

List of Acronyms

PTSD	Post Traumatic Stress Disorder
SCD	Sickle Cell Disease
SPSS	Statistical Package for the Social Sciences
SSS	Senior Secondary School
STD	Sexually Transmitted Disease
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
UNESCO	United Nations Educational, Science and Cultural Organization
UNFPA	United Nations Population Fund (formerly United Nations Fund for Population Activities)
WHO	World Health Organization
WPR	World Population Review
YRI	Youth Readiness Intervention

ABSTRACT

Background

Across the life cycle, adolescence marks a critical transition period for physical, psychological and social growth and development. Adolescents are vulnerable to mental and physical health challenges, which adversely impact on their successful navigation into adulthood. In Western countries, it has been reported that nutrition has both beneficial and adverse impact on the mental and physical health of young people. Several studies have revealed an association between mental, physical and social health of adolescents. Despite this established link, there is a paucity of information on the prevalence and correlates of mental disorders and malnutrition among adolescents in Freetown, Sierra Leone. This study aimed to assess the relationship between mental and nutritional health in school-going adolescents in the Eastern region of Freetown.

Methodology

A cross-sectional descriptive study was carried out among school-going adolescents. Five senior secondary coeducational schools were randomly selected from three geopolitical wards in the Eastern region of Freetown. A total of 550 randomly selected senior secondary school (SSS) students were selected to participate in the study. A socio-demographic questionnaire, the Global School Health questionnaire (GSHQ), the DISC Predictive Scales (DPS) and the Becks Depression Inventory (BDI) were given to the students to complete with some supervision provided by the researcher. Information on personal, family, and school-related, major life events, dietary and sexual behaviour, physical activity, substance and alcohol use and symptoms of common mental disorders were obtained from the self-administered questionnaires. In addition, each participating student had anthropometric measurements taken and a clinical examination.

Prevalence of common mental disorders and forms of malnutrition among participants were presented using percentages. Chi-square was used to establish any significant association between categorical variables and mental disorders or malnutrition and logistic regression analysis was further applied to determine variables that were independent predictors of common mental disorders and malnutrition.

Results

A total of 471 SSS students with a male-to-female ratio of 1:1.2 fully completed the questionnaires and allowed for a physical examination. Their ages ranged from 15 to 19 years with a mean age 17.8 years [SD=1.3]). Majority (77.7%) of the students reported being Muslim and two-thirds (68%) were from a monogamous family setting.

The prevalence of depression among the students in the past 12 months using the DPS screening tool was 24% and 28% with the BDI. Approximately 14.3% and 9.7% of students reported suicidal ideation and suicidal attempt in the past one year respectively, while 11.6% met the screening criteria for social phobia. Other prevalence rates for mental health problems were conduct disorder in 17.6%, oppositional defiant disorder in 5.3%, alcohol use in 12.7% and psychoactive substance use (life time) in 10%. Elimination problems such as enuresis and encopresis were found in 21.4% and 10% respectively. With regards to malnutrition 18.3% had stunting, 6.2% were underweight, while 18.7% and 2.5% were overweight and obese respectively. Psychosocial correlates of common mental disorders in the past 12 months found to be statistically significant were family dysfunction, occupation of parents, parental smoking or poor

monitoring, poor academic performance, frequent hunger, less intake of fruits, drinking alcohol, cigarette smoking and having experience traumatic event.

Alcohol use (p=0.036; 95% CI=0.30-0.98), poor academic performance (p=0.04; 95% CI =2.08-10.88), involvement in a fight (p=0.035; 95% CI=0.45-0.91), poor parental monitoring (p=0.016; 95%CI=1.10-3.60) and parental smoking (p=0.004; 95% CI=1.07- 1.44) were strongly and independently predictive of a positive screen for depression. Frequent hunger (p=0.033; 95%CI 0.25-0.94), poor academic performance (p=0.023; 95%CI=1.186-10.498), cigarette smoking (p=0.03; 95%CI 1.01-1.49) and having had a serious injury (p=0.02; 95% CI=1.28-7.49) were strong predictors of suicidal ideation/attempt. Being a male (p=0.001; 95% CI=1.58-4.28), truancy (p=0.008; 95%CI=0.29-0.83) and alcohol use (p=0.004; 95% CI=0.17-0.71) were strongly and independently predictive of conduct disorder.

Stunting was more likely to occur in participants whose mothers engaged in unskilled occupations (p=0.048; χ^2 =3.08). Being underweight was significantly associated with suicidal attempt (p=0.029; χ^2=9.050) but did not independently predict it (p=0.234; CI 0.418-35.38). Majority of the students (90%) had no obvious physical disability and about half (47%) were at Tanner stage V of sexual development.

Conclusion

Mental health problems and malnutrition are prevalent among school-going Senior Secondary School students in Freetown. Several psychosocial factors are strongly and independently linked with their occurrence. This further buttresses the urgent need for policy makers to prioritize and invest in ensuring optimal mental and physical health for the growing adolescent.

Key words: Adolescent, mental disorder, malnutrition, prevalence, correlates, school, Freetown.

CHAPTER ONE

INTRODUCTION

1.1 Background

According to the United Nations (UN) the term 'adolescent' includes persons aged between 10 and 19 years (UN, 2010). Adolescence is an age of opportunity for children and a fundamental period for us to build on their development, to help them circumvent risks and vulnerabilities and to ensure that they are on right course to fulfilling their potentials (UNICEF, 2011). There are 1.2 billion adolescents in the world (UN, 2012) and the vast majority (90%) live in low and middle income countries (UNICEF, 2011). Adolescence also is a critical period for physical, psychological and social growth and the successful transition through this period is essential to overall well-being in adulthood (Crone *et al*., 2012). Although majority of adolescents are healthy, they encounter challenges in their physical, mental and social lives (UNICEF 2011).

It is estimated that at any point in time, 20% of adolescents would suffer from a mental disorder (UNICEF, 2012). Mental health problems such as depression, anxiety disorders and disruptive behaviour disorders are leading causes of adjustment problems in adolescents and youth worldwide (Mental Health Matters, 2014). This contributes heavily to disability and lost productivity across the life course (Gore *et al.*, 2011) and accounts for 15–30% of the disability-adjusted life years (DALY) lost during the first three decades of life (Lopez, 2006).

There is evidence that certain behavioural and socio-demographic factors are significant predictors of mental disorders among adolescents (Luiz *et al*., 2005; Way *et al*., 2007; Omigbodun *et al*., 2008) and if these determinants remain ignored, mental disorders can persist or recur during adulthood, adversely impacting on psychosocial functioning (UNICEF, 2012).

Socially, in many cultures, adolescents lack a voice, have constrained access to resources, are likely to drop out of education and are vulnerable to exploitation and violence (Burman *et al.*, 2007). Mental health conditions during adolescence and young adulthood can have a significant negative impact on the development of safe, supportive and healthy relationships with peers, parents, teachers, and romantic partners (Mental Health Matters, 2014).

Physical health status including sexual maturation is a major determinant of growth and development during adolescence. Similarly, during this transitional period between childhood and adulthood, there is a rapid increase in nutritional requirements. Despite multiple issues faced by adolescents in their physical, mental and social health, reproductive health and sex education remain the main focus of health intervention during adolescence. Little or no attention is given to nutritional needs at the critical period of growth (Kurz, 1996). This trend where nutritional needs are neglected is more marked in developing countries as a result of inadequate resource or its misuse (Kurz *et al.*, 1996). The limited research studies available in developing countries show that the prevalence of malnutrition is high among adolescents (Anand *et al.*, 1999; Mukudden-Peterson *et al.*, 2004; Omigbodun *et al*., 2010). This vulnerability is due to high requirements for growth, eating patterns and lifestyles, risk-taking behaviours and susceptibility to environmental influences during this period (WHO, 2005).There is a ‘’double’’ burden of nutritional maladaptation-underweight from inadequate intake of appropriate nutritional requirements on one hand and obesity as consequence of poor eating lifestyle- on the other hand (Kimani-Murage, 2013).

Studies carried out in high and middle income countries among adolescents reported an association between poor mental health outcomes and overconsumption of sugary food (Lien *et al*., 2006; Oddy *et al*., 2009). Contrarily, adequate intake of certain food and dietary

supplements, such as fish oil and vitamin D can have a positive impact on mental health of young people (Amminger *et al*., 2010; Walsh *et al.,* 2011).

1.2 Justification

The population of Sierra Leone is approximately 6.0 million (World Population Review, 2012) with adolescents constituting about 23% (UNICEF, 2013). The burden of neuropsychiatric conditions is estimated at 2,735 Disability Adjusted Life Years (DALY) per 100,000 population (WHO 2004), representing about 4.1% of the country's all-cause disease burden. An age unstratified report indicates that 442,000 people are living with mental disorders nationwide and only 2% with severe conditions are receiving treatment (WHO proMIND, 2012).

Precise data is lacking on the mental health status of school-going adolescents in Freetown. A community-based survey on adolescents in the Southern province reported that 47% had one or more probable mental disorders (Johnny, 2015). Studies have also shown that 50% of mental disorders in adults begin before the age of 14 years and 75% before the age of 24 years (Kessler *et al.*, 2007). Sierra Leone was at war between 1990 and 2002 and mental disorders have been reported to be more common in post-conflict societies (Karunakara *et al.*, 2004). The past political instability has led to increased unemployment rates and poverty, coupled with the recent traumatic outbreak of Ebola Virus disease and flooding in the country can further increase the risk for mental disorders.

Aguayo and colleagues (2002) estimated 46% of child deaths in Sierra Leone were due to malnutrition although data was not age-stratified. It has been proven that children of mothers with no formal education are more likely to be malnourished than those with post-primary

education (Wamani *et al*., 2004). It is therefore relevant to establish the socio-demographic factors that may predict malnutrition in adolescents and how it is associated with mental disorders.

Despite policy makers investments in reproductive health and sexual education on STDS / HIV, 16 million adolescent girls give birth each year, which constitute 11 % of all births worldwide and 95% of these occur in LMIC (WHO, 2014). Studies have shown that pregnancy in adolescence is an independent predictor of mental disorders (Stacy *et al*., 2010; Paul *et al*., 2015). In Sierra Leone, the prevalence of teenage pregnancy is 68 % among sexually active teenage girls and 28% of teenage boys having caused a pregnancy (UNFPA 2010). These rates are alarming considering its linkage with mental disorders among adolescents (Paul et al., 2015). Are these adolescents mentally and physically healthy to face and surmount the challenges during adulthood?

Schools are important platforms for mental and physical health assessment and intervention. It is hoped that data from this study will be an integral part of the needs assessment for health service development in Sierra Leone and redirect policy makers' view on the urgent need for mental health service development in schools.

The country's future for economic and social development rests in large part on the prospect of having an increasing proportion of young people who are not only educated, but physically and mentally healthy and economically productive.

1.3 Research Questions:

1. What is the prevalence of common mental disorders and malnutrition among school-going adolescents in Freetown?
2. What are the correlates of mental disorders and malnutrition among school-going adolescents in Freetown?
3. Is there a significant relationship between mental health and nutritional status among school-going adolescents?

1.4 Aim

The aim of this study is to assess the relationship between mental disorders and malnutrition among school-going adolescents living in Freetown, Sierra Leone.

1.5 Specific objectives

The specific objectives of this study are to determine in school-going adolescents the:

1. Prevalence of mental disorders.
2. Prevalence of stunting, underweight and obesity
3. Correlates of mental disorders.
4. Correlates of malnutrition.
5. Relationship if any, between mental disorders and malnutrition.

1.6 Outcome of measure

The primary outcome of measure in this study is to estimate the prevalence of mental disorders and malnutrition and its correlates among school-going adolescents in Freetown.

CHAPTER TWO

LITERATURE REVIEW

2.1 The Period of Adolescence

Adolescents are individuals aged between 10 and 19 years according to the United Nations (UN, 2010). This period is a critical time of development, that serves as a platform for progression from childhood into adulthood (UNICEF, 2011) and it is an evolving life event characterised by physical, cognitive, emotional and social development (Rosen, 2004). These processes are dynamic, occurring simultaneously but at varying rates and are regulated in a complex way by multiple factors such as genes, endocrine, sex, age, ethnicity, nutritional intake, physical activity socioeconomic factors and general health status of the individual (Malina, 1998; Rosen, 2004). Psychological and social aspects of adolescents' development are given less recognition compared to their physical growth and maturation characteristics (Gillespie, 1997) and there are cultural differences in the recognition and naming of emotional and behavioural symptoms that may occur during this period (UNICEF, 2011). According to Arnett (1999), adolescence is frequently portrayed as a negative stage of life—a period of storm and stress. However, majority of adolescents successfully adapt to the physical, emotional and cognitive changes that occur during this period (Terzian *et al.*, 2014).

The period of adolescence is divided into three developmental stages based on physical, psychological and social changes (WHO, 1995):

- Early adolescence : 10 to 14 years
- Mid adolescence : 15 to 17 years
- Late adolescence: 17 to 19 years.

2.1.1 Psychological changes

The changes in how adolescents think, reason and understand can be more dramatic than their obvious physical changes. The cognitive development of adolescents partially lays the groundwork for moral reasoning, honesty, and prosocial behaviours such as helping, volunteering, or caring for others (Eisenberg *et al* ., 1995). Adolescents think abstractly, analyse situations logically in terms of cause and effect, entertain theoretical situations and use symbols artistically (Piaget, 1950). This higher level of thinking allows them to think about the future, evaluate alternatives, and set personal goals (Keating, 1990).

The psychological development of adolescent boys and girls differs, with girls more likely to feel confident about their reading and social skills and boys more likely to feel more confident about their athletic and mathematics skills (Eccles *et al*., 1999). Adolescents with learning disabilities reportedly experience emotional distress at rates 2 to 3 times higher than those without learning disability, with rates higher in girls than boys (Svetaz *et al.*, 2000).

2.1.2 Physical Changes

There is great variability in the onset of puberty and the progression of the sexual maturity among adolescents (Ahmad *et al.*, 2011). Over the years, the age of onset of sexual maturation has been observed to decrease (Herman-Giddens *et al*., 1997; Sun *et al.*, 2002; Slyper, 2005), while growth and physical development are proceeding at an accelerating pace (Kaplowitz *et al.*, 2001). The reason for this acceleration remains unclear, although factors such as good nutrition, improved social and economic conditions, metabolic changes have been implicated (Gower *et al.*, 1999; Arslanian *et al*., 2002).

The physical changes that herald adolescence including development of breasts and first menstrual period for girls, the deepened voices and broadened shoulders for boys are the most visible and striking markers of this stage (Bakken *et al.,*1992). Ghai *et al.,* (2000) observed that during the period of adolescence, boys tend to become more muscular while girls show fat deposition in characteristic female distribution. To an adolescent, physical appearance is of paramount importance (Grogan, 2008) as most adolescents are preoccupied by their body image, particularly in order to model the norms of the group with which they associate (Cordonnier, 1995; Grogan, 2008).

Early and late physically maturing adolescents appear to be at increased risk for mental health problems (Graber *et al*., 1997; Perry, 2000). For example, early maturing girls have been found to be at higher risk for depression, substance abuse, disruptive behaviours, and eating disorders (Graber *et al*., 1997; Striegel-Moore *et al*., 1999; Ge *et al.*, 2001). Early maturing boys are more likely to be involved in high-risk behaviours such as unprotected sex, smoking, or delinquency (Flannery *et al.,* 1993). Late maturating boys are at greater risk for depression, conflict with parents, and school problems (Graber *et al*., 1997) and are at higher risk of being bullied due to their smaller stature (Pollack *et al*., 2000).

2.1.3 Social Changes

Like other phases of life, the period of adolescence is influenced by the sociocultural context in which it occurs (Crockett, 1997). The skills young people are expected to master, the kinds of choices they make and the settings they negotiate during this period are predetermined by the social environment (Crockett, 1997). In Bronfenbrenner (1989) hypothesis from an ecological

perspective, adolescent development occurs within the immediate social contexts of everyday life: the family, peer groups and school. Adolescents generally see their family as an integral part of their life, but they may begin to rely more heavily on the support and guidance provided by their peers. Despite the challenges of traversing the developmental changes of adolescence, most adolescents are healthy (UNICEF, 2011); achieve tasks of autonomy, are able to develop cordial relationships and play vital roles in society (Fisher *et al.*, 2011).

2.2 Prevalence of Common Mental Disorders in Adolescence

2.2.1 Depression in Adolescence

Globally, one in every five adolescents in the world will have a mental or behavioural problem each year (UNICEF, 2011). Depression in adolescents is a major public health concern because of its unrecognised high prevalence, potential for recurrence and impairment of functioning in the affected individual (Akiskal, 2000). The prevalence of major depression during early and middle adolescence has been estimated at 5% worldwide (Murray *et al.*, 1996), but rises to about 20% by late adolescence (Thaper *et al*., 2012).

In the United States of America, a prevalence of 0.3% for depression was reported which is similar in other European countries (Anarson *et al.*, 1994; Shaffer *et al.*, 1996). In South Africa, Kleintjes and colleagues (2006) reported a prevalence of 8% for major depression among adolescents. In Kenya, Khasakhala *et al.*, (2012) found a prevalence of 26.4% among adolescents.

Omigbodun *et al.*, (2008), reported a 12% prevalence of significant depressive symptoms among rural youths in Nigeria. In a study in the South-western region among in-school adolescents aged 14 to 17 years, the point prevalence of clinically significant depressive symptoms of 11.6% was reported (Bella- Awusah *et al*., 2016).

Few studies on mental health in adolescents exist in Sierra Leone. However, a recent community-based study conducted among adolescents who live in the Southern province of Sierra Leone, found 16.6% had probable depression (Johnny, 2015).

Depression poses a huge burden on patients and their carers. The WHO projects that by 2020, depression will be the leading cause of disability worldwide second only to cardiovascular disease (Murray *et al*., 1996). Young persons with depressive disorders are at an increased risk of suicide, substance use disorders, early pregnancy, poor academic performance and impaired psychosocial functioning (Rhode *et al*., 1991; Brent *et al.*, 1999; Omigbodun *et al*., 2008).

Studies reveal that more than half of all individuals who have had one episode of depression will have another, while those who have a second episode have a further relapse risk of 70%. After a third episode, there lapse risk is 90% (NICE Guideline, 2003) and in 20% of cases, the condition becomes chronic (WHO, 2001).

2.2.2 Suicide in Adolescence

Suicide, suicidal ideation and self-harm are recognised public health burdens (Gould *et al.*, 1996; Liu *et al.*, 2005; Rodriguez *et al*., 2006; Omigbodun *et al*., 2008). Globally, an estimated 71,000 adolescents commit suicide annually (UNICEF, 2011). Belarus, Kazakhstan and The Russia

Federation reported the highest rates (UNICEF 2011). In China, suicide accounted for 3.6% of all deaths and was the fifth leading cause of death in adolescents (Phillips *et al.*, 2002). An increased risk of suicide attempt has been strongly linked with preceding suicidal ideation (Gould *et al.*, 1996) and depression (KIhasakhala *et al.*, 2012; Omigbodun *et al.*, 2008). Late adolescence, poverty, living in disrupted families have been strongly linked with suicidal tendencies (Akleema *et al*., 2005; Liu *et al.*, 2005; Ayton *et al.*, 2003; Rehkopf *et al*., 2006). Studies done in Western countries have established a strong association between suicidal behaviour and adolescents who have been sexually abused, exposed to crime or taken psychoactive substances (Howard *et al.*, 2005). Sun *et al*., (2006) in their study among Chinese adolescents, established that family connectedness, school and peer support were significant mediators of self-esteem, depression and suicidal ideation. This relationship was also revealed among secondary school students in El Salvador (Springer *et al*., 2006) and in New Zealand (Carter *et al*., 2006).

In the West African sub-region, there is paucity of sociodemographic characteristics on suicidal behaviour in adolescents. Omigbodun *et al.*, (2008) in a study among youth, reported 20% had suicidal ideation and 12% had attempted suicide in the past one year.

2.2. 3 Substance/Alcohol use in Adolescence

Substance abuse is defined as the use of mood modifying substances illegally, excessively and in a socially unacceptable manner (Fayombo, 1998). The substances range from those that should not be taken without medical prescription such as cocaine, amphetamine, heroin, marijuana and lysergic acid diethylamide (LSD-25) to the socially acceptable beverages such as whisky, local

gin, beer and other alcoholic drinks (Fayombo, 1998). In a global school based student health survey, about 1 in 4 adolescents in school reported drinking alcohol during the past month in nearly half of countries surveyed (WHO, 2011).

Adolescents who abuse drug erroneously believe that drugs enhance their performance and are unaware of the negative consequence to their own well-being and that of the society (Ajala, 2009). It is estimated that 29% of adolescents have experimented with illegal drugs and 41% have consumed alcohol (Johnston *et al.*, 2007). For many adolescents, such early experimentation eventually progresses to abuse or dependence on illicit drugs or alcohol (Johnston *et al*., 2007).

Every year, approximately one in five American adolescents between the ages of 12 and 17 years engages in abusive or problematic use of illicit drugs or alcohol (Knight *et al*., 2007). In a study conducted in selected communities and prisons in Sierra Leone, 79% of the respondents including children aged 7-8 years used cannabis, cocaine (28%) and heroine (26%) (mhLAP, 2012).

Several factors predispose adolescents to substance abuse. In a study carried out by Ajala *et al.*, (2010) among secondary school students in Ibadan, respondents who were boys and at senior secondary level were likely to abuse substances when compared to girls and their junior peers. In addition, exposure to traumatic events was more likely to increase drug craving in individuals already abusing substances (Saladin *et al.*, 2003).

2.2.4 Post-Traumatic Stress Disorders among Adolescents (PTSD)

PTSD may result from exposure to a stressful situation of an exceptional nature including, being the victim of torture, sexual abuse, observing or participating in armed conflict, or witnessing the violent death of relatives or friends (WHO, 2007).

