PREVALENCE AND CORRELATES OF CHILD AND ADOLESCENT MENTAL DISORDERS IN GUNJUR, THE WESTERN DIVISION OF THE GAMBIA

BY

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DECLARATION

I hereby declare that this research project is my original work and that it has not been submitted in part or whole to any other institution for the attainment of a degree or diploma.

Where other sources of information have been used, the authors were duly acknowledged and listed in the references.

Dr. Kalilu Jagne

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Signature Date

CERTIFICATION

I hereby certify that this research project was written by Kalilu Jagne (Dr.) a student of Centre for Child and Adolescent Mental Health, University College Hospital, University of Ibadan and has been reviewed and approved.

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DEDICATION

This research project is dedicated to my wife (Dr. Fatoumatta Jobarteh) and my child (Khadija Jagne) for all the support, care and love they have given me while I was away from home.

It is also dedicated to my parents, my brothers and my in-laws for their support and care during my absence from home to do this master's program.

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KEY TO ACRONYMS

DAWBA	-	Development and well-being assessment tool
DSM	-	Diagnostic and Statistical Manual of Mental Disorders
DALYs	-	Disability Adjusted Life Years
ICD	-	International classification of Diseases
HIV	-	Human Immunodeficiency Virus
MDGs	-	Millennium Development Goals
SDGs	-	Sustainable Development Goals
SDQ	-	Strength and Difficulties Questionnaire
SPSS	-	Statistical Package for Social Sciences
K-SADS-PL	-	The Kiddie Schedule for Affective Disorders and Schizophrenia

ABSTRACT

Background

According to the World Health Organization (WHO), globally 10-20 % of children and adolescents suffer mental disorders and 50% of adult mental disorders start before 14 years of age. Unfortunately, in many developing regions of the world, such as in The Gambia, due to a dearth of resources, the mental health needs of children and adolescents are neglected thereby causing several who would have benefitted from care to suffer lifelong disabilities. There are no studies in The Gambia on the prevalence and correlates of mental disorders in children and adolescents. The only trained mental health professionals working in The Gambia presently are two contract adult psychiatrists from Cuba. As a first step towards rectifying the treatment gap for mental disorders in children and adolescents, this descriptive cross-sectional study determines the prevalence, pattern and correlates of child and adolescent mental disorders in Gunjur, Western Division of The Gambia.

Methodology

This was a two-stage cross-sectional community based study to assess the mental health problems of children and adolescents' aged 4-16years living in Gunjur, Western Division of The Gambia. A stratified random sampling technique was employed to select participants from households. In the first stage the parents or caregiver completed the socio-demographic questionnaire and the parent version of the Strengths and Difficulties Questionnaire (SDQ) and adolescents aged 11-16 years completed the self-administered SDQ. Children and adolescents who screened above the abnormal range of the SDQ subclasses or total difficulties score and adolescents with suicide ideations, attempt, alcohol abuse, substance abuse or who reported that they experienced bullying were interviewed using the Kiddie Schedule for Affective Disorders

and Schizophrenia Lifetime version (K-SADS-PL) 2009 Working Draft, to diagnose specific DSM-IV mental disorders in the second stage of this study. Data collected was entered into SPSS version 20 for analysis. Overall prevalence, prevalence according to gender and age, specific mental disorders and their patterns were presented in frequencies and percentages. The association of mental disorders with selected socio-demographic characteristics was subjected to Chi-square tests at a significance of 5%. All significant associations were subjected to logistic regression at significance level of 5% and 95% confidence interval.

Results

A total of 270 children and adolescents participated in the study. There were 141(52.2%) females and 129(47.8%) males. The prevalence of mental disorders in the sample based on SDQ abnormalities and KSADS assessment was 24.1% and 23.7% respectively. The prevalence mental disorders in males and females was 34.1% and 14.2% respectively according to KSADS assessment DSM-IV. Children aged 4-10years had prevalence of mental disorders 23.9% while adolescents aged 11-16years had a prevalence of 23.4%. Behavioural disorders occurred in 17.8% and affective disorders were found in 4.1%. ADHD was found in 11.5% of the sample conduct disorder 5.6%, depression in 4.1%. Gender, repeated hospital visits, parental conflicts, repeating a grade , reporting difficulties with teachers and the experience of being bullied were found to be significantly associated($p<0.05$) with DSM-IV disorders.Males were 6 times more likely to have mental disorders than females. [OR=6.050;95% Cl;3.770-9.710)]

Conclusion

This study reveals that 1 in 4 children and adolescents in Gunjur, Western Division of The Gambia have a mental disorder. This high prevalence substantiates the need for child and adolescent mental health policies and services in The Gambia.Health workers should be trained to identify and address mental health problems in children and adolescents. Awareness campaigns on child mental health and disorders should also be conducted across the country.

Key words: Prevalence, correlates, children and adolescents, Gambia, mental disorders

CHAPTER ONE

INTRODUCTION

1.1 Background of study

According to the World Health Organization (WHO, 2005), childhood is defined as the period of human life between the ages of 0 to 18 years old and this overlaps with the period of adolescence which is considered to be from 0-19 years. However, the concept of childhood and adolescence differ across cultures. For instance, in Bangladesh a child is defined as a person within the pre-pubertal age with no financial or social responsibilities (Scolaro *et al*, 2015). In the Hmong culture of Southeast Asia, the ages of 12 to 13 years denote the end of adolescence and the onset of adulthood (Patel *et al*, 2007).