A considerable number of young persons are involved in the perpetration of violence towards others as well as prone to repeated physical, sexual and emotional violence (Betancourt *et al*., 2010). They are also at an increased risk of developing symptoms of PTSD (Derlyn *et al.*, 2004; Betancourt *et al*., 2010). Several studies report that post-conflict stressors in addition to war trauma may predispose to development of psychopathology (De jong *et al.*, 2003; Prince *et al.*, 2007). Children born during war have grown up and are still experiencing physical, psychological and emotional impact of the conflict (Betancourt *et al.*, 2008). In Sierra Leone, estimates of 35% of adolescents in the country have experienced traumatic event (African Development Bank, 2014). A longitudinal cohort study of war affected youth conducted in Sierra Leone in collaboration with the International Rescue Committee reported an association between war exposure and psychological distress mediated by daily stressors (Newman *et al*., 2015). However, despite the high rates of PTSD reported in this population, no comprehensive intervention has been implemented to address their mental health needs (Betancourt, 2011).

2.3. Physical Health Problems in Adolescence

According to WHO (2000), 20% of children and adolescents suffer from a chronic physical disorder worldwide. Child and adolescent liaison services addressing the psychological health needs of children affected by chronic physical illness are limited or virtually non-existent in most

sub-Saharan African countries (Kleintjes *et al*., 2010), despite the high prevalence of mental disorders in people with chronic illnesses such as sickle cell disease, HIV/AIDS, diabetes, cancers and brain injury (Ani *et al*., 2013).

2.3.1 Sickle Cell Disease and Adolescent Mental Health

Chronic medical conditions adversely impact on the psychological functions of affected children and can result in emotional distress (Bakare *et al*., 2008). Children with Sickle Cell Disease (SCD) are more likely to have emotional disorders and higher rates of suicidal ideation when compared to healthy control children (Bakare *et al*., 2008). A study among school-aged children with SCD reported compromised neuropsychological functions and impaired performance in certain areas such as low scores for mathematics and reading achievement (Winifred *et al.,* 2001) and high rates of low educational attainment (Schatz *et al*., 2001).

2.4 Malnutrition in Adolescence

Dietary lifestyle acquired during adolescence will last a lifetime and with increasing age, adolescents' personal choices and preferences gain priority over eating habits acquired in the family as they progressively have control over what they eat (Shepherd *et al*., 2002).

2.4.1 Overweight/Obesity in Adolescence

Childhood overweight and obesity is increasing at epidemic rates, even among pre-school children and is accompanied by significant comorbidities including physical and mental health problems (Ellulu *et al*., 2014). In the United States, the number of overweight children and adolescents has doubled in the last two to three decades (Williams, 2010) and similar doubling rates are being observed worldwide including in developing countries (Wang *et al*., 2002). Rates of increase seem most marked in countries of Northern Africa, such as Morocco and Egypt, as well as in some countries of the Caribbean and South America (De Onis *et al.,* 2000). Omigbodun *et al* (2010) reported an overweight rate of 2.3% among in-school adolescents in Southwest Nigeria with private schools' students having a higher prevalence. Co-morbidities associated with childhood obesity include orthopaedic problems, fungal skin infections, psychological and behavioural problems including, negative self-esteem, withdrawal from interaction with peers, depression, anxiety, and the feeling of chronic rejection (Williams, 2001). According to Sjoberg and colleagues (2005) obesity is associated with stigma and may be a contributing factor for the development of depression.

2.4.2 Underweight in Adolescence

Little attention has been given to address underweight malnutrition in adolescents. Undernutrition particularly in children negatively impact on their growth and development with resultant irreversible damage to their cognitive and social functions (UNICEF 2006). According to Flegal and colleagues (2005) underweight is associated with increased mortality when compared to normal or overweight individual. This underscores policy makers' poor response to

adolescent malnutrition and focussing mainly to address the high under-five mortality due to underweight (Flegal *et al*., 2005). Kantanista *et al*., (2005) reported a prevalence of 11.6% and 7.0% respectively among school girls and boys aged between 14 to 16 years. Omigbodun *et al*., (2010), in Southwest Nigeria found a prevalence of underweight at 18.9% among school-aged adolescents with male preponderance. Underweight in adolescents may be linked to various health problems, e.g. asthma, scoliosis, delayed puberty, emotional problems, and negative self-perception of body image (Luder e*t al.,* 2005) and perceived underweight in males has been strongly linked with suicidal behaviour (Wheaton *et al*.,2007).

2.5. Correlates of Mental Disorders in Adolescence

Living with adversities and the experience of psychosocial difficulties are associated with mental and behavioural problems in children, mostly reported from high-income countries (Barbarin *et al*., 1999, Rutter, 1999; Rutter *et al*., 2002). Attention has shifted lately to the issue of the social determinants of mental health in low and middle-income countries (LMIC). This is evident by the barrage of criticisms that has trailed what was perceived as attempts by the WHO to scale up restorative mental health services in LMIC without paying equal attention to the social factors that promote mental disorders in this region (Fernando, 2011; Campbell *et al*., 2012). Any effort to address mental health service needs without consideration of the social setting in context may not achieve desired results (Labonte' *et al*., 2012).

Atilola *et al*., (2013) reported that adolescents living with single parents, from a family with low socioeconomic status, having a chronic disabling physical condition, lower maternal education were independently associated with mental disorders. Similarly, adolescents living in household

without their mother and victims of violence are more likely to report depressive symptoms (Fitzpatrick *et al.*, 1993).

Risks for development of neuropsychiatric disorders related to individual behaviours including alcohol use and unsafe sex are more common for youth aged 15–24years, while environmental causes become less relevant, particularly among boys (WHO, 2011). A study conducted in Brazil among adolescents reported that less active, alcohol-dependent, overweight females were more likely to have a negative perception on the psychological functioning (Gordia *et al*., 2013). Paul *et al.*, (2013) observed a high suicide attempt risk in females who smoke, in a romantic relationships and poor physical health. Adolescents with concerns about their weight, marijuana use and negative mood states are more likely to have suicide plans (Paul *et al*., 2013). In addition to poor physical health, including disabilities and chronic health conditions, adolescents are vulnerable to mental health problems if they are poorly nourished, have infectious diseases or have had accidental injuries, especially head injuries (Paul *et al*., 2013). There is substantive evidence supporting the reciprocal relationship between alcohol and substance abuse and poor mental health among adolescents (Belfer *et al*., 2007). In a similar study, adolescent boys were more likely than adolescent girls to report using drugs (WHO, 2008).

2.5.1 Poverty and Mental Health in Adolescence

The WHO report on Mental Health and Development, highlighted the risks of a cyclical relationship between vulnerability and poor mental health, in which people with mental disorders are vulnerable to stigma, discrimination, violence, marginalization and other violations of their human rights (WHO, 2010). Poverty is a major social determinant of mental disorders in LMIC.

Health deprivation and adverse events are mediators of poverty and mental disorders relationship (Corrigall *et al.,* 2008) and this link appears to be cyclical in both high and low resource settings (WHO, 2010). Lund *et al., (*2010) in their study among youth reported that poverty, stigma and social exclusion, high rate of unemployment and illiteracy rate were associated with mental disorders.

2.5.2 Culture and Mental Health in Adolescence

The mental health needs of adolescents globally must include cultures and contexts in which they live during planning (Mental Health Matters, 2014). Cultural beliefs and practices can adversely influence mental health seeking behaviour (Swinton, 2001). Cultural differences can affect risk and protective factors that relate to mental health problems, provide content for its expression thereby influencing prevalence and incidence rates across cultures (Mental Health Matters, 2014). Locally, descriptions of symptoms of mental disorders, causes and social impacts of mental health problems, widely vary across cultures. In an interview on teachers' perception, spiritual factors were reported as determinants of mental disorders in children (Patricia *et al*., 2009). Ohaeri *et al.,* (2001) reported that majority of families of sufferers of mental disorders attributed the causes to spiritual forces. Cultural practices including early marriage and childbearing, gender and health service inequalities can impact on physical and mental health of adolescents (World Bank, 2007). Adolescents with a strong ethnic identity tend to have higher self-esteem than do those who do not identify strongly with their ethnic groups (Phinney *et al*., 2007; Thornton *et al*., 1990). Advising parents of this fact and encouraging them to discuss and practice aspects of their own ethnic identity including, history, culture and tradition can help their children develop a strong ethnic identity (Phinney *et al*., 1997).

2.5.3 Religion/Spirituality and Mental Health in Adolescence

Health professionals over the years have expressed concerns about the influence of religion on mental health of adolescents (Ellis, 1980). Studies have established a positive relationship between mental disorders and religion, social support and other behaviours (Holder *et al*., 2000). Adolescents who attach greater importance to religion were reported to have less involvement in sexual activity (Holder *et al*., 2000). Additionally, Strawbridge *et al*., (1998) reported a significant positive association between religious practice and mental disorders including schizophrenia and depression. On the contrary, religion can adversely impact on the psychosocial functioning of adolescents. Koenig, (2000) revealed that religious practice can induce guilt, aggression and promote social isolation among adolescents, particularly for those failing to conform to its standards. Otakpor and colleagues (2015) in their study on the effects of personality traits, religiousness or spirituality on adolescent students in Benin City, Nigeria found a negative association between religiousness or spirituality and psychological difficulties.

2.6 Relationship between Mental Health and Nutrition

Nutrition is especially important during the period of adolescence. There are considerable evidence to support that nutrition can impact on the mental and physical health of adolescents (Oddy *et al*., 2009). However these studies were carried out mostly in high and middle income countries. Studies have reported that onset of mental disorders coincides with the period of adolescence and its impact can be minimized by recommended dietary habits (Oddy *et al*., 2009). Additionally, eating behavioural patterns acquired during his time are likely to influence long term behaviours (Kelder *et al*., 1994).

Oddy *et al*., (2009) found poor mental health outcomes among adolescents aged 13-15 years were associated with Western dietary practice including, eating diet high in red and processed meats, sugary and refined foods and better mental health outcomes in those who had a higher intake of fresh fruits and leafy green vegetables. Similarly, researchers have found that overconsumption of sugar alone can negatively impact young people's mental health. (Lien *et al*., 2006) and in a related study, positive association between consumption of sugary soft drinks and sweet foods and risk for suicidal behaviour among adolescents aged 12-19 years was reported (Pan *et al*., 2011).

Contrarily, consumption of certain foods and dietary supplements, such as fish, fruits and vegetables and over-the-counter vitamins and supplements can have a positive impact on mental health of adolescents. Fish and fish oil are rich dietary sources for Omega-3 fatty acids are beneficial to neural functioning (Walsh *et al.,* 2011) and further research has shown that fish oil may prevent progression of psychosis in high-risk youth (Walsh *et al*., 2011).

Fish oil may offer a safe and effective prophylaxis in adolescents who are at a high risk of developing psychosis (Amminger *et al*., 2010). Vitamin D is a supplement that can positively affect mental well-being. Multiple studies have linked inadequate vitamin D intake to cognitive impairment, depression, bipolar disorder and schizophrenia which justifies it use by many mental health professionals to recommend regular vitamin D intake (Walsh *et al.,* 2011). Dietary modifications that increase nutrition can be introduced quickly with minimal to no health risks and could offer significant improvements in physical health, self-esteem, and quality of life (Deslande *et al*., 2009).

Adolescents are sensitive about body image and obese teenagers are especially vulnerable to social discrimination. Poor self-esteem and body image are consistently associated with obesity

in adolescents but not in younger children (French *et al*., 1995). Health-compromising behaviours such as binge eating, substance abuse and past suicide attempts were found to be correlated with inadequate intake of fruit and vegetables in the Minnesota Adolescent Survey (Neumark-Sztainer *et al.*, 1997).

2.7.1Benefits of Mental Health Services for in-School Adolescents.

Comprehensive school-based mental health services are effective in preventing a range of mental and behavioural problems (Durlak *et al*., 1997). Mental health and psychosocial problems are now being addressed within many school systems worldwide (Kury *et al.*, 2006). Schools are accessible to children and families, and may be less intimidating and stigmatising than hospitals or clinics. In a focus group discussion survey, teachers identify significant mental health problems in school-aged children and described a variety of contributing biopsychosocial factors (Omigbodun *et al*., 2009). Walter *et al*., (2006) found out that providing mental health services in schools can facilitate the removal of emotional and behavioural barriers to learning, thereby enhancing the students' potential for academic success. Evidence also exists for positive effect on academic outcome of students with physical health problems (Murray *et al*., 2007). In addition, numerous studies have found that skills-based health education can equip young people to manage relationships, cope with stress, and resolve conflicts (Greenberg *et al.* 2003).

In a recent study conducted in Sierra Leone by Betancourt *et al*., (2014) to address the question: what kind of post-conflict intervention could potentially address the links between poor mental health and school drop-out, under-employment and violence among affected youth? The intervention focussed on improving psychological and behavioural readiness to return to school

among 15-24 year old whose daily functioning was impaired by emotional distress and behavioural difficulties. After 10 sessions of Youth Readiness Intervention (YRI), revealed a significant post intervention effect on prosocial behaviour, social support and reduced functional impairment and significant follow-up effect on school enrolment, school attendance and class behaviour.

2.8 Relevance of Study to the West African Region

There is paucity of child and adolescent mental health (CAMH) related legislation, policies, services, programmes and human resources in the West African region (Kleintjes *et al.*, 2010). Stigma and low priority given to mental health contribute to low investment in CAMH (Belfer, 2008). In South Western Nigeria, research among school-aged adolescents with traumatic events reported a significant association with development of depression and similar study among youth within the same region reported one in ten had attempted suicide in the last year (Omigbodun *et al.*, 2010). These reports are alarming and invariably inform the urgent need for policy makers to prioritise mental health services for children and adolescents living within this region.

Furthermore, malnutrition in adolescents constitutes a huge burden in the West Africa region (WHO, 2002). Childhood obesity is a major driving force behind paediatric metabolic syndrome risk that has become a growing public health concern in LMIC (Musa *et al*., 2012) and it is associated with impaired psychosocial and economic productivity in adulthood (Philip, 2004; Abubakari *et al*., 2008).

From these data on mental health and nutritional status among adolescents and their prevailing socioeconomic predictors, it can be envisaged that the 'Low and Middle Income Trap' is far from being redecorated until mental health and nutrition in adolescents are given priority.

The results from this study will add more colours and rejuvenate existing policies designed by stakeholders in their pursuance of mental health services for children and adolescents and address their nutritional needs at national, provincial and local levels in West Africa.

CHAPTER THREE

METHODOLOGY

3.1 Study location

This study was carried out among school-going adolescents living in Freetown. Freetown is the capital city of Sierra Leone with an average population of 1.2 million on a total land area of 357 km² [World Population Review (WPR), 2010]. A major port city on the Atlantic Ocean, Freetown is ethnically, culturally and religiously diverse with Muslim and Christian inhabitants. Freetown was originally the home of resettled freed slaves who made up the Creole ethnic group but a mixture of other ethnic groups such as the Mende, Temne, Limba, Kono, Fullah, Loko, Susu, Madingo, Sherbro, Kissi and Koranko, who migrated from the inland provinces to the coast are now the dominant population.. Krio is the primary language of communication in Freetown. Freetown municipality is divided into the East, Central and West regions which are further subdivided into East 1, 2 and 3, Central 1 and 2 and West 1, 2 and 3 wards respectively. The wards in the East End contain the city's largest population and generally this is recognised as the poorest part of the city. The Western wards consist of relatively middle and high socio-economic populations.

The Eastern region houses the only psychiatric hospital in the country and this provides in and out-patient mental health services. There are no formal mental health services for children and adolescents with mental health needs in this facility. The only psychiatrist in the country retired recently and non-specialist health professionals deliver mental health services (mhLAP, 2012). Presently, faith based organisations and some NGOs render limited psychosocial services specifically to traumatised victims. The Government Specialist Paediatric and Maternity

Hospitals are located in the Eastern region and they deliver free health care for all under five aged children, pregnant women and lactating mothers.

The city's economy revolves largely around its harbour situated at the Eastern end, which is the gateway into the main city from the provincial areas. A ferry terminal close to this harbour is used as a connecting route to the only international airport in the country called Lungi International Airport. Within this region there are a few private factories that produce local gin, confectioneries and plastic items for domestic use. Petty trading is the major financial activity among indigenous members.

3.2 Study Design

This study used a school-based cross-sectional descriptive survey of adolescents living in Freetown as a part of a needs assessment process towards eventually developing a school health programme.

3.3 Study Population

The study was carried out among adolescents attending senior secondary schools (SSS) in the Eastern end of Freetown.

3.3.1 Inclusion criteria:

- Students between the ages of 10 to 19 years.
- Senior secondary schools within the Eastern region of Freetown.

3.3.2 Exclusion criteria:

- Students and parents who did not agree to sign the informed consent form or give assent.

3.4 Sample size

The minimum sample size calculated was done using the formula for a single proportion as follows:

$$N = \frac{(Z\alpha + Z\beta)^2 pq}{d^2}$$

Where:
N = minimum sample size required for the study

Zα= Standard normal deviate corresponding to 5% level of significance=1.96.

Zβ = represents power at 80% =0.80

p= prevalence of mental disorders or malnutrition in LMIC

q = 1 – p

d= level of precision = 5 % (0.05)

Prevalence of mental disorders in LMIC is 12-20 % (Gureje *et al*., 2006; Cortina *et al*., 2012).

Using the upper limit of 20%, q = 1- 0.2 = 0.8

$$\text{Thus } N = \frac{(1.96 + 0.80)^2 \times 0.20X\ 0.8)}{(0.05)^2} = 500$$

Assuming a 10% nonresponse rate, the sample was adjusted to 550.

Prevalence (p) of the various types of malnutrition in LMIC ranges between 9.3-12.6% (Abdulkarim *et al*., 2014). Thus q =1- 0.126 = 0.874

Applying the same formula,

$$N = \frac{(Z\alpha + Z\beta)^2 pq}{d^2} = \frac{(1.96 + 0.8)^2 \times 0.126 \times 0.874}{(0.05)^2} = 335$$

Assuming a 10% nonresponse rate, the sample was adjusted to 372.

In this study, the minimum sample size used was 550 (highest value of the two).

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3.5.1 Sampling Technique

A multi-stage stratified sampling was carried out to select the total number of participants. A sampling frame of all the secondary schools in the Eastern region in Freetown was developed based on a list of schools obtained from the Ministry of Education.

The following steps were carried out (Figure 3.1):

Stage 1: The Eastern region was purposively selected.

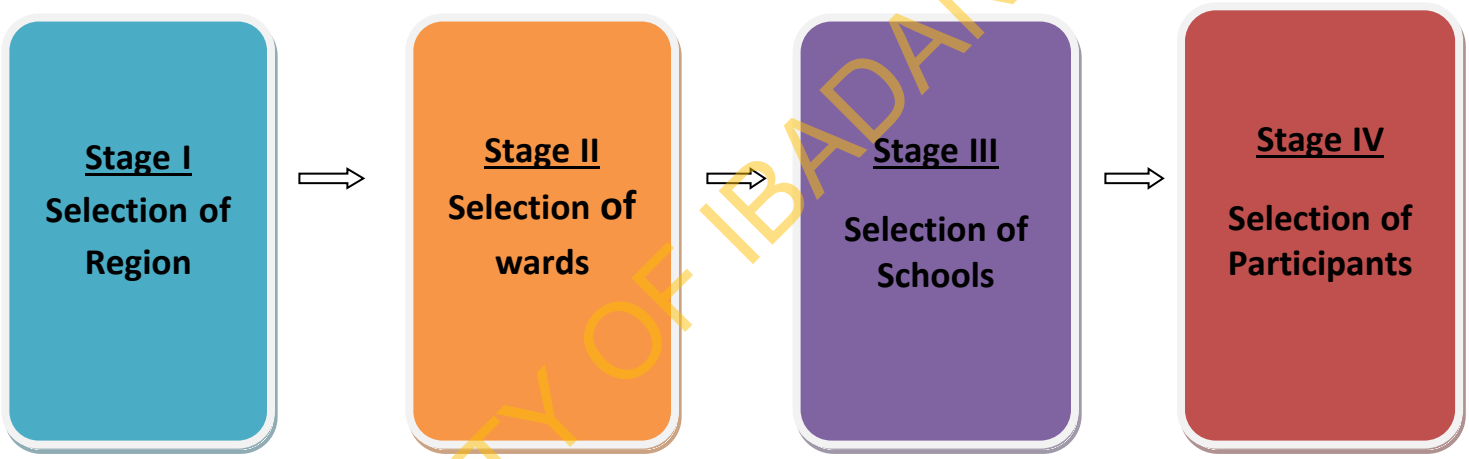
Stage 2: All the wards in the region were selected.

Stage 3: Five (5) schools were selected by simple random sampling from the list of schools in the Eastern wards. One each from East 1 and East 2 and three from East 3 which has 60% of the schools.

Stage 4: Selection of participants in each school was based on the total number of students enrolled. The class registers in each school were used to collate all the senior secondary students

to form a sampling frame. Students from each school were then selected by systematic sampling until the required number of students was reached in each school (Table 3.1). For example, in school 1 which had 599 senior secondary students, number of participants selected was derived by: 599 ÷ 3024 × 550 = 109. The first student was randomly selected among the first five students in the list and using a sampling interval of 5 i.e. 599 ÷ 109, every fifth student was selected thereafter.

Figure 3.1: Sampling Technique Flow Chart



3.5.2 Profile of Selected Schools:

Table 3.1 shows the profile of schools selected and the number of participants that completed the study in each school. There were 254 registered secondary schools in Freetown when the data was collected (MEST survey, 2016). Over 90% of these schools were private while others were either owned by the Government or Government–assisted, with some support from local and international NGOs. Of the 254 secondary schools, 152 (60%) were junior secondary (JS) level while 102 (40%) were either senior secondary (SS) level or mixed junior and senior. Participants

were selected from the senior level (SSS1 to SSS4) which is equivalent to 10 to 13 years of schooling. There were 49 senior secondary schools in all the wards of the Eastern region where this study was carried out and five schools were randomly selected from this number. One school was selected from East 1 and East 2 and three schools from East 3 which had 60% of the schools in the Eastern region. The selected schools include; Ansarul Islamic Mission (school 1), Cambridge International (school 2), Barrack H. Obama (school 3), Government Municipal (school 4) and Government Independent (school 5).

Table 3.1: Profile of Selected Schools and Number of Selected Participants

Variables	Ownership	Ward	Student Population	Selected Participants	%
School 1	Mission*	East one	599	109	19.8
School 2	Private	East two	429	78	14.2
School 3	Private	East three	341	62	11.2
School 4	Public	East three	940	171	31.2
School 5	Public	East three	715	130	23.6
Total			3024	550	100.0

*Government-assisted

3.6 Study Instruments

Four study instruments were used.

3.6.1. Sociodemographic Questionnaire:

This is a modified version of the school health socio-demographic questionnaire designed by Omigbodun *et al*., (2008). It contains questions on personal data, family information and school related questions.

3.6.2. Global School Health (GSH) Questionnaire:

The Global School-based Health Survey (GSHS) core questionnaire (World Health Organization & Centers for Disease Control and Prevention, 2003) was used. The GSHS questionnaire contains items on the following modules: dietary behaviour, alcohol, substance and tobacco use, physical activity, protective factors, sexual behaviour and violence. The GSHS has been used among students aged 13 to 17 years in several countries with the aim of providing accurate data on health behaviour and protective factors among students. It uses core-expanded and country specific questions that are combined to form a self-administered questionnaire.

3.6.3 Diagnostic Interview Schedule for Children (DISC) Predictive Scales (DPS) (Version 432)

The DPS is a diagnosis-specific self-reporting inventory designed to give an indication of the likelihood of mental disorders using the Diagnostic and Statistical Manual (Version 4) criteria. A modified version of the DPS with proven and acceptable validity and adaptability in previous studies was used ((Lucas *et al.*, 2001; Chen *et al*., 2005; Leung *et al*., 2005; Omigbodun *et al*., 2008). It has 106 items which are subdivided into 17 subsections each having 3 to 15 items referring to the past 12 months. The various scales include; anxiety disorders, eating disorders, major depressive disorders, attention deficit hyperactivity disorders (ADHD), oppositional defiant disorders (ODD), conduct disorders (CD), suicide/suicidal ideation, alcohol and drug use and general health problems. Participants with five or more symptoms of depression or oppositional defiant disorder met the diagnosis for probable depression and oppositional defiant disorder respectively. Those with three or more symptoms of conduct disorder or social phobia met the diagnosis for probable conduct disorder or social phobia respectively and those who had

experienced suicidal thoughts or had tried to kill themselves were categorised as suicidal ideation and suicide attempt respectively.

3.6.4. Becks Depression Inventory (BDI)

The BDI is a 21-item multiple-choice self-report inventory designed to screen for depression in adolescents aged 13 years and older in the past two weeks (Becks, Steer and Brown 1996). Its items are rated on a 4 point likert scale ranging from 0 – 3 giving a maximum score 63. Scores of 0 – 13 indicate minimal depression, 14 – 19 mild depression, 20 – 28 moderate depression, 29 – 63 severe depression (Beck, Steer and Brown, 1996). Their total BDI score was further dichotomized into 0 to 17 as not depressed and 18 or greater as clinical depression (Adewuya *et al*., 2007).

3.7. Ethical Considerations

Ethical approval to carry out the study was obtained from the Sierra Leone Ethics and Scientific Review Committee in Freetown. Permission to carry out the survey was obtained from the Ministry of Education and the various school authorities. Information about the study and participation was provided in both English language and the local language (Krio). Ethical principles were strictly observed as highlighted below.

3.7.1 Voluntariness

The autonomy of each participant was taken into cognisance and efforts were made to ensure participants experienced no undue coercion. Participation in the study was free and completely voluntary. Informed consent forms were signed by participants' parents and participants were

requested to provide assent after explaining the purpose of the study. Participants were informed that they could withdraw at any time they desired without any consequences to their health or academics.

3.7.2 Confidentiality

All data obtained from the respondents were handled with strict confidentiality. Each participant was identified by a code number and no names were used on the questionnaires. Participants were assured that their identity and information obtained during the procedure would only be accessed by the researcher and no names would be used in subsequent publications.

3.7.3 Beneficence to Participants

This study is an integral part of a needs assessment to develop school mental health programmes for children and adolescents in Freetown. Participants with obvious physical abnormalities were treated accordingly and efforts were made to provide brief psychotherapy for those with severe psychological distress or refer where necessary.

3.7.4 Non-maleficence to Participants

The examination aspect of this study was voluntary and non-invasive with not more than minimal risk to the participants. Measures were taken to ensure that inconveniences were reduced to the barest minimum and timing of the procedure was scheduled not to encroach on

their academic work or lunch break. The venues selected for the study were appropriate and conducive for the participants.

3.7.5 Justice

All the students in each school had equal chance to be enrolled in the study, but participants were selected randomly using a sampling frame derived from the class registers. All were given the chance to participate under the same circumstances within their respective schools and those who required interventions were treated appropriately.

3.8 Study procedure

Ethical approval was obtained from the National Ethic and Science Committee in Freetown. Informed consent and assent were obtained from the participants and their parents or caregivers. The study was carried out in two phases. After a general brief explanation of its contents, participants completed a self-report questionnaire with all the questions translated into Krio, the local language (See Appendix VI). Participants were also allowed and encouraged to seek clarification from the researcher or research-assistants during the session. The second phase involved measuring their weight (kilogram) and height (centimetres) using a weighing scale and a free standing graduated stadiometer respectively. These measurements were done in accordance with the WHO recommended protocol to avoid inaccurate readings. The BMI was extrapolated from the weight (in kg) and square of height (in metres) (Table 3.2). Obvious physical abnormalities identified were documented and appropriate referrals made if necessary.

A brief physical examination was done to identify any obvious physical abnormality and to ascertain the stage of their sexual maturity using the Tanner staging (Stage I to V). Breast development in females, testicular volume in males and pubic hair growth and distribution in both sexes are the ideal parameters for sexual maturity staging according to Tanner's staging (1970) and had been used in a previous study within the sub-region (Omigbodun *et al*., 2010). However, due to the unavailability of an orchidometer to measure testicular volume in males, breast development in girls and pubic hair growth and distribution in boys was used for staging in this study. Two research assistants (medical officers) were trained by the researcher in assessing sexual maturity using the Tanner stages. Female health professional examined the female students while male clinicians examined the males.

Table 3.2: BMI and Classification

BMI(kg/m^2)	Classification
less than 18.5	Underweight
18.5 -24.9	Normal
25-29.9	Overweight
30 or more	Obesity

3.9 Data Management

Data entry and analysis was done using the Statistical Package for the Social Sciences (SPSS) version 20. Means and standard deviations and percentages were used to present the prevalence of various forms of malnutrition and mental disorders and frequency tables were used to present the participants' sociodemographic variables. The Chi-square test was used to establish any significant association between categorical variables and mental disorders or malnutrition. Logistic regression analysis was further applied to determine which variables were independent predictors of common mental disorders and malnutrition. Kappa (K) analysis was used to test for agreement between DPS and BDI in their psychometric properties to diagnosis depression. ANOVA was applied to test for any significant difference between the prevalence of mental disorders or the type of malnutrition among the participants and location of their schools. Level of statistical significance was tested at 5%.

CHAPTER FOUR

RESULTS

This study to assess the relationship between mental disorders and malnutrition among school-going adolescents was carried out in the Eastern region of Freetown. The results are presented for 471 adolescents who completed the study.

4.1.0. Sociodemographic Characteristics of the Participants

4.1.1 Personal Information

More than half (55%) of the participants were females, with a male to female of ratio 1: 1.2. (Table 4.1a). Their ages ranged from 15 to 19 years with a mean age of 17.8 years (SD =1.3). Majority (42%) were in Senior Secondary School (SSS) level 2. All the participants (100%) reported that they practised a religion, majority (77%) were Muslims and a large proportion (84%) affirmed that their behaviour and family life was guided by their religion (Table 4.b).

Table 4.1a Number of Participants in each School

Variables	Participants (%)		Total	%
	Male	Female		
School 1	69(64.0)	38(36.0)	107	22.7
School 2	22(36.0)	39(64.0)	61	7.4
School 3	8(33.0)	27(77.0)	35	13.0
School 4	49(37.0)	118(63.0)	167	35. 5
School 5	63(73.0)	37(17.0)	101	21.4
Total	211	260	471	100.0

Table 4.1b: Personal Information of Participants (N =471)

Characteristics	Frequency	%
Age (years)		
14 – 15	23	5.0
16 – 17	117	25.0
18 – 19	331	70.0
Sex		
Male	211	44.8
Female	260	55.2
Religion		
Islam	366	77.7
Christianity	95	20.1
Others	10	2.2
Religious influence on behavior		
Very much	395	83.9
Much	47	10.0
Just a little	19	4.0
Not at all	10	2.1
Religious influence on family life		
Very much	397	84.3
Much	38	8.1
Just a little	26	5.5
Not at all	10	2.1

4.1.2 Family Characteristics of Participants

Majority (93%) of the participants reported that they liked their family. More than two-thirds (68%) were from a monogamous family setting, 20% had parents who were separated or divorced, and 23% had a parent who had died. Majority (86%) of the participants' mothers had one husband and 14% had had two or more husbands following a death or separation from their former partners (Table 4.2).

Table 4.2: Family Characteristics of Participants (N =471)

Variables	Frequency	%
Family type		
Monogamous	320	68.0
Polygamous	151	32.0
Respondent reports they like their family		
Yes	465	93.0
No	6	7.0
Marital status of parents		
Married	270	57.0
Separated/divorced	92	20.0
Parent(s) deceased	109	23.0
Number of husbands mother has had		
One	405	86.0
Two	60	12.7
Three or more	6	1.3
Number of father's children		
One	21	4.5
Two	42	8.9
Three or more	408	86.6
Number of mother's children		
One	17	3.6
Two	39	8.3
Three or more	415	88.1

4.1.3 Relationship of Participants with Caregivers

More than a third of the participants (36.4%) were currently living with their biological parents, about a third (30.2%) with a single parent and 7.0% with grandparents. More than half (52%) had left their parents to live with one or more guardians at different periods of time (Table 4.3)

Table 4.3: Relationship of Participants with Caregiver (N=471)

Variables	Frequency	%
Caregiver living with currently		
Parents	171	36.4
Single parent	102	30.2
Grandparents	33	7.0
Others	124	26.4
Guardian since childhood		
Parents	175	37.0
Single parent	192	40.5
Grandparents	61	13.0
Others	43	9.5
Number of different people adolescents had lived with in the past		
One	178	37.8
Two	52	11.0
Three or more	24	4.0

4.1.4 Parents' Education and Occupation

Almost a quarter (24%) and 41.7 % of participants' fathers and mothers had no formal education respectively. Majority (70.4%) and 43.5% respectively reported their mothers' and fathers' occupation as unskilled (Table 4.4).

Table 4.4: Parents' Education and Occupation (N =471)

Variable	Frequency	%
Level of father's education		
No formal education	113	24.0
Quranic school	99	21.0
Primary school	50	10.6
Secondary school	100	21.2
Post-secondary (non-university)	47	10.0
University degree and above	47	10.0
Unknown	15	3.2
Occupation of father		
Unskilled	203	43.5
Semi-skilled	125	26.8
Professional (non-university)	70	15.0
Professional and university	46	9.9
Unknown	27	5.7
Level of mother's education		
No formal education	222	47.1
Quranic school	36	7.6
Primary school	75	15.9
Secondary school	94	20.0
Post-secondary (non-university)	24	5.1
University degree and above	12	2.5
Unknown	8	1.7
Occupation of mother		
Unskilled	331	70.4
Semi-skilled	94	20.0
Professional (non-university)	29	6.2
Professional and university	9	1.9
Unknown	7	1.5

4.2 School-Related Information

Majority (99.0%) of the participants reported they liked their schools and 95.5% indicated that they were doing well academically. Less than one-fifth (16%) reported having difficulty with their teachers. More than three fourths (77%) affirmed they had a guidance counsellor in their school but only 66% had ever sought help from a counsellor (Table 4.5).

Table 4.5: School-Related Information (N=471)

Variables	Frequency	%
Doing well academically		
No	21	4.5
Yes	450	95.5
Liked school		
No	6	1.0
Yes	465	99.0
Had experienced difficulty with teachers		
No	398	84.5
Yes	73	15.5
Has guidance counsellors in school		
No	106	22.5
Yes	365	77.5
Seen by guidance counselor		
No	297	63.1
Yes	174	36.9
Sought help from guidance counsellor		
No	160	34.0
Yes	311	66.0

4.3: Dietary Lifestyle and Physical Activity

In the past 30 days, more than half (53.6%) of the participants reported they had sometimes gone hungry, 43.8% reported that they had never or rarely gone hungry, while 2.6% indicated they were always hungry. More than half (59.0%) reported that they had eaten some fruits in a day in the past week. One in every four (25%) had spent less than 2 of the previous 7 days deliberately doing physical activities and 53.9% had spent less than an hour sitting in a 24 hour period (Table 4.6).

Table 4.6: Dietary Pattern and Physical Activity (N=471)

Variables	Frequency	%
Going hungry (past 30 days)		
Never or rarely	206	43.8
Sometimes or most times	252	53.6
Always	13	2.6
Frequency of eating fruits per day (past 30 days)		
Never	90	19.0
less than once/day	103	22.0
Once or more/day	278	59.0
Physically active for lasting 30mins in a day (past 7 days)		
Never	2	0.4
One day	122	25.9
Two days or more	447	73.7
Time spent sitting (per day)		
less than 1 hour a day	254	53.9
1-2 hours a day	150	31.8
3 hours or more a day	72	15.3

4.4 Injury and Traumatic Events

More than a third (38%) of the participants had lost a close relative and Ebola Virus Disease accounted for over 27% of these deaths. Up to 37% of the participants indicated that they had experienced a natural disaster. Two in every three (62%) participants reported they had been bullied and 44% had been physically attacked once or had sustained a serious injury in the last 12 months (Table 4.7).

Table 4.7 Injury and Traumatic Events (N=471)

Variables	Frequency	%
Death of close relative		
No	292	62.0
Yes	179	38.0
Cause of death of close relative (n=179)		
Ebola Virus Disease	48	27.0
Road Traffic Accident	32	18.0
Malaria	30	16.7
Hypertension	25	14.0
Tuberculosis	18	10.0
HIV/AIDS	6	3.1
Others*	20	11.2
Experienced natural disaster		
No	296	63.0
Yes	175	37.0
Bullied (last 12 months)		
No	181	38.0
Yes	290	62.0
Physically attacked		
No	266	56.0
Yes	205	44.0
Sustained serious injury (last 12 months)		
No	267	56.0
Yes	204	44.0

Others*: cancers, kidney disorders, diabetes, unknown

4.5 Sexual Behaviour, Tobacco, Alcohol and Drug Use

Almost half (46.3%) of the participants had ever had sexual intercourse and 72% of those who were sexually active had their first sexual intercourse by the age of 16 years. Just below two-thirds (62%) had unprotected sexual intercourse the last time they had had sex. Less than a tenth (7%) had ever tried a cigarette and 2% reported that it had occurred by the age of 7 years. Above a tenth of the participants (12.7%) affirmed that they had drunk alcohol at least once in the past month and 9.5% had used psychoactive drugs at least once in their lifetime (Table 4.8).

Table 4.8: Sexual Behaviour, Alcohol, Drug and Tobacco use (N=471)

Variables	Frequency	%
Sexual intercourse		
No	218	46.3
Yes	253	53.7
Age first had sexual intercourse(n=253)		
11 year old or younger	5	2.0
12 to 15years old	66	26.0
16 years or older	182	72.0
Condom used last time had sexual intercourse		
Yes	96	38.0
No	157	62.0
Lifetime rate of drug use		
No	426	90.3
Yes	45	9.7
Frequency of alcohol intake in the last 30days		
No	411	87.3
Yes	60	12.7
Cigarette smoking (age first tried)		
Never	437	93.0
7 years old or younger	8	2.0
8 years or older	26	5.0

4.6 Prevalence of Common Mental Disorders among Participants

Table 4.9a shows the prevalence of common mental disorders among the participants. One in four (24%) had probable depression using scores on the DISC Predictive Scale (DPS) and more than a quarter (28%) met the diagnostic criteria for depression using scores from the Becks Depression Inventory (BDI). Fifty five (11.6%) had probable social phobia, 5.3% had probable oppositional defiant disorder and 6% had conduct disorder. Above a tenth (14.3%) had experienced suicidal ideation and 9.7% had attempted suicide. About a fifth (21.4%) had enuresis and 9.7% had encopresis. Lifetime rate of psychoactive substance use among participants was 9.5%.

Table 4.9a: Prevalence of Common Mental Disorders (N=471)

Variables	Frequency	%
Depression(using DPS)		
No	358	76.0
Yes	113	24.0
Depression (using BDI)		
No	339	72.0
Yes	132	28.0
Suicidal ideation		
No	381	85.2
Yes	66	14.3
Suicide Attempt		
No	425	90.3
Yes	46	9.7
Oppositional Defiant Disorder		
No	446	94.7
Yes	25	5.3
Conduct Disorder		
No	388	82.4
Yes	83	17.6
Social Phobia		
No	416	81.4
Yes	55	11.6
Enuresis		
No	370	78.6
Yes	101	21.4
Encopresis		
No	395	90.3
Yes	76	9.7
Alcohol intake (last 30days)		
No	411	87.3
Yes	60	12.7
Drug use (life time)		
No	426	90.0
Yes	45	10.0

4.7 Comparing Prevalence of Common Mental Disorders among the Participants by Wards

Table 4.9b shows prevalence of common mental disorders among the participants in the three wards of the Eastern region. ANOVA was used to compare the prevalence of mental disorders among the participants attending schools in the three wards. There was a statistically significant difference between participants meeting criteria for diagnosis of depression, social phobia, enuresis and location of their schools ($p < 0.05$). Further analysis comparing prevalence of depression among the wards of school revealed a significant difference between participants attending schools in East two and East three but no significant difference between the other wards (Table 4.9c).

Table 4.9b: Comparing Prevalence of Mental Disorders among the Participants by wards

Variables		N	Mean	Std. D	F Statistics	p-value
Depression	East one	107	15.85	10.37	6.115	0.002*
(BDI)	East two	61	12.54	9.96		
	East three	303	11.99	9.66		
Depression (DPS)	East one	107	3.26	1.69	8.804	<0.0001*
	East two	61	3.82	1.50		
	East three	303	2.87	1.72		
Oppositional Defiant Disorder	East one	106	1.38	1.28	2.758	0.064
	East two	61	1.88	1.27		
	East three	301	1.73	1.61		
Conduct Disorder	East one	107	1.29	1.51	0.318	0.728
	East two	61	1.31	1.09		
	East three	303	1.42	1.64		
Social Phobia	East one	107	1.53	1.38	4.112	0.017*
	East two	61	1.54	1.00		
	East three	303	1.24	0.97		
Enuresis	East one	107	0.20	0.45	4.728	0.009*
	East two	61	0.10	0.30		
	East three	303	0.31	0.58		
Suicidal ideation	East one	99	0.17	0.38	2.220	0.110
	East two	55	0.22	0.42		
	East three	290	0.12	0.30		
Suicide attempt	East one	101	0.11	0.33	0.026	0.974
	East two	57	0.10	0.31		
	East three	287	0.10	0.30		

Table 4.9c: Comparing Prevalence of Depression between the Wards (N=471)

Variables		S E	p-value	95% CI	
				Lower	Upper
East one	East two	0.07	0.068	-.26	.01
	East three	0.05	0.353	-.05	.14
East two	East one	0.07	0.068	-.01	.26
	East three	0.06	0.005*	.05	.29
East three	East one	0.05	0.353	-.14	.05
	East two	0.01	0.005*	-.29	-.05

*Significant at the level of 5%

4.8 Anthropometry of Participants

Table 4.10 shows the anthropometric profile of the participants. Just below a fifth of the participants were overweight (18.7%) or stunted (18.3%). Less than a tenth (6.2%) were underweight and 2.5% were obese.

Table 4.10: Anthropometry of Participants (N=471)

Variables	Frequency	%
Height*(cm)		
Normal	384	82.5
Stunted	86	18.3
Tall	1	0.2
BMI†(Weight●/Height^2)		
Normal	342	72.6
Overweight	88	18.7
Underweight	29	6.2
Obese	12	2.5

***Mean**: males =168.34 (SD9.21); females =158.51 (SD 6.35)
†**Mean:** males= 21.99 (SD 2.61); females =23.49 (SD 3.51)
●**Mean**: males= 62.45(SD 9.207); females=59.0 (SD 9.17)

4.9 Frequency of Symptoms of Common Mental Disorders among Participants (in the past 12months)

4.9.1 Symptoms of Depression

Over half (58.9%) of the participants reported that sometimes nothing made them happy, or they were sometimes uninterested in anything. Sixty-five percent had less energy than usual or were feeling tired. About half (50.9%) affirmed that at times they could not do anything well or felt not as good-looking or as smart as other people. Up to 14.3% had experienced suicidal ideation, and about one in ten (9.7%) had attempted suicide (Table 4.11).

Table 4.11: Depressive Symptoms as Assessed by the DPS (N=471)

Symptoms	Frequency	%
Has there been a time when nothing made you happy and you just were not interested in anything?(n=457)		
No	195	41.1
Yes	276	58.9
Has there been a time when you had less energy than you usually do?		
No	165	35.0
Yes	306	65.0
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?		
No	231	49.1
Yes	240	50.9
Has there been a time when you thought seriously about killing yourself?		
No	405	85.7
Yes	66	14.3
Have you tried to kill yourself in the last year?		
No	425	90.3
Yes	46	9.7
Has there been a time when doing even little things made you feel really tired?		
No	173	36.5
Yes	298	63.5
Has there been a time when you could not think as clearly or as fast as usual?		
No	205	43.0
Yes	266	57.0

4.9.2 Symptoms of Social Phobia

About half (50.5%) of the participants had felt very nervous, shy or uncomfortable when in the midst of a group of children or young people, and less than a third (30.1%) often wanted to stay at home and not go to school or other places without their parents (Table 4.12).

Table 4.12: Symptoms of Social Phobia as Assessed by the DPS (N=471)

Variables	Frequency	%
In the last year, have you often felt very nervous, shy or uncomfortable when you have been with a group of children or young people - for example, like eating at school or at a party?		
No	238	50.5
Yes	233	49.5
Do you often feel very nervous or shy when you have to do things in front of people?		
No	223	47.3
Yes	248	52.7
Has there been a time when you often wanted to stay at home and not go to school or other places without your mother or father?		
No	329	69.9
Yes	142	30.1

4.9.3 Symptoms of Oppositional Defiant Disorder

About one sixth (15.3%) of the participants had carried out revenge by hurting people or destroying their belongings. One fifth (20%) had refused to obey their parents' or teachers' orders and 22.3% had done bad things to people on purpose. Close to half (47%) had blamed someone else for their mistakes or for things that they shouldn't have done (Table 4.13).

Table 4.13 Symptoms of Oppositional Defiant Disorder as Assessed by the DPS (N=471)

Symptoms	Frequency	%
In the last year, have you carried out revenge by doing things like hurting people spoiling their things?(n=457)		
No	387	84.7
Yes	70	15.3
Have you refused to do what your parents or teachers told you to do?(n=465)		
No	374	80.4
Yes	91	19.6
Have you been irritable or easily annoyed? (n=438)		
No	231	52.7
Yes	207	47.3
Have you done bad things to people on purpose?(n=454)		
No	353	77.8
Yes	101	22.2
Have you blamed someone else for your mistakes or for things you did that you shouldn't have done? (n=459)		
No	271	59.0
Yes	188	41.0
Have you done things just to annoy people or make them angry?(n=459)		
No	333	72.5
Yes	126	27.5

4.9.4 Symptoms of Conduct Disorder

Almost half (49.3%) of the participants had lied to get money or something else, 18.5% had been physically cruel to an animal, 14% reported swearing or having used dirty language on people and 16.6% had broken something or spoiled some place on purpose. Ten percent (10%) reported they had shoplifted, 9.2% had stolen from someone and 5.9% had been expelled from school for bad behaviour (Table 4.14).

Table 4.14: Symptoms of Conduct Disorder as Assessed by the DPS (N=471)

Variables	Frequency	%
Have people complained because you were swearing or used dirty language?		
No	392	83.6
Yes	79	16.4
In the last year, have you been expelled from school for bad behaviour?		
No	443	94.1
Yes	28	5.9
Have you shoplifted?		
No	423	89.8
Yes	48	10.2
Have you lied to get money or something else you wanted?		
No	239	50.7
Yes	232	49.3
Have you snatched someone else's purse or jewelry?		
No	432	91.7
Yes	39	8.3
Have you broken something or spoiled some place on purpose?		
No	405	86.0
Yes	66	14.0
Have you stolen from anyone when they were not around or looking?		
No	426	90.4
Yes	45	9.6
Have you been physically cruel to an animal and hurt it on purpose?		
No	384	81.5
Yes	87	18.5

4.10: Experience at Home and School among Participants (in the last 30days)

Over a fourth (29.0%) of the participants had missed classes or school without permission and 71% reported that their friends were sometimes or always helpful in school. Over quarter (27.6%) reported that their parents understood or were always worried about their problems and their parents or guardians knew what they were doing in their free time 54.2% of the time (Table 4.15).

Table 4.15: Experience at Home and School among Participants (N=471)

Variables	Frequency	%
During the past 30 days, on how many days did you miss classes or school without permission?		
Never	334	71.1
1 or more days	137	29.0
During the past 30 days, how often were most of the students in school kind and helpful?		
Never/rarely	84	18.0
Sometimes/most times	335	71.0
Always	52	11.0
During the past 30 days, how often did your parents or guardians check to see if your home work was done?		
Never/rarely	98	20.8
Sometimes/ most times	191	40.5
Always	182	38.7
During the past 30 days, how often did your parents or guardians understand your problems and worries?		
Never/rarely	73	15.5
Sometimes/ most of the time	268	56.9
Always	130	27.6
During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?		
Never/ rarely	76	16.1
sometimes /most of the time	255	54.2
Always	140	29.7

4.11.0 Correlates of Specific Mental Disorders

4.11.1 Correlates of Depression (BDI)

More females had depression compared to males using the BDI score but there was no statistically significant difference (29.6% vs 26.1%; p = 0.394). The proportion of depression was significantly higher in participants who went hungry sometimes compared with those who never had to go hungry (32.5 vs, 21.3; p=0.008). Participants who had been physically attacked, involved in a physical fight, had difficulty with teachers or performing poorly in their academics and frequently took alcohol were more likely to be depressed (p< 0.05)(Table 4.16a).

Table 4.16a: Correlates of Depression (BDI) (N= 471)

Variables	Depression		Total	χ^2	p-value
	No (%)	Yes (%)			
Gender					
Male	156(73.9)	55(26.1)	211(100.0)	0.727	0.394
Female	183(70.4)	77(29.6)	60(100.0)		
Going hungry					
No	148(78.7))	40(21.3)	188(100)	7.065	0.008*
Yes	191(67.5)	92(32.5)	283(100)		
Fruits intake					
Never	63(70.0)	27(30.0)	90(100)	0.215	0.643
Sometimes	276(72.4)	105(27.6)	381(100)		
Alcohol intake					
No	305(74.2)	106(26)	411(100)	7.988	0.005*
Yes	34(56.7)	26(43.3)	60(100)		
Parents check home work					
Never	52(64.2)	29(35.8)	81(100)	2.933	0.087
At least once	287(73.6)	103(26.4)	390(100)		
Parents know activity during free time					
Never	45(70.3)	19(29.7)	64(100)	0.101	0.750
Sometimes	294(72.2)	113(27.8)	407(100)		
Parental use of tobacco					
Neither	132(77.6)	38(22.4)	170(100)	16.883	0.002*
Father	27(50.9)	26(49.1)	53(100)		
Mother	17(81.0)	4(19.0)	21(100)		
Difficulty with teachers					
No	294(73.9)	104(26.1)	398(100.0)	4.570	0.033*
Yes	45(61.6)	28(38.4)	73(100.0)		
Doing well academically					
No	8(38.1)	13(61.9)	21(100)	12.507	0.001*
Yes	331(73.6)	119(26)	50(100)		
Physically attacked					
No	205(77.1)	61(22.9)	266(100)	7.859	0.005*
Yes	134(65.4	71(34.6	205(100)		
Involved in a physical fight					
No	237(76.0)	75(24.0)	312(100)	7.284	0.007*
Yes	102(64.2)	57(35.8)	159(100)		
Helpful friends in school					
No	45(64.3)	25(35.7)	70(100)	2.410	0.121
Yes	294(73.3)	107(26.7)	401(100)		
Experienced natural disaster					
No	217(73.6)	78(26.4)	295(100)	1.061	0.303
Yes	121(69.1)	54(30.9)	175(100)		

***Significant at the level of 5%

4.11.2 Correlates of Depression (DPS)

Table 4.16b shows correlates of depression as assessed using DPS. Participants who had no intake of fruits in the past 30 days were more likely to meet the diagnostic criteria for probable depression compared with those who had eaten at least once in a day (33.5 vs, 21.3; p= 0.021). Poor parental knowledge about respondents' activities and schoolwork, parental use of tobacco were significantly associated with probable depression. Participants who had difficulties with teachers or no helpful friends in school or had experienced natural disaster were more likely to be depressed ($p < 0.05$).

Table 4.16b: Correlates of Depression (DPS) (N= 471)

Variables	Depression		Total (%)	χ^2	p-value
	No (%)	Yes (%)			
Gender					
Male	160(75.8)	51(24.2)	211(100.0)	0.007	0.935
Female	198(76.2)	62(23.8)	260(100.0)		
Going hungry					
Never	147(78.2)	41(21.8)	188(100)	0.818	0.366
Sometimes	211(74.6)	72(25.4)	283(100)		
Fruits intake					
Never	60(66.7)	30(33.3)	90(100.0)	5.325	0.021*
At least once	298(78.2)	83(21.8)	381(100.0)		
Alcohol intake					
Never	310(75.4)	101(24.6)	411(100)	0.601	0.438
Sometimes	48(80.0)	12(20.0)	60(100)		
Parents check home work					
Never	1(63.0)	30(37.0)	81(100.0)	9.129	0.003*
At least once	307(78.7)	83(21.3)	390(100.0)		
Parents know activity during free time					
Never	39(60.9)	25(39.1)	64(100.0)	9.225	0.002*
Sometimes	319(78.4)	88(21.6)	407(100.0)		
Parental use of tobacco					
None	357(92.5)	29(7.5)	386(100.0)	12.48	0.014*
Father	36(67.9)	17(32.1)	53(100.0)		
Mother	16(76.2)	5(23.0)	21(100.0)		
Difficulty with teachers					
No	310(85.0)	88(15)	398(100.0)	4.430	0.024*
Yes	48(66.0)	25(34.0)	73(100.0)		
Doing well academically					
No	14(66.7)	7(33.3)	21(100.0)	1.052	0.305
Yes	344(76.4)	106(23.0)	450(100.0)		
Helpful friends in school					
No	46 (66.0)	24(34.0)	70(100.0)	4.778	0.029*
Yes	312 (77.8)	89(22.2)	401(100.0)		
Physically attacked					
No	206(77.4)	60(22.6)	266(100.0)	0.690	0.406
Yes	152(74.1)	53(25.9)	305(100.0)		
Involved in a physical fight					
No	244(78.2)	68(21.8)	312(100.0)	2.446	0.118
Yes	114(71.4)	45(28.3)	159(100.0)		
Experienced natural disaster					
No	234(79.0)	62(21.0)	296(100.0)	3.972	0.046*
Yes	124(70.9)	51(29.1)	175(100.0)		

***Significant at the level of 5%

4.11.3 Comparison of DPS and BDI Scores for Depression

Table 4.16c shows a comparison between DPS and BDI in their psychometric properties to meet a diagnostic criterion for depression. Kappa (K) value is greater than zero which means there was a statistically significant agreement between BDI and DPS instruments (K = 0.158 and p = 0.001).

Table 4.16c: Comparison of DPS and BDI Scores for Depression (N=471)

	Depression (BDI)				
Variables	**No (%)**	**Yes (%)**	**Total**	K	**p-value**
Depression (DPS)					
No (%)	272(76.0)	86(24.0)	358(100)	0.158	0.001*
Yes (%)	67(59.3)	46(40.7)	113(100)		

***Significant at the level of 5%

4.10.4 Predictors of Probable Depression

Binary logistic regression analysis was applied to determine significant variables (combined BDI and DPS) that were independent predictors of depression among the participants. Poor academic performance, difficulty with teachers, involvement in a physical fight, drinking alcohol, poor parental monitoring of activities and parental smoking were independent predictors of depression (Table 4.16d).

Table 4.16d Logistic Regression Analysis: Predictors of Depression (N=471)

Variables	OR	p-value	95% C.I.	
			Lower	Upper
Parents know free time activity				
No♦	1.0			
Yes	1.97	0.016*	1.104	3.600
Physically attacked				
No	1.0			
Yes	0.67	0.073	0.440	1.034
Involved in a physical fight				
No♦	1.0			
Yes	0.654	0.035*	0.402	0.910
Poor academic performance				
No♦				
Yes	1.342	0.040*	2.080	10.880
Difficulty with teachers				
No	1.0			
Yes	0.515	0.027*	0.318	0.934
Unhelpful friends at school				
No♦	1.0			
Yes	1.49	0.178	0.934	3.615
Drinking alcohol				
No♦	1.0			
Yes	0.58	0.036*	0.301	0.980
Going hungry				
No♦	1.0			
Yes	0.931	0.532	0.743	1.166
Less intake of fruits				
No♦	1.0			
Yes	0.947	0.533	0.798	1.124
Experienced natural disaster				
No♦	1.0			
Yes	0.744	0.197	0.475	1.165
Parental use of tobacco				
No♦	1.0			
Yes	1.242	0.004*	1.072	1.439
Physically attacked				
No♦	1.0			
Yes	0.676	0.073	0.440	1.038

♦Reference group (OR=1.0**)** ***Significant at the level of 5%

4.10.5 Correlates of Suicidal Ideation (in the past 12 months)

Table 4.17a displays correlates associated with suicidal ideation among the participants in the past 12 months. There was a significant association between suicidal ideation and frequent hunger, low parental monitoring, occupation of father, dislike of family, sexual activity, involved in a physical fight and poor academic performance.

Table 4.17a: Correlates of Suicidal Ideation (N=447)

Variables	Suicidal Ideation		Total (%)	χ^2	p-value
	No (%)	Yes (%)			
Gender					
Male	172(85.1)	30(14.9)	202(100)	0.002	0.963
Female	209(85.3)	36(14.7)	245(100)		
Occupation of father					
Unskilled	160(81.2)	37(18.8)	197(100)	4.515	0.034*
Skilled	221(88.4)	29(11.6)	250(100)		
Like family					
No	3(50.0)	3(50.0)	6(100)	5.999	0.014*
Yes	378(85.7)	63(14.3)	441(100)		
Parents understand problems and worries					
No	44(75.9)	14(24.1)	58(100)	4.652	0.031*
Yes	337(86.6)	52(13.4)	389(100)		
Going hungry					
No	163(90.6)	17(9.4)	180(100)	6.779	0.009*
Yes	218(81.6)	49(18.4)	267(100)		
Had serious injury					
No	250(89.6)	29(10.4)	379(100)	11.269	0.001*
Yes	131(78.0)	37(22.0)	168(100)		
Involved in a physical fight					
No	265(88.9)	33(11.1)	298(100)	9.679	0.005*
Yes	116(77.9)	33(22.1)	149(100)		
Had been bullied					
No	245(88.8)	31(11.2)	276(100)	7.157	0.007*
Yes	136(79.5)	35(20.5)	171(100)		
Drug use					
No	348(85.9)	57(14.1)	405(100)	1.635	0.201
Yes	33(78.6)	9(21.6)	42(100)		
Cigarette smoking					
No	359(85.7)	60(14.3)	419(100)	0.72	0.396
Yes	24(80.0)	6(20.0)	30(100)		
Doing well academically					
No	13(68.4)	6(31.6)	19(100)	4.458	0.035*
Yes	368(86.0)	60(14.0)	428(100)		

*Significant at the level of 5%

4.10.6 Predictors of Suicidal Ideation

Table 4.17b shows variables that were found to be associated with suicidal ideation. Going hungry most times of the day, disliked family, had been bullied and poor academic performance were independently linked with suicidal ideation ($p<0.05$).

Table 4.17b Predictors of Suicidal Ideation (N=447)

Variables	OR	p-value	95% CI	
			lower	Upper
Hunger				
No♦	1.0			
Yes	0.48	0.033*	0.250	0.943
Physical fight				
No♦	1.0			
Yes	0.57	0.790	0.313	1.085
Dislike family				
No♦	1.0			
Yes	0.01	0.010*	1.708	55.774
Poor academic performance				
No♦	1.0			
Yes	3.53	0.023*	1.186	10.498
Occupation of father				
Semi-skilled/professional♦	1.0			
Unskilled	0.11	0.113	0.893	2.910
Had been bullied				
No ♦	1.0			
Yes	1.184	0.010*	1.184	3.393

♦Reference category (OR=1.0) *Significant at the level of 5%

4.10.7 Correlates of Suicidal Attempt

Table 4.17c shows the correlates of suicide attempt reported among the participants in the past 12 months. More females were likely to attempt suicide, but there was no significant difference (10.7 vs 9.9; p =0.73). Drug and tobacco use were strongly associated with suicide attempt ($p<0.05$). Participants that reported that their parents never understood their problems or worries were more likely to attempt suicide (19.0 vs 8.9; p=0.014) and those that had been bullied were more likely to report suicide attempt (p=0.025).

Table 4.17c Correlates of Suicide Attempt (N =445)

Variables	Suicide Attempt		Total (%)	χ^2	p-value
	No (%)	Yes (%)			
Gender					
Male	182(90.1)	20(9.9)	202(100)	0.682	0.408
Female	217 (89.3)	26(10.7)	243(100)		
Occupation of father					
Unskilled	165(87.3)	24(12.7)	189(100)	2.096	0.48
Skilled	237(91.5)	22(8.5)	259(100)		
Like family					
No	4(80.0)	1(20.0)	5(100)	0.52	0.471
Yes	398(89.8)	45(10.2)	443(100)		
Parents understand problems and worries					
No	51(81.0)	12(19.0)	63(100)	4.652	0.014*
Yes	348(91.1)	34(8.9)	382(100)		
Going hungry					
No	164(91.1)	16(8.9)	180(100)	0.689	0.408
Yes	235(81.7)	30(11.3)	265(100)		
Had serious injury					
No	237(92.4)	19(7.4)	256(100)	5.527	0.019*
Yes	162(85.7)	27(14.3)	189(100)		
Involved in a physical fight					
No	276(92.6)	22(7.4)	298(100)	8.496	0.004*
Yes	123(83.7)	24(16.3)	147(100)		
Had been bullied					
No	258(92.1)	22(7.9)	280(100)	5.011	0.025*
Yes	141(85.5)	24(14.5)	165(100)		
Lifetime drug use					
No	365(91.0)	36(9.0)	401(100)	8.087	0.004*
Yes	34(77.3)	10(22.7)	44(100)		
Cigarette smoking					
No	374(90.8)	38(9.2)	412(100)	7.436	0.006*
Yes	25(75.8)	8(24.2)	33(100)		
Doing well academically					
No	16(80.0)	4(20.0)	20(100)	2.152	0.142
Yes	386(90.2)	42(9.8)	428(100)		

***Significant at the level of 5%

4.10.8 Predictors of Suicide Attempt (last 12 months)

Table 4.17d shows correlates observed to be associated with suicide attempt among the participants. Smoking cigarettes or having sustained serious injuries were independent predictors of suicide attempt**.**

Table 4.17d Predictors of Suicide Attempt (N=445)

			95% CI	
Variables	**OR**	**p-value**	**lower**	**Upper**
Parents understand problems and worries				
No♦	1.0			
Yes	0.90	0.88	0.49	2.78
Drug use				
No♦	1.0			
Yes	0.57	0.62	0.06	5.25
Involved in a physical fight				
No♦	1.0			
Yes	0.53	0.07	0.26	1.05
Had been bullied				
No♦	1.0			
Yes	0.77	0.55	0.37	1.63
Had serious injuries				
No♦	1.0			
Yes	3.08	0.02*	1.28	7.49
Cigarette smoking				
No♦	1.0			
Yes	1.22	0.03*	1.01	1.49

♦ Reference category OR=1.0 *****Significant at level of 5%

4.10.9: Correlates of Oppositional Defiant Disorder (in the past 12 months)

More male respondents had probable oppositional defiant disorder compared to females and the difference was statistically significant (8.5vs 2.7%; p= 0.005). Participants whose parents used tobacco and who had been involved in a physical fight were significantly more likely to have probable oppositional defiant disorder ($p < 0.05$) (Table 4.18a**).**

Table 4.18a: Correlates of Oppositional Defiant Disorder (N= 471)

Variables	Oppositional Defiant Disorder			χ^2	p-value
	No (%)	Yes (%)	Total (%)		
Gender					
Male	193(91.5)	18(8.5)	211(100)	7.900	0.005*
Female	253(97.3)	77(2.7)	260(100)		
Parents or guardians check to see if home work was done					
Never	75(92.6)	6(7.4)	81(100)	0.858	0.354
At least once	371(95.1)	19(4.9)	390(100)		
Parental use of tobacco					
Neither	161(94.7)	9(5.3)	170(100)	9.823	0.045*
Father	47(88.7)	6(11.3)	53(100)		
Mother	21(100.0)	0(0.0)	21(100)		
Both	8(81.6)	2(18.4)	10(100)		
Unknown	208(96.3)	8(3.7)	216(100)		
Physically attacked					
Never	254(95.5)	12(4.5)	266(100)	0.772	0.380
At least once	192(93.7)	13(6.3)	205(100)		
Involved in a physical fight					
Never	301(96.5)	11(3.5)	312(100)	5.841	0.016*
At least once	145(91.2)	14(8.8)	159(100)		

***Significant at the level of 5%**

4.10.10 Predictors of Oppositional Defiant Disorder

Table 4.18b shows variables found to be associated with oppositional defiant disorder. Being a male was an independent predictor to meet a diagnostic criterion for oppositional defiant disorder (P=0.014; OR 3.14, 95% CI= 1.24-7.88).

Table 4.18b: Predictors of Oppositional Defiant Disorder (N= 471)

Variables	OR	p-value	95% CI	
			lower	Upper
Gender				
Female♦	1.0			
Male	3.14	0.014*	1.24	7.88
Parental use of tobacco				
No♦	1.0			
Yes	1.25	0.61	0.53	8.89
Involved in a physical fight				
No♦	1.0			
Yes	0.44	0.05	0.19	1.00

♦Reference category (OR=1.0)
*Significant at the level of 5%

4.10.11 Correlates of Conduct Disorder (past 12months)

A significantly higher proportion of males had conduct disorder compared to females (25.6% vs 11.2%; $p < 0.001$). Frequency of alcohol intake, drug use, being physically attacked or involved in a fight, missing classes or school without permission were each significantly associated with probable conduct disorder ($p < 0.05$)(Table 4.19a).

Table 4.19a: Correlates of Conduct Disorder (N=471)

Variables	Conduct Disorder No (%)	Yes (%)	Total (%)	χ^2	p-value
Gender					
Male	157(74.4)	54(25.6)	211(100)	16.727	<0.001*
Female	231(88.8)	29(11.2)	260(100)		
Alcohol intake					
No	348(84.7)	63(15.3)	411(100)	11.692	0.001*
Yes	40(66.7)	20(33.3)	60(100)		
Lifetime rate of drug use					
No	356(83.6)	70(16.4)	426(100)	4.351	0.037*
Yes	32(71.1)	13(28.9)	45(100)		
Missing classes or school					
No	286(85.6)	48(14.4)	334(100)	8.359	0.004*
Yes	102(74.5)	35(25.5)	137(100)		
Parental use of tobacco					
Neither	144(84.7)	26(15.3)	170(100)	15.47	0.004*
Father	36(67.9)	17(32.1)	53(100)		
Mother	18(85.7)	3(14.3)	21(100)		
Both	6(54.5)	5(45.5)	11(100)		
I do not know	184(85.2)	32(14.8)	216(100)		
Physically attacked					
No	230(86.5)	36(13.5)	266(100)	7.036	0.008*
Yes	158(77.1)	47(22.9)	205(100)		
Physical fight					
No	267(85.6)	45(14.4)	312(100)	6.515	0.011*
Yes	121(76.1)	38(23.9)	159(100)		

*Significant at the level of 5%

4.10.12 Predictors of Conduct Disorder

Table 4.19b shows the variables linked with conduct disorder. Being a male, drinking alcohol and missing classes or school without permission were each independently associated with conduct disorder.

Table 4.19b: Predictors of Conduct Disorder (N=471)

Variables	OR	p-value	95% CI	
			Lower	Upper
Gender				
Female♦	1.0			
Male	2.50	0.001*	1.58	4.28
Alcohol intake				
No♦	1.0			
Yes	0.32	0.004*	0.17	0.71
Lifetime rate of drug use				
No♦	1.0			
Yes	1.10	0.830	0.472	2.57
Missing classes or school				
No♦	1.0			
Yes	0.49	0.008*	0.29	0.83
Parental use of tobacco				
No♦	1.0			
Yes	0.88	0.930	0.24	3.43
Physically attacked				
No ♦	1.0			
Yes	1.49	0.133	0.85	2.52
Physical fight				
No♦	1.0			
Yes	0.74	0.250	0.43	1.25

♦Reference category (OR=1.0)
*Significant at the level of 5%

4. 11.0: Correlates of Malnutrition among Participants

4. 11.1: Correlates of being Underweight, Overweight and Obese

Table 4.20 shows correlates of malnutrition among the participants. Females were more likely to be obese than males and this difference was statistically significant (3.5% vs 0.9; p<0.001). On the other hand, males were more likely to be underweight than females (7.1vs 5.2; p<0.001).Respondents from a polygamous family setting were more likely to be underweight, overweight or obese as compared to their counterparts, but this was not statistically significant. Respondents who sat for at least one hour per day were more likely to be obese than those who sat for less than an hour a day (3.2% vs 2%; p =0.009).

Table 4.20: Correlates of being Underweight, Overweight and Obese (N=471)

Variables	BMI (%) Underweight	Normal	Overweight	Obese	Total	χ^2	p-value
Gender							
Male	15(7.1)	173(82.0)	21(10.0)	2(0.9)	211(100)	24.629	0.001*
Female	14(5.4)	169(65.0)	67(25.8)	10(3.8)	260(100)		
Family type							
Monogamous	19(5.9)	236(73.8)	58(18.2)	7(2.2)	320(100)	0.932	0.818
Polygamous	10(6.6)	106(70.2)	36(19.9)	5(3.3)	151(100)		
Level of father's education							
No formal/Quranic	14(6.6)	156(73.6)	36(17.0)	6(20.8)	212(100)	0.89	0.822
At least primary	15(5.2)	186(71.8)	52(20.1)	6(2.3)	259(100)		
Occupation of father							
Unskilled	12(5.9)	150(73.9)	35(17.2)	6(3.0)	203(100)	0.746	0.862
Skilled	17(6.3)	192(71.6)	53(19.8)	6(3.2)	268(100)		
Level of mother's education							
No formal/Quranic	14(5.4)	188(72.9)	51(19.8)	5(1.9)	258(100)	1.691	0.639
At least primary	15(7.0)	154(37.0)	37(17.4)	7(3.3)	213(100)		
Occupation of mother							
Unskilled	2.1(6.3)	239(72.2)	61(18.4)	1(3.0)	331(100)	1.107	0.775
Skilled	8(5.7)	103(73.6)	27(19.3)	2(1.4)	140(100)		
Going hungry							
No	10(5.3)	131(69.7)	42(22.3)	5(2.7)	188(100)	2.982	0.394
Yes	19(6.7)	211(74.6)	46(16.3)	7(2.5)	283(100)		
Eating fruits							
No	4(4.4)	69(76.7)	15(16.7)	2(2.2)	90(100)	1.071	0.784
Yes	25(6.6)	273(71.7)	73(19.2)	10(2.6)	381(100)		
Eating vegetables							
No	2(4.3)	38(82.6)	5(10.9)	1(2.2)	46(100)	2.667	0.446
Yes	27(6.4)	304(71.5)	83(19.5)	11(2.6)	425(100)		
Hours spent sitting in a day							
less than1hr	10(3.9)	180(70.9)	59(23.2)	5(2.0)	254(100)	11.47	0.009*
At least1hr	19(8.8)	162(74.7)	29(13.4)	7(3.2)	217(100)		

*Significant at the level of 5%

4.11.2 Correlates of Stunting

Table 4.21a shows correlates of stunting among participants. Those who were males, from a polygamous family background, frequently going hungry and not eating fruit or vegetables were more likely to be stunted, but these associations were not statistically significant ($p > 0.05$). Occupations of the participants' mothers and stunting showed a statistically significant association (24.5 vs 12.9; $p = 0.048$).

Table 4.21a Correlates of Stunting (N=471)

Variables	Stunting(%)	Normal (%)	Total (%)	χ^2	p-value
Gender					
Male	46(21.8)	165(78.2)	211(100)	3.213	0.073
Female	40(15.4)	220(84.6)	260(100)		
Family type					
Monogamous	57(17.8)	263(92.2)	320(100)	0.133	0.740
Polygamous	26(19.2)	122(80.8)	151(100)		
Level of father's education					
No formal /Quranic	36(17.0)	176(83.0)	212(100)	0.428	0.576
At least primary	50(19.0)	209(81.0)	259(100)		
Occupation of father					
Unskilled	42(18.5)	161(79.3)	203(100)	1.412	0.235
Skilled	44(16.4)	224(83.6)	268(100)		
Level of mother's education					
No formal/Quranic	49(19.0	208(81.0)	258(100)	0.200	0.050
At least primary	37(17.0)	176(82.6)	213(100)		
Occupation of mother					
Unskilled	68(24.5)	263(79.5)	331(100)	3.080	0.048*
Skilled	17(12.9)	122(87.1)	140(10)		
Going hungry					
No	33(17.6)	155(82.4)	188(100)	0.114	0.740
Yes	53(19.7)	230(81.3)	283(100)		
Eating fruits					
Never	19(21.1)	71(78.9)	90(100)	0.606	0.436
Sometimes	67(17.6)	314(82.4)	381(100)		
Eating vegetables					
Never	9(19.6)	37(83.4)	47(100)	0.058	0.809
Sometimes	77(18.1)	348(81.9)	425(100)		
Hours spent sitting in a day					
Less than 1 hour	47(18.5)	207(81.5)	254(100)	0.022	0.882
More than 1 hour	38(28.0)	178 (82.0)	217(100)		

4.12 Factors independently associated with Stunting among the Participants

Table 4.21b displays variables that were significantly associated stunting. Although occupation of participants' mothers was associated with stunted growth among participants, it did not independently predict stunting (p =0.05; OR 0.51, 95% CI= 0.35-1.09).

Table 4.21b Factors Independently Associated with Stunting among the Participants (N=471)

Variables	OR	p-value	95% CI	
			Lower	Upper
Occupation of mother				
Skilled♦	1.0			
Unskilled	0.51	0.05	0.35	1.09

♦Reference category

4.13. Relationship between Mental Disorders and Malnutrition

Tables 4.22a and 4.22b show relationship between common mental disorders and malnutrition (using BMI) among the respondents. Participants who were underweight were more likely to meet a diagnostic criterion for one of the common mental disorders. This association was statistically significant for suicide attempt (15.2% vs 5.0%; p =0.029), but not a strong independent predictor of suicide attempt (p=0.234; 95% CI=0.428-35.38). Obese participants were more likely to be associated with social phobia when compared to those who were not obese, but the relationship was not statistically significant (5.5% vs 2.3%; p=0.398).

Table 4.22a Relationship between Mental Disorders and Malnutrition (N= 471)

	BMI (%)						
Variables	**Underweight**	**Normal**	**Overweight**	**Obese**	**Total (%)**	**χ^2**	**p-value**
Depression(DPS)							
No	20(5.6)	261(72.9)	68(19.0)	8(2.5)	358(100)	0.890	0.889
Yes	9(8.0)	91(71.7)	20(17.7)	3(2.7)	113(100)		
Depression(BDI)							
No	17(5.0)	255(75.2)	59(17.4)	8(2.4)	339(100)	4.926	0.177
Yes	12(9.1)	87(65.9)	29(22.0)	4(3.0)	132(100)		
Conduct Disorder							
No	20(5.2)	280(72.2)	76(19.0)	12(3.1)	358(100)	7.180	0.066
Yes	9(10.8)	62(72.7)	12(14.5)	0(0.0)	83(100)		
Oppositional Defiant Disorder							
No	26(5.8)	325(72.9)	83(18.6)	2(2.7)	446(100)	2.280	0.550
Yes	3(12.0)	17(68.0)	5(20.0)	0(0.0)	25(100)		
Suicide Attempt							
No	21(5.0)	314(73.9)	78(18.5)	12(2.5)	425(100)	9.050	0.029*
Yes	7(15.2)	27(58.7)	11(23.9)	1(2.2)	46(100)		
Suicidal Ideation							
No	22(5.8)	281(73.8)	69(18.1)	9(2.4)	381(100)	1.205	0.752
Yes	6(9.1)	47(71.2)	11(16.7)	2(3.0)	66(100)		
Social Phobia							
No	25(6.0)	309(73.6)	71(18.1)	10(2.3)	416(100)	2.958	0.398
Yes	4(7.3)	36(65.5)	12(21.8)	3(5.5)	55(100)		

***Significant at the level of 5%**

Table 4.22b: BMI-Type that Independently Predict Suicide Attempt

Variables	OR	p-value	95% CI	
			Lower	Upper
Underweight				
No ♦	1.0			
Yes	3.85	0.234	0.418	35.38

♦ Reference category (OR=1.0)

4.14 Clinical Findings among the Participants

Table 4.23 shows clinical findings observed during the brief physical examination of the participants. Majority (90.7%) had no obvious clinical abnormality and 3% had dental caries. Fungal skin infections were seen in about 2.7%. Other findings include umbilical hernias, mouth ulcers/cheilitis, scars, yellowish eyes and inflamed tonsils.

Table 4.24: Clinical Findings of Participants (N=471)

Variables	Frequency	%
No Abnormality	427	90.3
Dental caries	15	3.0
Umbilical Hernia	12	2.7
Fungal skin infection	5	1.0
Mouth Ulcers /Cheilitis	3	0.6
Inflamed tonsils	2	0.4
Surgical scar	2	0.4
Others	8	1.6

4.15 Stage of Sexual Maturity (Tanner Staging)

Table 4.25 shows stages of sexual maturity of Participants using the Tanner Stage (stages I to V). None of the participants was observed to be in prepubertal stage (Tanner Stage I). About half (47.0%) were in Tanner Stage V and 34.4% were in stage IV.

Table 4.24: Stages of Sexual Maturity of the Participants (Tanner Staging) (N=471)

Stage	Frequency	%
I*	-	-
II	16	3.5
III	73	15.5
IV	162	34.0
V	220	47.0

*prepubertal stage

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The burden of mental disorders and malnutrition is a worldwide public health problem and is therefore of interest during the critical transition period of adolescence. This chapter considers findings on the prevalence and correlates of mental disorders and malnutrition among adolescents in Freetown, Sierra Leone. It is divided into the following subsections.

5.1 Discussion

5.2 Conclusion

5.3 Limitations

5.4 Recommendations

5.1.0 DISCUSSION

5.1.1 Sociodemographic Characteristics of Participants

This study was carried out in the East end of Freetown among 471 students attending co-educational senior secondary schools. Participants' ages ranged between 15 and 19 years with a mean age of 17.8 years (SD=1.3) and majority were in the SSS level 2, which is the equivalent to 11 years of schooling. A community-based study among adolescents in the Southern region of Sierra Leone country obtained a lower mean of 15.5 years and age range of between 12 to 19 years (Johnny, 2015). In Northwest Nigeria, a study carried out among Almajiri children obtained an even lower mean age of 13.1 years (Abubakar, 2014). Inclusion of participants from

the senior school level who were older accounts for the higher age range and mean age in this study.

There were more female participants than males with a male to female ratio of 1.0:1.2 in this school study. The finding of a female preponderance was unusual as a greater proportion of males are reported in school study (Omigbodun *et al*., 2010) and community studies in the sub-region (Mambu, 2014; Johnny 2015). It is common practice in Sierra Leone for families to enroll the boy-child for formal education first before considering the girl-child. According to UNICEF, the secondary school participation net attendance ratio from 2008 to 2012 was 39.9% and 33.2% for males and females respectively (UNICEF, 2016). However, due to the improved responsiveness and advocacy on educating the girl-child in Sierra Leone, there has been a significant increase in the enrollment and retention of girls in schools [National Education Action Plan (NEAP), 2013]. In addition, it is notable that in the Eastern and Northern provincial areas, education is free for girls at the junior secondary level. While this may not account for the discrepancy, the positive initiative for girl-child school enrollment, may partly account for the high proportion of females in this study (NEAP, 2013).

The largest proportion of participants in this study was Muslims, followed by Christians. These proportions are similar to estimates obtained in the general populace (Demographic Health Survey 2013; Pew Research Centre, 2015).

Majority of participants were from monogamous family settings and one-fifth reported their parents were separated or divorced. These findings are consistent with similar studies carried out

in the provincial areas of this country (Johnny, 2015). A third of the participants were currently living with a single parent and more than half had left their parents at a point in time to live with family members or other people as a result of financial constraint in most instances. About two thirds (60%) of Sierra Leoneans live below the national poverty line (UNDP, 2012). Studies have shown that children and adolescents that are separated from their parents to live with other family members at a young age or who experience family dysfunction are more likely to suffer from mental disorders (Omigbodun, 2004). Due to the prevailing rise in unemployment, poverty, and a corresponding stagnation or fall in household incomes, parents send their children to other supportive and affluent family members or friends for continued educational support and financial needs. This cultural practice has been identified in Southwestern Nigeria (Omigbodun, 2004) and in Sri Lanka, adolescents from poor homes are given out to serve as house helps or maids in order to generate income for the family (De Silva *et al*., 1988), and this may adversely impact their mental health (Bandeali *et al*., 2008; Muhammad *et al* .,2015). In this study over one third of the respondents reported they were engaged in some commercial activities before or after school. This pattern of commercial activity by adolescents has also been reported in a study among adolescents in Nigeria (Omigbodun *et al*., 2008).

About one quarter of the participants' fathers and close to half of their mothers had no formal education. Majority (70.4%) of their mothers and 43.5% of their fathers were engaged in unskilled jobs. A study on street children and a community survey in Sierra Leone reported lower rates of formal education and higher rates of unskilled employment than what is reported in the current study (Mambu, 2014; Johnny, 2015). The observed higher rates of formal education and skilled labour could be attributed to academic nature of the current study location.

Educated parents are more likely to enroll their children in school compared to parents without a formal education. The New Education Policy for Sierra Leone which has a nonformal component geared to improve adult literacy can also account for the higher literacy rate found in this study (NEPA, 2013).

5.1.2. Prevalence of Common Mental Disorders among Participants

Mental disorders affect 10%–20% of children and adolescents worldwide (Global Mental Health, 2010). Approximately one in four participants met the diagnostic criteria for depression using scores from the DPS and BDI in this study. There are myriads of factors that can influence the detection of symptoms of mental disorder using a screening instrument. The participant's clinical state, the number and significance of items and diagnostic criteria used in both instruments are plausible reasons for this difference. The BDI has more items than the DPS and majority of these items are focussed on emotions experienced by the respondents in the past two weeks unlike the DPS which has seven items experienced in the past 12 months. The BDI has a lower diagnostic threshold [presence of six (28%) out of twenty one items] when compared to the DPS [presence of five (71%) out of seven items]. Thus, the BDI is likely to more easily detect "cases" and thus yield a higher rate of probable depression. Both instruments revealed significant agreement in their psychometric properties in detecting depressive symptoms ($p=0.001$; $K = 0.158$).

A community-based study carried out among adolescents in Bo Town (Southern province), Sierra Leone reported a prevalence rate of 16.4% for probable depression (Johnny, 2015) and Mambu (2014) in a similar study among street children (mean age of 13.7 years) in Kenema (Eastern province) reported a prevalence rate of 42% for probable depression. The decade-long

civil war in Sierra Leone originated from the Eastern province and later spread to all regions. Studies have shown that this provincial area was profoundly affected when compared to other areas as it served as one of the main strong holds of the Revolutionary United Front (RUF) who used its natural resources to fund their insurgency (Johnson, 2002). According to Betancourt and colleagues (2008), children born during war have grown up and are still experiencing the physical, psychological and emotional impact of the conflict. The discrepancy between findings in the current study and those reported from other areas in this country may be explained by the increased risk of depression from post-traumatic exposure possibly suffered immensely by children in the Eastern province. In addition, differences in methodology and study population in these studies could account for the disparities.

In Kenya, Khasakhala *et al*., (2012) in their study among adolescents found a rate of depression of 24.6%, which is in keeping with the current study. Other similar studies done in Nigeria have reported prevalence rates of depression ranging between 6 and 12% (Omigbodun *et al.*, 2008; Abdulmalik, 2009; Bella-Awusah *et al*., 2016). The consequences of the recent Ebola epidemic, which was contained just three months before data for this study was collected, can also be a contributory factor to the relatively high rate we found, considering the fact that traumatic events have been strongly linked with depressive symptoms (De jong *et al.*, 2003; Omigbodun *et al*., 2008; Newman, 2015). Mels *et al*., in their 2010 study, established a significant relationship between adolescents living in adverse settings and manifestations of internalizing symptoms. In this study, about 25% of the causes of death in a family member or close relative were reported as due to Ebola viral Disease. In addition, other recent traumatic events including flooding and community violence, coupled with the general rise in economic hardships, are plausible

contributory socioeconomic stressors for adolescents to develop the psychological difficulties identified in the current study (Omigbodun *et al*., 2008)

Prevalence rates of 9.7% and 14.3% for suicide attempt and suicidal ideation respectively were found in this study. There is a dearth of studies on the prevalence of suicidal ideation or suicide attempts among adolescents in Freetown, but a non-stratified nationwide survey reported suicidal ideation rates two times higher (28%) and attempted suicide one third (3%) lower than the findings in this study (mhLAP-SL, 2012). A national survey of school-aged adolescents (14 to18 years) in the United States reported similar rates of suicide attempt in the 12 months prior to the survey (Eaton *et al*., 2008). In Southwest Nigeria, equal rates of suicidal ideation but two times higher rates of suicidal attempt were reported among adolescents compared to this study (Omigbodun *et al.*, 2008). Low rates were reported among school-attending adolescents in Tanzania (Andrea *et al*., 2015). The differences in these values compared to those in the current study were not surprising. Methods of data collection and misclassification or underreporting of suicidal behaviour due to cultural norms are possible factors accounting for the varied prevalence rates in LMIC.

The prevalence of oppositional defiant disorder and conduct disorder among participants in this study were 5.3% and 17.6% respectively. Values reported from the Southern (Johnny, 2015) and Eastern (Mambu, 2014) provincial areas of this country were almost two times higher than this study. A plausible explanation for this difference is that participants in this study were school-going adolescents and majority were likely to have been under the supervision of their caregivers or teachers in contrast to street children which were about a quarter of out-of-school children interviewed in the other studies. Other studies done within the West African sub-region reported lower prevalences of conduct disorder among adolescents. In Northwest Nigeria, Audu

et al., (2013) reported a rate of 4.2% and in the Southwest, Adewuya *et al*., (2007) found a rate of 9.3%. The devastating economic situation in Sierra Leone may be a possible reason for the high rates among studied participants.

5.1.3 Correlates of Mental Disorders

There are loads of socio-demographic factors that can adversely impact on the psychosocial functioning of adolescents. In the current study, multiple psychosocial determinants of common mental disorders were examined, including family structure, living location, marital status of parents, level of parents' education and their occupations, parental monitoring, and religious practice. Other correlates studies included sexual or physical abuse, alcohol or psychoactive substance abuse, hunger and dietary life style, experience of physical attack, and school-related factors.

In this study, using both DPS and BDI assessments, depression was observed to be significantly associated with poor academic performance and having difficulty with teachers. Depression was also associated with having experienced natural disaster, been physically attacked or injured, drinking alcohol, poor parental monitoring and tobacco smoking, not eating fruits and going hungry most times. Omigbodun (2004) also identified poor academic performance, severe traumatic events and family disruption as specific psychosocial correlates of mental disorders in Nigeria. After multivariate logistic regression analysis; poor academic performance and difficulty with teachers, drinking alcohol, prior involvement in a physical fight, poor parental monitoring of free time activities, and parental smoking were found to be independently associated with depression in the current study.

Studies have shown causal relationships between smoking among adolescents and depression (Rodriquez *et al*., 2005; Sunhee *et al.,* 2007; Maharaj *et al*., 2008). The possibility of parental smoking acting as a confounder rather than a predictor cannot be ruled out, considering the fact that this study is cross-sectional (Vogel *et al*., 2003). A longitudinal study design may be needed to further explore whether this relationship is causal or spurious. Poor academic performance and drinking of alcohol were found to be significant and independent predictors of depression in this study. Both factors can be reciprocally linked with depression. For instance, adolescents with depressive symptoms, including not being able to think as clearly or fast as before, having less energy, low mood, or sleep disturbance, are more likely to perform poorly in their academics. Such poor academic performance may result in school drop-out. The currently high rates of school dropout in Sierra Leone may be somewhat reflective of such high rates of depressive symptoms as we found in this study. The country's devastating socioeconomic conditions, sandwiched with poor academic performance, may also increase adolescents' vulnerability to depressive symptoms.

In this study, there were significant associations between suicidal ideation or attempts and frequent hunger, family disharmony, sexual activity, physical fighting, had been bullied and poor academic performance. These factors are similar to those reported in other studies done within the sub-region (Omigbodun *et al*., 2008). In China, Sun *et al*., (2006) established that the absence of family connectedness, school support and peer support were significant mediators of depression, suicidal ideation and low self-esteem. Sierra Leone was declared Ebola-free three months before this study was conducted. The economic effects of this epidemic, and prevailing financial constraints among caregivers and youth are possible reasons for occurrence of psychosocial distress (De jong *et al.,* 2003; Prince *et al.,* 2007; Newman *et al*., 2015). In the

current study, having to go hungry may have been an indication of low socioeconomic status and lack of family support. Involvement in a fight could be a reflection of poor cordiality between family members or poor relationship with peers.

Being of male, frequent alcohol intake, drug use, experience of physical attack or involvement in a fight, and truancy were significantly associated with probable conduct disorder in this study. After application of logistic regression, being a male, drinking alcohol and truancy were found to be independent predictors of conduct disorder. Other studies have also reported a strong link between conduct disorder and alcohol use among adolescents (Bakare *et al*., 2009; Ferrett *et al*., 2011). Lack of family cohesion in some settings, social acceptability of alcohol in some cultures and the urge to explore and experiment with alcohol are established contributory factors to adolescents engaging in risky activities and practices characteristic of behavioural disorders found in this study.

5. 1.4 Prevalence and Correlates of Malnutrition

There is a dearth of studies on the prevalence of malnutrition among adolescents in LMIC. In these regions, the main focus of attention of stakeholders is child and maternal nutrition (UNICEF, 2009). Studies suggest that in developing countries females are nearer to the international reference standards for height and weight when compared with males. Previous findings have also shown that unfavorable environments can adversely impact the growth of males (Cordeiro *et al*., 2006; Wamani *et al*., 2007; Ayoola *et al*., 2009). In this study about one in five participants had stunted growth, one in eight was overweight, about one in ten underweight, and about one in forty was obese. This pattern supports the rising "double" burden of malnutrition described in other studies (Kimani *et al.,* 2013). Omigbodun *et al*., (2010) in a

study carried out in Southwestern Nigeria, reported similar rates of stunting, but rates of underweight were more than twice higher and overweight five times lesser.

In this study, more males were taller than females, but males were likely to be stunted than females, although the difference did not attain statistical significance. Females were three times more likely to be obese compared to males. In a Southwest Nigerian study, Omigbodun and colleagues (2010), reported similar findings, but females were three times more likely to be overweight.

Studies in Kenya and Mozambique reported almost similar rates of stunted growth (16%) as found in this study, but Senegal, Benin and Sudan reported between 23 and 29% rates of stunting among adolescents (Leenstra *et al*., 2005; Cordeiro *et al*., 2006). Similar prevalence rates of obesity among adolescents in Senegal were reported by Schneider (2000). A study among black school-going teenagers in South Africa reported similar gender differences with boys more likely to be stunted and underweight than girls (Jinabhai *et al*., 2007). Higher rates (40 - 60%) of stunting than this study have been reported in a similar survey in the South American region and Asia (Chavez *et al*., 1994; Venkaiah *et al*., 2002). The divergent sociodemographic profiles and the consequence of rapid globalization and urbanization can explain the wide discrepancy of growth trends reported in this study and within the sub-region. In Freetown, the dietary patterns, especially among school-going adolescents are not only inadequate but poorly balanced. The practice of takeaway snacks which are relatively cheap and contain significant quantity of polysaturated fats and less fruits and vegetables is common among this population especially during school periods. This practice, coupled with the declining Physical Health Education programmes in most schools, can be a plausible explanation for the high rate of overweight. The global epidemiologic transition, involving an insidious increase in non-communicable diseases

and waning of communicable diseases due to expanded public health measures (WHO, 2014), may be indirectly related to the nutritional growth trend identified in the study.

In the current study, participants whose fathers' and mothers' occupations were unskilled or whose parents had no formal education, who were from polygamous family settings, went hungry most times, and ate less fruits and vegetables, were more likely to be stunted, but only mothers' occupation revealed a statistically significant association (p= 0.048). Mothers with unskilled jobs are less likely to provide the necessary support and dietary supervision to meet the nutritional requirements during the period of rapid growth and development. This can also be linked directly or indirectly with poverty. Thus, adolescents in such settings are highly vulnerable to malnutrition.

5.1.5 Mental Health and Nutrition

Following extensive research into diet and its effect on physical health, researchers in Western countries are now exploring the link between mental health and nutrition. Unhealthy dietary behaviour including infrequent intake of fruits in the past 30 days was significantly associated with probable depression in this study, but longitudinal studies are needed to further explore this association. However, studies in Western countries have reported that adequate intake of fresh fruits, vegetables and multivitamins containing fish oil positively impact on the mental health of adolescents (Oddy *et al*., 2009; Walsh *et al*., 2011; Almudedena *et al*., 2015). In addition to its impact on short and long term mental health, evidence indicates that food plays an important contributory role not only in the development and management but prevention of specific mental disorders including depression, ADHD and schizophrenia (Mental Health Foundation, 2016).

Participants who were underweight (using the BMI) were more likely to meet a diagnostic criterion for at least one of the common mental disorders examined in this study, but only suicide attempt was significantly association with underweight. This finding similarly supports what was reported by Whestone and colleagues (2007) in the United States on perception of weight status and suicidal behaviour, although the association was strongly linked with male participants. Possible explanation for this finding in the current study can be linked indirectly with delayed or late sexual and physical maturity observed in underweight adolescents, which may result in a variety of psychosocial distresses including depression and poor coping skills. It is also possible that participants who were underweight were more likely to be bullied or teased and weight-based teasing has been linked to suicide attempt in adolescents (Eisenberg *et al*., 2003).

5.2 CONCLUSION

The results from this study reveal that mental disorders and malnutrition are common among adolescents living in Freetown. In addition, there is a reciprocal association between mental disorders and physical health problems as evidenced by malnutrition. Nutrition is especially important during adolescence due to rapid growth and development and the onset of many psychiatric illnesses coincide with this period (Oddy *et al*., 2009). In this study, depression was found to be the most prevalent mental disorder followed by conduct disorder, suicidal ideation, social phobia, suicide attempt and oppositional defiant disorder. Being overweight was identified to be the highest form of malnutrition and obesity the least. Other neuropsychiatric disorders including enuresis and encopresis were also reported.

There are a host of psychosocial factors that can predispose to or perpetuate these disease conditions. If timely interventions are implemented, these health problems can be identified and tackled at their early stages. In this study, family type, marital status of parents, occupation and level of education of parents, parental monitoring, sexual or physical abuse, alcohol or psychoactive substance use, being physically attacked, academic performance, adequate intake of appropriate and balanced diet and physical activity were significantly linked with mental disorders and malnutrition.

The prevalence of these health problems among adolescents is an indication of the urgent need for policy makers to invest in adolescent mental and physical health.

5.4 RECOMMENDATIONS

Mental health services for children and adolescents are virtually nonexistence in Freetown. Where services are provided, these are usually done by unskilled health or non health workers who lack the expertise to manage mental health problems. In addition, malnutrition is not limited to under-five children. Adolescents are also vulnerable. The following are therefore recommended.

1. Policy makers to prioritize child and adolescent mental health.

2. Establish mental health services at all levels of the health care delivery system.

3. Establish School Health Programmes with a comprehensive mental health service and introduction of mental health and nutrition in the school curriculum.

4. Revisit and redesign the mental health curriculum in medical, paramedical and nursing institutions and introduce it into all health related centres.

5. Conduct a wider study involving all the regions in Freetown.

5.3 LIMITATIONS

1. This study was cross-sectional and it is not possible to establish the direction of relationship between mental disorders and its correlates. .

2. An orchidometer was not accessible during the study to assess sexual maturity in male participants which necessitated adaptation of the Tanner staging.

3. A self-reporting questionnaire was used to assess symptoms of mental disorders and dietary lifestyle, which are vulnerable to reporting bias, especially among adolescents.

4. The large proportion of girls included in this study may have occurred as a result of errors with sampling and this is not representative of the secondary student population in Sierra Leone.

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APPENDICES

Appendix I

GOVERNMENT OF SIERRA LEONE
Ministry of Health and Sanitation
Office of the Sierra Leone Ethics and Scientific Review Committee
Directorate of Health Systems Policy, Planning and Information, Youyi Building, 5th Floor

11th January, 2016

TO: **Dr. Abubakarr B. Bah** **Principal Investigator**
Centre for Child and Adolescent Mental Health
University of Ibadan
Federal Republic of Nigeria.

Study Title: **Prevalence and Correlates of Mental Disorders and Malnutrition in School-Going Adolescents in Eastern Freetown, Sierra Leone.**

Version: 5th January, 2015

Submission Type: Initial Protocol Submitted for Review

Committee Action: Expedited Review

Approval Date: 8th January, 2016

The Sierra Leone Ethics and Scientific Review Committee (SLESRC) having conducted an expedited review of the above study protocol and determined that it presents minimal risk to subjects, **hereby grants ethical and scientific approval** for it to be conducted in Sierra Leone. The approval is valid for the period, **8th January, 2016 -7th January, 2017.** It is your responsibility to obtain re-approval for any on-going research prior to its expiration date. The request for re-approval must be supported by a progress report.

Review Comments:

- **Amendments;** Intended changes to the approved protocol such as the informed consent documents, study design, recruitment of participants and key study personnel, must be submitted for approval by the SLESRC prior to implementation.

For further enquiries please contact: efoday@health.gov.sl

GOVERNMENT OF SIERRA LEONE
Ministry of Health and Sanitation
Office of the Sierra Leone Ethics and Scientific Review Committee
Directorate of Health Systems Policy, Planning and Information. Youyi Building, 5th Floor

- **Termination of the study:** When study procedures and data analyses are fully complete, please inform the SLESRC that you are terminating the study and submit a brief report covering the protocol activities. Individual identifying information should be destroyed unless there is sufficient justification to retain, approved by the SLESRC. All findings should be based on de-identified aggregate data and all published results in aggregate or group form.

H Morgan.

Professor Hector G. Morgan
Chair

For further enquiries please contact: efoday@health.gov.sl

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
New England
Freetown

Ref. No. MESTSFP/01

11th February, 2016

TO WHOM IT MAY CONCERN

I write to inform you that the Honourable Minister of Education, Science and Technology has granted permission to Dr. Abubakarr Bah (Researcher) to carry out his research/study among school-going adolescents in respect of schools in the Eastern part of Freetown.

Your cooperation will be highly appreciated.

Yours faithfully

Prince E.O. Cole
Permanent Secretary

Appendix II

Appendix III

INFORMED CONSENT

Research on the Health of Adolescents in Secondary Schools in Freetown

Name of Participant: _____ Serial number:-

_____

I am a Medical Doctor pursuing a Masters programme at the Centre for Child and Adolescent Mental Health, University of Ibadan, Nigeria. I am conducting a study on the health of young people attending secondary schools in the Eastern end of Freetown.

The secondary school period overlaps with the period of adolescence. During this period, young people experience a lot of changes in their bodies, minds and eating habits that can affect their physical, psychological and social well-being.

This study seeks to identify health needs of secondary school-going children and develop a school health programme so that children with health problems can receive help. We also want to identify ways in which the health of children can be promoted and health problems prevented. Some of the questions may be personal but accurate answers are required.

You will be asked to participate in this study by completing a self- report questionnaire to obtain information about your medical and family history. Your weight and height will be checked, followed by a brief physical examination. This will take approximately one hour to complete. There is no risk involved and confidentiality is highly guaranteed. Participants who wish to withdraw from the study are allowed to do so at any time without any effect on their school work or health. If you agree to participate in the study described above, please sign below.

____ I agree for both the interview and physical examination.

_____

Signature of student/ Date

_____

Signature of parent or guardian/ Date

_____

Signature of investigator/ Date

Appendix IV

Tanner Stage for Males

Tanner Stage	Pubic Hair	Testicular Volume
I	No pubic hair at all (prepubertal) (typically age 10yrs and younger)	Testicular volume less than 1.5 ml; small penis of 3 cm or less (prepubertal)

		(typically age 9 yrs and younger)
II	Small amount of long, downy hair with slight pigmentation at the base of the penis and scrotum (10–11.5yrs)	Testicular volume between 1.6 and 6 ml; skin on scrotum thins, reddens and enlarges; penis length unchanged (9–11yrs)
III	Hair becomes more coarse and curly, and begins to extend laterally (11.5–13yrs)	Testicular volume between 6 and 12 ml; scrotum enlarges further; penis begins to lengthen to about 6 cm (11–12.5yrs)
IV	Adult–like hair quality, extending across pubis but sparing medial thighs (13–15yrs)	Testicular volume between 12 and 20 ml; scrotum enlarges further and darkens; penis increases in length to 10 cm (12.5–14 yrs)
V	Hair extends to medial surface of the thighs (15yrs+)	Testicular volume more than 20ml and adult size scrotum and penis.

Appendix V

Tanner Stage for Females

Tanner Stage	Breast	Pubic Hair
I	No glandular tissue: areola follows the skin contours of the chest (prepubertal) (typically age 10yrs and younger).	No pubic hair at all (prepubertal) (typically age 10yrs and younger)
II	Breast bud forms, with small area of surrounding glandular tissue; areola	Small amount of long, downy hair with slight pigmentation on the labia majora (10–

	begins to widen (10–11.5yrs).	11.5yrs)
III	Breast begins to become more elevated, and extends beyond the borders of the areola, which continues to widen but remains in contour with surrounding breast (11.5–13yrs).	Hair becomes more coarse and curly, and begins to extend laterally (11.5–13yrs)
IV	Increased breast size and elevation; areola and papilla form a secondary mound projecting from the contour of the surrounding breast (13–15yrs)	Adult–like hair quality, extending across pubis but sparing medial thighs (13–15yrs)
V	Breast reaches final adult size; areola returns to contour of the surrounding breast, with a projecting central papilla (15yrs+).	Hair extends to medial surface of the thighs (15 yrs+)

Appendix VI

Serial Number: __ __ __

Today's Date: __ /__ /__

SCHOOL HEALTH QUESTIONNAIRE (Translated in Krio)

Please write the answers to the questions or draw a circle where it applies to you. This is not an examination it is only to find out about you and your health.

Duya rayt di ansa dɛn to di kwɛshɔn dɛm ɔ drɔ sakul bay aw yu si am. Dis nɔ to ɛni ɛgzamineshɔn na fɔ fɛnɔt bɔt yu ɛn yu wɛlbɔdi wan. SECTION I

Personal Information

1. Name of School:
1. Skul nem:

2 form/grade:
2.Fɔm/Gred

3. Where do you live? (Address of Present Abode):
3.Usay yu tap

4. What is your date of birth? DOB: _____ _____ _____

4. Ustɛm yu bɔn?

5. How old are you? ____
5. Ɔmɔs ia yu ol ? ____

6. Are you a boy or a girl? (a) boy (b) girl

6. Yu na bɔbɔ or titi? (a) bɔbɔ (b) Titi

7. Do you practise any religion? No Yes

7. Yu gɛt ɛni rilijɔn?No Yes

8. Please write down the exact place you attend for worship _____

8. Duya rayt di ɛgzakt ples usay yu de go wɔship _____

(a) Islam (b) Orthodox Christian (c) Pentecostal Christian(d) Traditional religion (e) Other

9. How much does the teaching of your religion guide your behaviour?
(a) Very much (b) much (c) Just a little (d) Not at all
9. Aw yu rilijɔn de ɛp yu biev?

(a) Fayn wan (b) Fayn (c) Smɔl wan (d) Natin

10. How much does the teaching of your religion guide your family life?

(a) Very much (b) much (c) Just a little (d) Not at all 10. Aw yu rilijɔn de ɛp yu ɛn yu fambul

(a) Fayn fayn wan (b) bɛtɛ wan (c) lilibit (d) atɔl

Family Information (Infɔmeshɔn bɔt Fambul)

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

11. Uskayn fambul: (a) wan wɛf (b) bɔku wɛf

12. Number of Mother's Children:
12. Ɔmɔs pikin we yu mama bɔn:

13. Number of Father's Children:
13. Ɔmɔs pikin we yu papa bɔn:

14. What is your position among your father's children?
14. Yu na nɔmba ɔmɔs pan yu papa in pikin dɛn?

15. What is your position among your mother's children?

15. Yu na nɔmba ɔmɔs pa yu mama in pikin dɛn?

16. Marital Status of Parents:

(a) Married (b) Separated/Divorced (c) father is dead (d) mother is dead
(e) Both father and motherare dead
16. Yu pipul dɛn mared :

(a) Gɛt uman (b) Dɛn dɔn pat (c) yu papa dɔn day (d) yu mama dɔn day (e) yu papa en mama dɔn day

17. How many husbands has your mother had?

17. Ɔmɔs man dɛn yu mama gɛt?

18. Who do you live with presently?

(a) Parents (b) Mother (c) Father (d) Grandparents (e) Grandmother (f) Grandfather (g) Other [please specify] _____

18. Udat yu de wit naw?
(a) Mi pipul dɛn (b) Mama (c) Papa (d) Mi ol pipul dɛn (e) Grani (f) Granpa
(g) Ɔda [duya tɔkan] _____

19. Who brought you up from your childhood?

(a) Parents (b) Mother (c) Father (d) Grandparents (e) Grandmother (f) Grandfather
(g) Other [please specify] _____
19. Udat mɛn yu frɔm we yu smɔl?
(a) Mi pipul dɛn (b) Mama (c) Papa (d) Mi ol pipul dɛn (e) Grani (f) Granpa
(g) Ɔda[duya tɔk am] _____

20. How many different people have you left your parents to live with
20. Ɔmɔs difɛrɛnt pipul dɛn yu lɛf tap wit?

21. If more than one person, list the people, time spent and whether experience was good or bad?
21. If i pas wan pɔsin sho dɛn nem, aw lɔng yu de wit dɛn ɛn wetin gud ɔ bad we yu lan to dɛn?

Person lived with	from which age to which age	Experience (good or bad)
Pɔsin we yu tap wit	frɔm us ej to us ej	wetin yu lan (gudɔ bad)
_____	_____	_____
_____	_____	_____

22. Do you do any kind of work to earn money before or after school? Yes No

22. Yu de du ɛni wok fɔ gɛt mɔni bifo ɔ afta skul? Yes No

23. If yes, please describe what you do _____

23. If yes, wetin yu de du?

24. 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

24. Yu papa in buk lanin lɛvul.

(a) Nɔn Fɔmal buk lanin (b) Koranic Skul (c) Praymari Skul (d) Sɛkɔndari Skul

(e) Post Sɛkɔndari (f) Digri na Kɔlɛj (g) A nɔ sabi

25. Occupation of Father: [Write the exact occupation] _____/ I do not know
(a) Unskilled (b) Semi-skilled (c) Professional [NotUniversity] (d) Professional and University

(e) Others (Specify)_____
25. Yu dadi in wok: [Rayt di ɛgzakt wok] _____/ A nɔ sabi
(a) I nɔ lan natin (b) Lan smɔl wok (c) Lan wok bɔt noto Kɔlɛj (d) Lan wok ɛn go Kɔlɛj

(e) Ɔda _____

26. 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

26. Yu mama in buk lanin lɛvul
(a) I nɔ lan natin (b) Koranic Skul (c) Praymari Skul (d) Sɛkɔndari Skul (e) Post Sɛkɔndari

(f) Digri na Kɔlɛj (g) A nɔ sabi

27. Occupation of Mother: [Write in the exact occupation] _____/ I do not know

(a) Unskilled (b) Semi-skilled (c) Professional [NotUniversity] (d) Professional and University

(e)Others (Specify)_____

27. Yu Mama in wok [rayt di ɛgzakt wok] _____/ A nɔ sabi

(a) I nɔ lan natin (b) Lan smɔl wok (c) Lan wok bɔt noto Kɔlɛj (d) Lan wok ɛn go Kɔlɛj

(e) Ɔda _____

28. Do you like your family? Yes No

28. Yu lek yu fambul den? Yes No

29a. If Yes, Why? _____

29a. If Yes, Fɔ wetin? _____

29b. If No, Why? _____

29b. If No, Fɔ wetin? _____

School-Related Questions (Kwɛshɔn bɔt skul)

30. Do you like your school? Yes/ No
30. Yu lɛk yu skul? Yes/ No

31. How many children are there in your class?___
31. Ɔmɔs pikin dɛn de na yu klas?___

32. Do you do well academically? Yes No

32. Yu de du wɛl na yu lanin? Yes No

33a. If Yes, explain_____

33a. If Yes, tɔk am_____

33b. If No, explain_____

33b. If No, tɔk am_____

34. Are you having difficulties with your teachers? Yes No

34. Yu de gɛt prɔblɛm wit yu ticha? Yes No

35. If yes, what sort of difficulties? _____

35. If yes, uskayn prɔblɛm? _____

36. Do you have guidance counsellors in your school? Yes No
36. Yu gɛt kawnselɔ dɛn na yu skul? YesNo

37. Have you ever gone to see them? Yes No
37. Yu bin ɛva go fɔ si dɛn? Yes No

38. If yes, what did you go to see them for? _____
38. If yes, what did you go to see them for? _____

39. If you have a problem at school would you go to the guidance counsellor for help? Yes No

39. If yu gɛt problɛm na skul yu go go to di kawnselɔ fɔ ɛp? Yes No

40a. If yes, why would you go?

40a. If yɛs, wetin mek yu de go de?

40b. If no, why not?

40b. If no, wetin mek?

Puberty Onset Questions Please write in the exact age you were or not yet.

Pyubati kwɛshɔndɛn. Duya rayt di Kɔrɛkt ej we yu bin de ɔ yu nɔ bin de.

	GIRLS ONLY: How old where you when Titi dɛn nɔmɔ: Ɔmɔs ia yu ol we		BOYS ONLY How old where you when Bɔbɔdɛn nɔmɔ: Ɔmɔs ia yu ol we	
41.	You noticed your breasts were growing? Yu bɔbi dɛn big?		Semen first came out of your penis while sleeping at night (wet dream) wata fɔs kɔmɔt pan yu prayvet we yu de slip na nɛt(wɛt drim)	
42	You started menstruating? Yu stat fɔ si yu piriɔd?		Your voice changed to that of a man? Yu vɔys chenj to man yon?	
43.	Hair started to grow on your private part Ia bigin gro na yu bifo		Hair started to grow on your private part Ia biginbɔku na yu prayvet	
44.	Noticed you had a lot of hair in your armpit Yu notis se yu gɛt bɔku ia na yu ɔnda an		You noticed you had a lot of hair in your armpit Yu notisse yu gɛt bɔku ia na yu ɔnda an	

Please tick in yes or no and give reasons for your answer Duya tik if na yɛs ɔ no ɛn gi risin fɔ yu ansa

		yes	no	Give Reasons
45.	I am satisfied with the way my face looks? A satisfay witdi we mi fes tan?			
46.	I am satisfied with the way my body looks? Asatisfay witdi we mi bɔdi tan?			
47.	I am satisfied with my height? Asatisfay witmi ayt?			
48.	I am satisfied with your weight? A satisfay witmi wet?			

Major Life Events (Bad tin dɛn we apin na yu layf)

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

49. Wetin na di wɔst tin we bin apin to yu na yu layf?

50. Has any one close to you died? No Yes

50.Ɛnibodi bin klos to yu we day? No Yes

51. If yes , who was it? _____
51. If yɛs , na udat? _____

52 .what was the cause?

(a) Road Traffic Accident (b) Ebola (c) HIV/AIDS (d) others (specify) _____

52..Wetin bi di kɔz?

(a) Aksident (b) Ibola (c) HIV/AIDS (d) Ɔda (specify) _____

53. If yes, please describe_____
53. If yɛs, duya tɔk am_____

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

54. Yu bin dɔn ɛva ɛkspiriɛns nachɔral dizasta lɛk wata ɔ faya? Yes No.

55. If yes, please describe _____
55. If yɛs, duya tɔk am _____

SECTION II : GLOBAL SCHOOL HEALTH QUESTIONNAIRE

Sɛkshɔn II : GLOBAL SkulWɛlbɔdi Kwɛshɔnia

GSHS Core Questionnaire: Dietary Behaviour Module

GSHS Kɔ Kwɛshɔnia: Dayɛt bievio modyul

1. During the past 30 days, how often did you go hungry because there was not enough food in your home?
(a) Never (b) Rarely (c) Sometimes (d) Most of the time (e) Always

1. Fɔ di pas 30 dez, ɔmɔs tɛm yu bin angri, bikɔs bɔku it nɔ bin de na yu os?

(a) Nɛva (b) wan wan tɛm (c) Sɔntɛmde (d) bɔku tɛm (e) ɔltɛm

The next two questions ask about foods you might eat.

2. During the past 30 days, how many times per day did you usually eat fruit, such as oranges, pawpaw, pineapples, guava, or mangoes?

(a) I did not eat fruit during the past 30 days (b) Less than one time per day (c) 1 time per day (d)2 times per day(e) 3 times per day (f) 4 times per day (g) 5 or more times per day

2. Fɔ di pas 30 dez, ɔmɔs tɛm fɔ de yu bin it frut, lɛk orinch, pɔpɔ, paynapul, gwɛvaɔ mango?

(a) I nɔbin it frut Fɔ di pas 30 dez(b) I nɔ pas wan tɛm fɔ de (c) wan tɛm fɔ de,
(d) 2 tɛm fɔ de (e) 3 tɛm fɔ de (f) 4 tɛm fɔ de (g) 5 tɛm fɔ de

3. During the past 30 days, how many times per day did you usually eat vegetables, such as cucumbers, carrot, cabbage, cassava leaves, potato leaves or beans?

(a) I did not eat fruit during the past 30 days (b) Less than one time per day (c) 1 time per day (d) 2 times per day (e) 3 times per day (f) 4 times per day (g) 5 or more times per day

3. Fɔ di pas 30 dez, ɔmɔs tɛm fɔ de yu bin it vɛjitebul dɛmlɛkkɔkumba, karɔt, kabej, kasada lif, pɛtɛtɛ lifɔ binch?

(a) I nɔbin it vɛjitebulFɔ di pas 30 dez(b) I nɔ pas wan tɛm fɔ de (c) wan tɛm fɔ de,

(d) 2 tɛm fɔ de (e) 3 tɛm fɔ de (f) 4 tɛm fɔ de (g) 5 tɛm fɔ de

4. During the past 30 days, what is your daily menu ?(24hour Dietary Recall)
(a) Morning--------
(b) Afternoon ---------
(c) Evening ---------

4. Fɔ di pas 30 dez, wetin yu kin it ɔltɛm ?
(a) Mɔnin--------
(b) Aftanun ---------
(c) Ivnin ---------

GSHS Core Questionnaire: Alcohol and Other Drug Use Module

GSHS Kɔ Kwɛshɔnia: Rɔm ɛn ɔda drɔg yus Modyul

This question ask about drinking alcohol. This includes drinking beer, wine, pegapakDrinking alcohol does not include drinking a few sips of wine for religious purposes. One drink is a glass of beer or palm-wine, a glass of wine or small glass of gin.

Di kwɛson de aks bɔt rɔm dɛn lɛk fɔ drink bia, wayn, pɛgapak. Fɔ drink rɔm nɔ min se fɔ drink smɔl wayn fɔ rilijɔn sek. Wan drink na wan glas (cɔp)bia ɔ poyo, wan kɔp wayn ɔ smɔl kɔp gin.

5. 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 (e) 10 to 19 days (f) 20 to 29 days (g) All 30 days

5. Fɔ di pas 30 dez, ɔmɔs de yu bin drink wan kɔp rɔm?

(a) 0 de (b)1 or 2 dez (c) 3 to 5 dez (d) 6 to 9 dez (e) 10 to 19 dez (f) 20 to 29 dez (g) ɔl di 30 dez

The next question asks about drugs.(Di nɛks kwɛshɔn aks bɔt drɔgs).

6.. During your life, how many times have you used drugs like Indian hemp (Jamba), heroin, cocaine, Chinese capsule, or take over me ?

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

6.. Frɔm we yu bɔn, ɔmɔs tɛm yu yus drɔg lɛk Indian hɛmp (Jamba), hɛroin, kokeɪn ɔ Chayniz kapsul ɔ tek oba mi?

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

GSHS Core Questionnaire: Physical Activity Module

GSHS Kɔ Kwɛshɔnia: Fisikal aktiviti Modyul

The next 2 questions ask about physical activity. Physical activity is any activity that increases your heart rate and makes you breathless some of the time. Physical activity can be done in sports, playing with friends, or walking to school. Some examples of physical activity are running, fast walking, riding a bicycle, dancing and football.

Di nɛks tu kwɛshɔn aks bɔt fisikal aktiviti. Fisikal aktiviti na ɛni aktiviti we de inkris yu atbit ɛn mek yu blo fas fas wan.Fisikal aktiviti kin bi na spɔt,we yu de ple wit yu padi dɛn, ɔ we yu de waka go na skul. Sɔm ɛgzampul of Fisikal Aktiviti na lek we yu de rɔn, waka kwik kwik, we yu de rayd baysikul, dans ɛn ple bɔl.

ADD UP ALL THE TIME YOU SPEND IN PHYSICAL ACTIVITY EACH DAY. DO **NOT** INCLUDE YOUR PHYSICAL EDUCATION CLASS AT SCHOOL

.AD ƆL DI TƐM WE YU SPƐND PAN FISIKAL AKTIVITI ƐVRIDE. NƆ AD DI TƐM FƆ YU FISIKAL ƐDYUKESHƆN KLAS NA SKUL

7. During the past **7 days**, on how many days were you physically active for a total of at least 60 minutes per day?
(a) 0 days (b) 1 day (c) 2 days (d) 3 days (e) 4 days (f) 5 days (g) 6 days (h) 7 days

7. Fɔ di pas **7 dez**, ɔmɔs de yu bin strɔng fɔ 60 minit fɔ de?
(a) 0 de (b) 1 de (c) 2 dez (d) 3 dez (e) 4 dez (f) 5 dez (g) 6 dez (h) 7 dez

The next question asks about the time you spend mostly sitting when you are not in school or doing home work.

Di nɛks kwɛshɔn aks bɔt di tɛm we yu kin sidɔn yu nɔ de du natin. Yu nɔ go skul ɔ go wok.

8. How much time do you spend during a **typical or usual** day sitting and watching television, playing computer games or working at the computer, talking with friends, or doing other sitting activities such as playing ludo, draught?

(a) Less than 1 hour per day (b) 1 to 2 hours per day (c) 3 to 4 hours day (d) 5 to 6 hours per day (d) 7 to 8 hours per day (e) More than 8 hours per day

8. Ɔmɔs tɛm yu de spɛnd fɔ sidɔn ɛni de wach tɛlivishɔn, de ple kɔmpyuta gem ɔ wok na kɔmpyuta, tɔk to padi dɛn ɔ lɛk fɔ sidɔn de ple lodo, draf ɔ Ayo gem.

(a) i nɔ rich wan awa fɔ de (b) 1 to 2 awa fɔ de (c) 3 to 4 awa fɔ de (d) 5 to 6 awa fɔ de

(d) 7 to 8 awa fɔ de (e) i pas 8 awa fɔ de

9. During the past 7 days, how long did it **usually** take for you to get to and from school each day?

ADD UP THE TIME YOU SPEND GOING TO AND COMING HOME FROM SCHOOL.

(a) Less than 10 minutes per day (b) 10 to 19 minutes per day (c) 20 to 29 minutes per day (d) 30 to 39 minutes per day (e) 40 to 49 minutes per day (f) 50 to 59 minutes per day (g) 60 or more minutes per day

9. Fɔ di pas 7 dez ɔmɔs minit i kin tek fɔ mek yu rich na skul**?**
AD ƆL DI TƐM WE YU KIN TEK FƆ GO ƐN KƆMƆT NA SKUL

(a) i no rich 10 minit fɔ de (b) 10 to 19 minit fɔ de (c) 20 to 29 minit fɔ de

(d) 30 to 39 minit fɔ de (e) 40 to 49 minit fɔ de (f) 50 to 59 minit fɔ de (g) i pas 60 minit fɔ de

GSHS Core Questionnaire: Protective Factors Module

The next 5 questions ask about your experiences at school and at home. GSHS Kɔ Kwɛshɔnia: Protɛktiv Faktɔ Modyul

Di nɛks 5 kwɛshɔn de aks bɔt yu ɛkspiriɛns na skul ɛn os.

10. During the past 30 days, on how many days did you miss classes or school without permission?

(a) 0 days (b) 1 or 2 days (c) 3 to 5 days (d) 6 to 9 days (e) 10 or more days

10. Fɔ di pas 30 dez, ɔmɔs de yu mis klas ɔ skul witawt pamishɔn?

(a) 0 de (b) 1 to 2 dez (c) 3 to 5 dez (d) 6 to 9 dez (e) 10 ɔ mɔ dez

11. During the past 30 days, how often were most of the students in your school kind and helpful?

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

11. Fɔ di pas 30 dez,ɔmɔs tɛm bɔku studɛnt na yu skul bin gud ɛn de ɛp?

(a) nɛva (b) wan wan tɛm (c) Sɔntɛm de (d) bɔku tɛm (e) ɔltɛm

12. During the past 30 days, how often did your parents or guardians check to see if your homework was done?

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

12. Fɔ di pas 30 dez, ɔmɔs tɛm yu mami ɛn dadi ɔ gadian bin de chɛk fɔ si if yu dɔn du yu omwok?

(a) nɛva (b) wan wan tɛm (c) Sɔntɛm de (d) bɔku tɛm (e) ɔltɛm

13. 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

13. Fɔ di pas 30 dez, ɔmɔs tɛm yu mami ɛn dadi ɔ gadian dɛn bin ɔndastand yu prɔblɛm ɛn wɔri ?

(a) nɛva (b) wan wan tɛm (c) Sɔntɛm de (d) bɔku tɛm (e) ɔltɛm

14. During the past 30 days, how often did your parents or guardians **really** know what you were doing with your free time?

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

14. Fɔ di pas 30 dez, ɔmɔs tɛm yu mami ɛn dadi ɔ gadian bin tray fɔ no wetin yu kin du wit yu fri tɛm?

((a) nɛva (b) wan wan tɛm (c) Sɔntɛm de (d) bɔku tɛm (e) ɔltɛm

GSHS Core Questionnaire: Sexual Behaviour Module

The next questions ask about sexual intercourse.

[This includes vaginal intercourse (when a man puts his penis into a woman's vagina) and anal intercourse (when a man puts his penis into his partner'

GSHS Kɔ Kwɛshɔnia: Sɛkshual Bievia Modyul

Di nɛks 5 kwɛshɔn aks bɔt mami ɛn dadi biznɛs.

s anus).]

15. Have you ever had sexual intercourse?

(a) Yes (b) No

15. Yu bin dɔn ɛva du mami ɛn dadi biznɛs?

(a) Yɛs (b) Nɔ

16 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

16 Ɔməs ia yu bin ol we yu bigin fɔ du mami ɛn dadi biznɛs fɔ di fɔs tɛm? (a) A nɔ ɛva du mami ɛn dadi biznɛs (b) 11 ia ol ɔ smɔl pas dat (c) 12 ia ol (d) 13 ia ol (e) 14 ia ol (f) 15 ia ol (g) 16 ia ol ɔ pas dat

17. During the past 12 months, have you had sexual intercourse? (a) Yes (b) No

17 Fɔ di pas 12 mɔnt, yu bin du mami ɛn dadi biznɛs? (a) Yɛs (b) Nɔ

18. The last time you had sexual intercourse did you or your partner use a condom?

(a) I have never had sexual intercourse (b) Yes, a condom was used (c) No, condom was not used

18. Di las tɛm yu du mami ɛn dadi biznɛs yu ɔ yu patna bin yuz kɔndɔm?
(a) A nɔ ɛva du mami ɛn dadi biznɛs (b) Yɛs, wi bin yuz kɔndɔm (c) Nɔ, wi nɔ bin yuz kɔndɔm

19. Has an adult ever forced you to have sexual intercourse with them? No yes

19. Big pɔsin dɔn ɛva fos yu fɔ du mami ɛn dadi biznɛs wit dɛm? Nɔ Yɛs

20. If yes, who was it? _____

20. If yɛs, udat na bin di pɔsin? _____

GSHS Core Questionnaire: Tobacco Use Module

GSHS Kɔ Kwɛshɔnia: Tabaka Yus Modyul

The next 6 questions ask about cigarette and other tobacco use.

Di nɛks 6 kwɛshɔn aks bɔt sigarɛt ɛn ɔda tabaka yus.

21. 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

21. Ɔmɔs ia yu bin ol we yu fɔs tray sigarɛt?

(a) A nɔ ɛva smok sigarɛt (b) 7 ia ɔ smɔl pas dat (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 ol ɔ pas dat

22. Which of your parents or guardians use any form of tobacco?

(a) Neither (b) My father or male guardian (c) My mothe r or female guardian (d) Both (e) I do not know

22. Uswan pan yu mami ɛn dadi ɔ gadian de smok sigarɛt?

(a) nɔn pan dɛn (b) Mi dadi ɔ gadian we na man (c) Mi mami ɔ gadian we na uman (d)dɛn ɔltu (e) A nɔ no

GSHS Core Questionnaire: Violence and Unintentional Injury Module

The next question asks about physical attacks. A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon (such as a stick, knife, or gun). It is not a physical attack when two students of about the same strength or power choose to fight each other.

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Di nɛks kwɛshɔn aks bɔt Fizikal atak. Fisikal atak kin tek ples we wan ɔ mɔ pipul nak dɛnsɛf

ɔ we wan ɔ mɔ pɔsin nak ɔda pɔsin wit wɛpɔn (lɛk tik, nɛf, ɔ gɔn). Nɔ to fizilak atak we tu studɛnt wit di sem trɛnk ɔ pawa disayd fɔ fɛt dɛnsɛf.

23. During the past 12 months, how many times were you physically attacked?

(a) 0 times (b) 1 time (c) 2 or 3 times (d) 4 or 5 times (e) 6 or 7 times (f) 8 or 9 times

(g) 10 or 11 times (h) 12 or more times

23. Fɔ di pas 12 mɔnt, ɔmɔs tɛm dɛn fizikali atak yu?

(a) 0 tɛm (b) 1 tɛm (c) 2 ɔ 3 tɛm (d) 4 ɔ 5 tɛm (e) 6 ɔ 7 tɛm (f) 8 ɔ 9 tɛm
(g) 10 ɔ 11 tɛm (h) 12 ɔ mɔ tɛm

The next question asks about physical fights. A physical fight occurs when two or more students of about the same strength or power choose to fight each other.

Di nɛks kwɛshɔn aks bɔt Fizikal fɛt. Fizikal fɛt kin bi we tu ɔ mɔ studɛnt wit di sem trɛnk ɔ pawa pik fɔ fɛt dɛnsɛf.

24. During the past 12 months, how many times were you in a physical fight?

(a) 0 times (b) 1 time (c) 2 or 3 times (d) 4 or 5 times (e) 6 or 7 times (f) 8 or 9 times

(g) 10 or 11 times (h) 12 or more times

24. Fɔ di pas 12 mɔnt, ɔmɔs tɛm yu bin dɔn de pan fizikal fɛt?

(a) 0 tɛm (b) 1 tɛm (c) 2 ɔ 3 tɛm (d) 4 ɔ 5 tɛm (e) 6 ɔ 7 tɛm (f) 8 ɔ 9 tɛm (g) 10 ɔ 11 tɛm (h) 12 ɔ mɔ tɛm

The next 4 questions ask about <u>the most serious injury</u> that happened to you during the past 12 months. An injury is serious when it makes you miss at least one full day or usual activities (such as school, sports or a job) or requires treatment by a doctor or nurse.

Di nɛks 4 kwɛshɔn aks bɔt di siriɔs wund we bin apin wit yu fɔ di pas 12 mɔnt. Wund in siriɔs wan we kin mek yu mis wan ful de ɔ aktiviti (lɛk skul, spɔt ɔ wok) ɔ nid dɔcta ɔ nɔs in tritmɛnt.

25. During the past 12 months, **what were you doing** when the most serious injury happened to you?
(a) I was not seriously injured during the past 12 months
(b) Playing or training for a sport
(c) Walking or running, but not as part of playing or training for a sport
(d) Riding a bicycle or okada
(e) Riding or driving in a car or other motor vehicle
(f) Doing any paid or unpaid work, including housework, work in the compound, or cooking
(g) Nothing
(h) Something else [specify] _____
25. Fɔ di pas 12 mɔnt, wetin yu bin de du we siriɔs wund bin apin to yu?

(a) A nɔ bin gɛt siriɔs wund fɔ di pas 12 mɔnt
(b) Ple ɔ tren fɔ spɔt

(c) Waka ɔ rɔn, bɔt nɔto fɔ ple ɔ tren fɔ spɔt
(d) Rayd baysikul ɔ ɔkada
(e) Rayd ɔ drayv motorcar ɔ ɔda viikul
(f) Du ɛni wok we dɛn nɔ nɔ pe yu fɔ, lɛk oswok, wok na yad, ɔ kuk
(g) Natin
(h) ɔdatin_____

26. During the past 12 months, **what was the major cause** of the most serious injury that happened to you?

(a) I was not seriously injured during the past 12 months
(b) I was in a motor vehicle accident or hit by a motor vehicle
(c) I fell
(d) Something fell on me or hit me
(e) I was fighting with someone
(f) I was attacked, assaulted, or abused by someone
(g) I was in a fire or too near a flame or something hot
(h) Something else caused my injury

26. Fɔ di pas 12 mɔnt,wetin na bin di men tin we mek di wund so siriɔs we apin to yu?

(a) A nɔ bin wund pas mak fɔ di pas 12 mɔnt
(b) A bin de pan mɔtɔka aksidɛnt ɔ motoka bang mi
(c) A fɔdɔm
(d) Sɔntin fɔdɔm pantap mi ɔ wap mi
(e) A bin de fɛt wit sɔmbɔdi
(f) Dɛn bin atak, asɔlt, ɔ abyuz mi
(g) Faya bɔn mi ɔ a go nia faya ɔ wam sɔntin
(h) Ɔdatin mek a wund
27.During the past 12 months, **how** did the most serious injury happen to you?

(a) I was not seriously injured during the past 12 months (b) I hurt myself by accident

(c) Someone else hurt me by accident (d) I hurt myself on purpose (e) Someone else hurt me on purpose

27.Fɔ di pas 12 mɔnt, aw di siriɔs wund apin to yu?

(a) A nɔ bin wund siriɔs wan fɔ di pas 12 mɔnt (b) A wund misɛf by aksidɛnt

(c) Sɔmbɔdi mistek wund mi (d) A wund misɛf bay wilful (e) Sɔmbɔdi wund mi bay wilful

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28. During the past 12 months, **what was** the most serious injury that happened to you?
(a) I was not seriously injured during the past 12 months
(b) I had a broken bone or a dislocated joint
(c) I had a cut, puncture, or stab wound

(d) I had a concussion or other head or neck injury, was knocked out, or could not breathe
(e) I had a gunshot wound
(f) I had a bad burn
(g) I lost all or part of a foot, leg, hand, or arm
(h) Something else happened to me

28. Fɔ di pas 12 mɔnt, wetin na bin di siriɔs wund we apin to yu?

(a) A nɔ bin wund siriɔs wan fɔ di pas 12 mɔnt
(b) A bin brok mi bon ɔ mi jɔynt kɔmɔt na in ples
(c) A gɛt kɔt, chuk ɔ stab

(d) A bin gɛt bren ɔ ɔda ed ɔ nɛk wund, a gɛt blakawt, a nɔ ebul brith
(e) A bin gɛt gɔnshɔt wund
(f) A bin gɛt bad bɔn
(g) A bin lɔs ɔl ɔ pat pan di fut, lɛg ɔ mi an.
(h) Ɔdatin apin to mi

29. During the past 30 days, how were you bullied **most often**?
(a) I was not bullied during the past 30 days

(b) I was hit, kicked, pushed, shoved around or locked indoors

(c) I was made fun of because of my ethnic group

(d) I was made fun of because of my religion

(e) I was made fun of with sexual jokes, comments, or gestures

(f) I was left out of activities on purpose or completely ignored

(g) I was made fun of because of how my body or face looks

(h) I was bullied in some other way.

29. Fɔ di pas 30 de, ɔmɔs tem dɛn buli yu?

(a) Dɛn nɔ buli mi fɔ di pas 30 dez
(b) Dɛn wap mi, kik mi, push mi, ɔ lɔk mi insay os.
(c) Dɛn provok mi bikɔs of mi trayb
(d) Dɛn bin de mek fɔn bikɔs ɔf mi rilijɔn
(e) Dɛn provok mi wit mami ɛn dadi biznɛs tɔk
(f) Dɛn pul mi kɔmɔt pan bɔku aktiviti dɛn
(g) Dɛn mek fɔn bɔt aw mi bɔdi ɛn fes luk lɛk
(h) Dɛn buli mi ɔda kayn we

SECTION III: Youth DPS – Version 4.32 (Non-Skip)

These questions are about feelings that young people sometimes have and things that may have happened to you ~~IN THE LAST YEAR~~.

Dɛn kwɛshɔn ya de bɔt aw yɔng pipul de fil ɛn tin dɛn we apin to yu insay last ia

1	In the last year, have you often felt very nervous, shy or uncomfortable when you have been with a group of children or young people – for example, like when eating at school or at a party?	Yes	No	16
1	Insay last ia, yu bin fil bad ɔ shem sef we yu de wit ɔda pikin grup dɛn lɛk ɛn we una kin de it ɔ de na pati?			
2	Do you often feel very nervous or shy when you have to do things in front of people?	Yes	No	17
2	Yu kin de nav ɔ shem we dɛn aks yu fɔ du sɔntin bifo ɔda pipul dɛn?			
3	Has there been a time when you often wanted to stay at home and not go to school or other places without your mother or father?	Yes	No	18
3	Tɛm bin dɔn de we yu bin want fɔ sidɔn na os ɛn nɔ go skul ɔ ɔda ples dɛm witawt yu mami ɔ dadi			
42	In the last year, has anyone worried that you were too thin?	Yes	No	57
42	Insay last ia, ɛnibɔdi bin wɔri we yu bɔdi jɛs de smɔl?			
43	Have you often felt bad about yourself because you thought you were fat or overweight?	Yes	No	58
43	Yu bin fil bad bɔt yusɛf bikɔs yu tink yu fat tumɔs ɔ ovawet?			
44	Have there been times when you thought about food or about eating almost all of the time?	Yes	No	59
44	Tɛm bin dɔn de we yu tink fɔ it bɔku bɔku ɔltɛm?			
45	Now I am going to ask you about eating binges. An eating binge is when someone eats a lot of food in a short time-like several loafs of bread, meat pie, puff-puff, rice, biscuit or containers of ice cream-and they don't seem to be able to control how much they eat. In the last year have you had an eating binge like that?	Yes	No	60

Naw a de kam aks yu bɔt fɔ it bɔku fud insay shɔt tɛm lɛk bɔku brɛd, mitpay, pɔf-pɔf, rɛs chin-chin, biskit ɔ bɔku ays krim ɛn nɔ ebul kɔntrol yu apitayt. Insay last ia yu bin it lɛk dat?

46	In the last year, have you wet the bed at night?	Yes	No	61
46	Insay last ia yu bin pisabed?			
47	Have you wet your pants during the day?	Yes	No	62
47	Insay last ia yu bin pis pan yu drɔz santɛm?			
48	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	63
48	Insay las ia yu bin tɔylɛt pan yusɛf? Amin se yu si smɔl smɔl tɔylɛt nay u drɔz, na grɔn, ɔ sɔnsay we nɔto tɔylɛt			
49	Has there been a time when nothing made you happy and you just were not interested in anything?	Yes	No	64
49	Tɛm bin de we natin nɔ bin de mek yu gladi ɛn yu lɔs intrɛs pan bɔku tin?			
50	Has there been a time when you had less energy than you usually do?	Yes	No	65
50	Tɛm bin de we yu bɔdi fil wik pas aw yu blant fil?			

51 51	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? Tɛm bin de we yu fil se yu gud fɔ natin ɛn yu nɔ fayn ɛn smat lɛk ɔda pipul dɛn?	Yes	No	66 67
52 52	Has there been a time when you thought seriously about killing yourself? Tɛm bin de we yu tink fɔ kil yusɛf?			
53 53	Have you tried to kill yourself in the last year? Yu bin tray fɔ kil yusɛf last ia?	Yes	No	68
54 54	Has there been a time when doing even little things made you feel really tired? Tɛm bin de we yu bɔdi so taya fɔ du ivin dɛn smɔl smɔl wok?	Yes	No	69
55 55	Has there been a time when you couldn't think as clearly or as fast as usual? Tɛm bin de we yu nɔ bin de tink klia wan ɛn tink kwik?	Yes	No	70
69 69	In the last year, have you carried out revenge by doing things like hurting people, spoiling their things Insay last ia, yu bin tray fɔ du bad tin to dɛn wan we bin du yu bad lɛk fɔ damej dɛn, pwɛl dɛn tings ɔ fɔ lay pan dɛn?or telling lies about them?	Yes	No	22
70 70	Have you refused to do what your parents or teachers told you to do? Yu bin dɔn se yu nɔ go du wetin yu mami ɛn dadi ɛn yu ticha dɛn tɛl yu fɔ du?	Yes	No	23
71 71	Have you been irritable or easily annoyed? Yu at kin wam ɛn yu vɛks kwik?	Yes	No	24
72 72	Have you done bad things to people on purpose? Yu dɔn ɛva plan fɔ du bad tin to sɔm pipul?	Yes	No	25
73 73	Have you blamed someone else for your mistakes or for things you did that you shouldn't have done? Yu dɔn ɛva blem ɔda pipul dɛn fɔ yu yon mistek ɔ tin dɛn we yu du we yu nɔ bin fɔ du?	Yes	No	26
74 74	Have you done things just to annoy people or make them angry? Yu bin dɔn du bad tin to pipul we yu min am na yu at?	Yes	No	27
75 75	Have people complained because you were swearing or used dirty language? Pipul dɔn ɛva kɔmplen bikɔs yu lɛk fɔ swɛ ɔ fɔ kɔs?	Yes	No	28
76 76	In the last year, have you been expelled from school for bad behaviour-that is, told you could never go back to that school at all? Insay last ia dɛn bin drɛb yu na skul bikɔs ɔf yu bievia ɛn dɛn se mek yu ɛva kam bak na da skul de?	Yes	No	29
77 77	Have you shoplifted-that is, stolen something from a shop when you thought no one was looking? Yu dɔn ɛva tif na sto we yu tink se nɔbɔdi nɔ go si yu?	Yes	No	30
78 78	Have you lied to get money or something else you wanted? Yu dɛn ɛva lay fɔ gɛt mɔni ɔ sɔntin we yu want?	Yes	No	31
79 79	Have you snatched someone else's purse or jewellery? Yu dɛn ɛva jɔg pɔsin in pɔs ɔ chen?	Yes	No	32
80 80	Have you broken something or spoiled some place on purpose, like breaking windows, writing on a building, or slashing tyres? Yu dɔn ɛva brok os ɔ pwɛl pɔsin ples lɛk winda, rayt na bildin ɔ chɛr taya?	Yes	No	33
81 81	Have you stolen from anyone when they were not around or were not looking? Yu dɔn tif ɛnibɔdi we dɛn nɔ de ɔ we dɛn nɔ si yu?	Yes	No	34
82 82	Have you been physically cruel to an animal and hurt it on purpose? Have you been physically cruel to an animal and hurt it on purpose?	Yes	No	35
83 83	In the last year, have you broken into a house, a building, or a car? Insay last ia, yu brok ɛnibɔdi in os, bildin ɔ motoka?	Yes	No	36
99	How often did your parents feel worried or concerned about the way you were feeling or acting?	A lot of the time Some of the time Hardly ever Not at all		52

99	Ɔmɔs tɛm yu mami ɛn dadi wɔri bɔt aw yu de fil ɔ akt?	Bɔku tɛm Wan wan tɛm Sɔntɛm de Atɔl	
99a	Were they worried or concerned because of:	You feeling anxious or worried You feeling sad or depressed You being angry, irritable, or in a bad mood Problems with food, eating or weight Problems with your behaviour Problems with alcohol or drugs Other things you did	53 54 55 56 57 58 59
99a	Dɛn bin wɔri bikɔs of:	Yu fil wɔri Yu fil sad Yu bin vɛks ɔ yu at wam Prɔblɛm wit fud, it ɔ wet Prɔblɛm wit yu bievia	
100	How often did your parents get annoyed or upset with you because of the way you were feeling or acting?	A lot of the time Some of the time Hardly ever Not at all	60
100	Ɔmɔs tɛm yu mami ɛn dadi bin vɛks ɔ fil bad bay aw yu bin de fil ɛn akt	Bɔku tɛm Wan wan tɛm Sɔntɛm de Atɔl	
100a	Were they annoyed or upset because of:	You feeling anxious or worried You feeling sad or depressed You being angry, irritable, or in a bad mood Problems with food, eating or weight Problems with your behaviour Problems with alcohol or drugs Other things you did	61 62 63 64 65 66 67
100a	Dɛn bin vɛks bikɔs ɔf:	Yu fil wɔri Yu fil sad Yu bin vɛks ɔ yu at wam Prɔblɛm wit fud, it ɔ wet Prɔblɛm wit yu bievia Prɔblɛm wit rɔm ɛn drɔgs Ɔdatin we yu du	
103	How often did the way you were feeling or acting make it difficult to do schoolwork or cause problems with your grades?	A lot of the time Some of the time Hardly ever	23
103	Ɔmɔs tɛm bay di we aw yu bin de fil ɔ akt mek i tranga fɔ du yu skul wok ɔ prɔblɛm wit yu gred dɛn?	Not at all Bɔku tɛm Wan wan tɛm Sɔntɛm de Atɔl	
103a	Did you have problems with your schoolwork or grades because of:	You feeling anxious or worried You feeling sad or depressed You being angry, irritable, or in a bad mood Problems with food, eating or weight Problems with your behaviour	24 25 26 27 28

		Problems with alcohol or drugs Other things you did	29 30
103a	Yu bin gɛt prɔblɛm wit yu skul wok ɛn gred dɛn bikɔs ɔf:	Yu fil wɔri Yu fil sad Yu bin vɛks ɔ yu at wam Prɔblɛm wit fud, it ɔ wet Prɔblɛm wit yu bievio Prɔblɛm wit rɔm ɛn drɔgs Ɔdatin we yu du	
104	How often were your teachers annoyed or upset with you because of the way you were feeling or acting?	A lot of the time Some of the time Hardly ever Not at all	31
104	Ɔmɔs tɛm yu ticha dɛn bin vɛks ɔ fil bad bay aw yusɛf bin de fil ɔ akt?	Bɔku tɛm Wan wan tɛm Sɔntɛm de Atɔl	
104a	Were your teachers annoyed or upset because of:	You feeling anxious or worried You feeling sad or depressed You being angry, irritable, or in a bad mood Problems with food, eating or weight Problems with your behaviour Problems with alcohol or drugs Other things you did	32 33 34 35 36 37 38
104a	Yu ticha dɛn bin vɛks bikɔs ɔf:	Yu fil wɔri Yu fil sad Yu bin vɛks ɔ yu at wam Prɔblɛm wit fud, it ɔ wet Prɔblɛm wit yu bievio Prɔblɛm wit rɔm ɛn drɔgs Ɔdatin we yu du	
105	How often did the way you were feeling or acting make you feel bad or feel upset?	A lot of the time Some of the time Hardly ever Not at all	39
105	Ɔmɔs tɛm di we aw yu bin de fil ɔ akt mɛk yu fil bad	Bɔku tɛm Wan wan tɛm Sɔntɛm de Atɔl	

Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more that one statement for any group.

Duya rid ich grup ɔf stetmɛnt fyn fyn ɛn wan pul kɔmɔtwan stetmɛnt insai ich grup wae go sho we betteh betteh wan aw yu bin de fil insai di las tu wik ɛn tide. Sakul dinɔmba wae de nia di stetmɛnt wae yu pik. If buko pan di stetmɛnt don apin to yu pik de wan wae gethi nɔmba fɔ ich grup. Mek shɔ se yu sakul wan stetmɛnt nɔmɔ.

1. Sadness

0 I do not feel sad.

1 I feel sad much of the time

2 I am sad all the time.

3 I am so sad or unhappy that I can't stand it

1. Pwɛl at

0 A nɔ gɛt pwɛl at.
1 A kin pwɛl at bɔku tɛm
2 A kin pwɛl ɔltɛm
3 Mi at so pwɛl ɛn i de mɔna mi

2. Pessimism

0 I am not discouraged about my future

1 I feel more discouraged about my future that I used to be

2 I do not expect things to work out for me.

3 I feel my future is hopeless and will only get worse

2. A nɔ abop

0 A nɔ fil bad bɔt mi fyuchɔ
1 A fil bad bɔt mi fyuchɔ
2 A nɔ de ɛnitin fɔ wok fɔ mi
3 A fil lɛk abop nɔ de na fyuchɔ

3. Past Failure

0I do not feel like a failure.

1I have failed more than I should have.

2As I look back, I see a lot of failures.

3I feel I am a total failure as a person.

3. Past mistek dɛn

0 A nɔ fil se a dɔn fel

1 A dɔn fel bɔku tɛm.

2 As a luk biɛn a si bɔku mistek

3 A fil se a dɔn fel as mɔtalman

3 I dislike myself..

4. Punishment Feelings

0 I don't feel I am being punished.

1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

4. Aw a fil we dɛn pɔnish mi

0 A nɔ fil se dɛn pɔnish mi
1 A de fil se dɛn gɛt fɔ pɔnish mi

2 A biliv se dɛn go pɔnish mi

3 A fil lɛk dɛn dɔn pɔnish mi

5. Self-dislike

0 I feel the same about my self as ever.
1 I have lost confidence in myself.

2 I am disappointed in myself.

5. A nɔ lɛk misɛf

0 A de fil di sem we bɔt misɛf ɔltɛm
1 A nɔ abop pan misɛf egen

2 A dɔn fil bad bɔt misɛf
3 A nɔ lɛk misɛf

6. Self-criticalness

0 I don't criticize or blame myself more than usual
1 I am more critical of myself than I used to be.
2 I criticize myself for all of my faults.
3 I blame myself for everything bad that happens

6. A de kritisayz misɛf

0 A nɔ go kritisayz ɔ blem misɛf pasmak wan.

1 A de kritisayz misɛf naw pas aw a bin dɔn yus fɔ du.
2 A de kritisayz misɛf fɔ ɔl mi fɔlt dɛn.

3 A de blem misɛf fɔ ɔl di bad tin dɛn we dɔn apin tomi.

7. Lots of Pleasure

0 I get as much pleasure as I ever did from the things Ienjoy.

1 I don't enjoy things as much as I used to.

2 I get very little pleasure from the things I used to enjoy.

3 I cant get any pleasure from the things I use to enjoy.

7. Bɔku Ɛnjɔymɛnt

0 A de ɛnjɔy misɛf lɛk ɔltɛm

1 A nɔ de ɛnjɔy lɛk aw a bin dɔn yus fɔ ɛnjɔy

2 A jɛs de ɛnjɔy smɔl frɔm di tin dɛn we a bin dɔn yus fɔ ɛnjɔy.

3 A nɔ de ɛnjɔy natin frɔm di tin dɛn we a bin dɔn yus fɔ ɛnjoy

8. Guilty Feelings

0 I don't feel particularly guilty.

1 I feel guilty over many things I have done or should have done

2 I feel guilty most of the time.

3 I feel guilty all of the time,

8. Fil Gilti

0 A nɔ de fil gilti

1 A de fil gilti tumɔs pan di tin dɛn we a dɔn du ɔ we a bin fɔ du

2 A kin fil gilti bɔku tɛm

3 A kin fil gilti ɔltɛm

9. Agitation

0 I am no more restless or wound up than usual.

1 I feel more restless or wound up than usual.

2 I am so restless or agitated that it's hard to stay still.

3 I am so restless or agitated that I have to keep still

9. Wori

0 A nɔ tu wɔri ɔ vɛks bad bad wan lɛk fɔstɛm.

1 A mɔ wɔri ɛn vɛks pas fɔstɛm.

2 A so wɔri ɛn vɛks dat i tranga fɔ pe stil.

3 A wɔri ɛn vɛks bad bad wan dat a gɛt fɔ de muv ɛn du sɔntin.

10. Loss of Interest

0 I have not lost interest in other people or activities
1 I am less interested in other people or activities

2 I have lost most of my interest in other people or things.

3 It's hard to get interest in anything.

10. Fɔ lɔs intrɛs pan sɔntin

0 A nɔ lɔs intrɛs pan ɔda pipul ɔ wetin dɛn de du.

1 A nɔ gɛt bɛtɛ intrɛs pan ɔda pipul ɔ wetin dɛn de du.
2 A dɔn lɔs bɔku intrɛs pan ɔda pipul ɛn tin dɛn.
3 I tranga fɔ gɛt intrɛs pan ɛnitin.

11. Suicidal Thoughts or Wishes

0 I don't have any thoughts of killing myself.

1 I have thoughts of killing myself, but I wouldnot carry them out.

2 I would like to kill myself.
3 I would kill myself if I had the chance.

11. Fɔ tink aw fɔ kil misɛf ɔ wish bad fɔ misɛf

0 A nɔ de tink fɔ kil misɛf.
1 A de tink fɔ kil misɛf bɔt a nɔ g du am.
2 A go lɛk fɔ kil misɛf.
3 A bin fɔ kil misɛf if a gɛt chans.

12 . Crying

0 I don't cry anymore than I used to.
1 I cry more than I used to.
2 I cry over every little thing.
3 I feel like crying, but I can't

12. Fɔ Kray

0 A nɔ de kray lɛk fɔstɛm.
1 A de kray pas aw a bin dɔn yus fɔ kray.
2 Smɔl tin de mek a nɔ kray.

3 A fil fɔ kray bɔt a nɔ ebul.

13. Irritability

0 I am no more irritable more than usual.
1 I am no more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

13. Fɔ vɛks

0 A nɔ de vɛks pasmak wan.
1 A nɔ de vɛks ɔltɛm.
2 A de vɛks pasmak wan.
3 A de vɛks ɔltɛm

14. Changes in Appetite

0 I have not experienced my changed in my appetite.

1a My appetite is somewhat less than usual.

1b My appetite is somewhat greater than usual.

2a My appetite is much less than before.

2b My appetite is much greater than usual.

3a I have no appetite at all.

3b I crave food all the time.

14. Chenj ɔf Apitayt

0 A nɔ si ɛni chenj na mi apitayt
1a A nɔ gɛt apitayt lɛk fɔstɛm.

1b Mi apitayt bɛtɛ pas fɔstɛm.

2a Mi apitayt nɔ tan lɛk fɔstɛm

2b Mi apitayt pas ɔl di ɔda tɛm den.

3a A nɔ gɛt apitayt atɔl.

3b A lɛk fɔ it ɔltɛm

15. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.

2 I have much greater difficulty in making decisions that used to.

3 I have trouble in making any decisions.

15. Nɔ ebul disayd.

0 A ebul disayd pan ɛnitin.
1 I kin at fɔ disayd pan dɛn tranga tin dɛn.
2 I tranga bad bad wan fɔ disayd pan tin dɛn naw we a bindɔn yus to.

3 A de gɛt trɔbul we a mek disishɔn.

16. Worthlessness

0 I do not feel I am worthless.

1 I don't consider myself as worthwhile and useful as I used to.

2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

16. Yuslɛs

0 A nɔ fil se a yuslɛs.

1 A nɔ kɔnsida misɛf se a yusful lɛk aw a bin tan.
2 A fil se a mɔ yuslɛs pas ɔda pipul dɛn.
3 A fil se a yuslɛs kpatakpata

17. Loss of Energy

0 I have as much energy as ever.

1 I have less energy than I used to have.

2 I don't have enough energy to do very much.

3 I don't have enough energy to do anything

17. Fɔ lɔs trɛnk.

0 A gɛt trɛnk ɔltɛm.

1 A nɔ gɛt bɛtɛ trɛnk lɛk bifo.
2 A nɔ gɛt bɛtɛ trɛnk fɔ du bɔku wok.
3 A nɔ gɛt bɛtɛ trɛnk fɔ du ɛnitin

18. Concentration Difficulty

0 I can concentrate as well as ever

1 I can't concentrate as well as usual.

2 It's hard to keep my mind on anything for very long.

3 I find I can't concentrate on anything

18. A nɔ ebul kɔnsɛntret.

0 A de kɔnsentret ɔltɛm.
1 A nɔ ebul kɔnsɛntret lɛk fɔstɛm

2 I tranga fɔ put mi maynd pan ɛnitin fɔ lɔng.
3 A fɛnɔt se a nɔ ebul kɔnsɛntret pan ɛniting

19. Tiredness or fatigue

0 I am no more tired or fatigued than usual.

1 I get more tired or fatigued more early than usual.

2 I am too tired or fatigued to do a lot of the things I used to do.

3 I am too tired or fatigued to do most of the things I used to do

19. Taya ɛn Wik.

0 A nɔ taya ɔ wik lɛk fɔstɛm.

1 A de taya ɔ wik kwik pas fɔstɛm.

2 A dɔn taya ɔ wik fɔ du sɔm pan di tin dɛn we a bin dɔn yus fɔ du.

3 A dɔn taya ɔ wik fɔ du bɔku pan di tin dɛn we a bin dɔn yus fɔ du.

20. Loss interest in Sex

0 I have not noticed any recent change in myInterest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely

20. Fɔ lɔs intrɛs pan dadi ɛn mami biznɛs.

0 A nɔ tek notis of ɛni chenj pan mi intrɛs pan dadi ɛn mami biznɛs.

1 A nɔ gɛt bɛtɛ intrɛs pan dadi ɛn mami biznɛs lɛk fɔstɛm.
2 A nɔ gɛt tɛm fɔ dadi ɛn mami biznɛs naw.
3 A dɔn lɔs ɔl intrɛs pan dadi ɛn mami biznɛs sleep.

21. Changes in Sleeping Pattern

0 I have not experienced any change in mysleeping pattern.

1a I sleep somewhat more than usual.

1b I sleep somewhat less than usual.

2a I sleep a lot more than usual.

2b I sleep a lot less than usual.

3a I sleep most of the day.

3b. I wake up 1-2 hours early and can't get back to

21. Chenj na di we aw yu de Slip.

0 A nɔ si no chenj in di we aw a de slip.

1a A de slip mo pas aw a yus fɔ slip.

1b A de slip lilibit naw pas fɔstɛm.

2a A de slip tumɔs naw pas fɔstɛm.

2b A de slip pasmak wan pas fɔstɛm.

3a A de slip ɔlmos di wanol d

3b A de wekkwik ɛnnɔ ebulslip bak egen

Weight(kg) ----

Height (cm) ----

BMI(kg/m^2)------

T~~anner Staging: I II III~~ IV V Clinical finding(s) :