Children and adolescents constitute about a quarter of the world's population and 85% of them live in low and middle-income countries. The children and adolescents of today are a Nation's workforce of tomorrow and hence they are often considered the most important asset to the economic growth of a nation (Erskine *et al*, 2015). This growth is directly proportional to the mental health of the children and adolescents (Erskine *et al*, 2015). According to WHO (2005), Children and adolescents who enjoy mental health are able to achieve and maintain optimal psychological and social functioning and wellbeing, have a sense of identity and self-worth, and sound family and peer-relationships. They also have an ability to be productive and learn, as well as the capacity to tackle developmental challenges and use cultural resources to maximize growth (WHO, 2005).

When mental disorders go unrecognized and untreated, they can result in substantial impairment to an individual's cognitive, affective or relational abilities. Studies have established that one in

four people will experience a mental disorder in their lifetime (WHO 2001) and 50% of these disorders have their onset before 14 years of age and 75% start before the age of 24 years (Charara *et al*, 2017).

A systematic review conducted in 1995 based on studies that used structured diagnostic instruments based on the Diagnostic and Statistical Manual of Mental Health Disorders(DSM) and the International Classification of Diseases(ICD) Diagnostic criteria showed varied prevalence rates of child and adolescent mental disorders across the world(Patel *et al*,2007). The review- pooled studies that were either population based, school-based or based in non-mental health care settings with the target population consisting of individuals from the age of one to nineteen years (Patel *et al,* 2007). This review found that among young people aged 9-17 years in the U.S.A, the prevalence of any mental disorders was 21% while study participants between the ages of 4-17 years living in Australia recorded a prevalence rate of 14%. Swiss children and adolescents aged 1-15 years had 23% prevalence for mental disorders while Brazilians aged of 7-14 years showed a prevalence of 13%. Indians aged 1-16 years had a prevalence of 13% while South African children aged 6-16 years had a prevalence of 15% of mental disorders (Patel *et al*, 2007).

Other prevalence studies of mental disorders among children and adolescents between the ages of 5 and 15 years in the countries of Sudan, Philippines, Colombia and India obtained rates ranging from 12% to 29% (Belfer, 2008).

A systematic review of the Global Burden of Disease study carried out in 2010 and 2013 among children aged 5 to 17years in 184 countries revealed a 6.7% mean global prevalence of mental disorders (Erskine *et al*, 2015). However, the prevalence of specific disorders obtained the

following rates: Conduct disorder 5%, Attention deficit hyperactivity disorder 5.5%, Autism spectrum disorder (ASD) (16.1%), Eating disorder (4.4%), depression (6.2%) and anxiety (3.2%). Only a few developing countries were represented (Erskine *et al*, 2015).

In developing countries, the public health focus has been largely on childhood illnesses like malaria, pneumonia and HIV/AIDS with little attention on mental health problems. This is in spite of documentation that mental health problems are strongly related to other health and developmental outcomes in children and adolescents (Patel *et al*, 2007)

Delamater *et al*, (2017) investigated mental health issues in children and adolescents with chronic illnesses in the US and the result showed that a significant portion of youth experience mental health problems from the chronic health conditions. Butler *et al*, (2017) also indicated that mental disorders with children from 6-16yers with chronic illness is very common and has a negative impact of the quality of life over time.

A nationally representative study on the relationship between mental health and BMI among 34,184 adolescents in the U.S.A revealed that obese or overweight adolescents were more likely to suffer from depression, behavioural problems and social marginalization, and were often victims of bullying (Belue *et al*, 2009).

In sub-Saharan Africa, approximately six million children less than 15 years of age live with Human Immuno-deficiency Virus (HIV) (Belfer,2004). Majority of whom have lost one or both of their parents and are isolated in their struggle against the illness while adjusting to their declining physical and cognitive functioning which has dire mental health consequences on their lives (Belfer, 2004).

Mental disorders are ranked among the top leading cause of disability and mortality in young people (Harding, 2011). For example, in India and China, suicide was identified as the leading cause of death among young people 15-24years (Patel *et al*, 2007) In Cambodia, between 2 to 3 percent of the population have physical disabilities and these children are the most marginalized in many resource-poor countries (Eisenbruch, 2008),A study done on Philadelphia youths between the ages of 8-21years showed that there is a strong association between the severity of the physical condition and most classes of mental disorders as well as with their functional impairment(Merigangas *et al*, 2015).

Despite the prevalence, implication and burden of child and adolescent mental disorders, mental health needs are grossly neglected and the treatment gap is huge, especially in developing countries (Omigbodun *et al*, 2011). This often leads to lifelong consequences that can reduce the capacity of societies to be safe and productive (WHO, 2003).

In 2003, the World Health Organization (WHO) report helped direct international focus on child and adolescent mental health(CAMH) as an essential component of overall health and growth (WHO, 2003). However, mental health goals were not directly tackled in the Millennium Developmental Goals (MDGs) hence, many governments did not prioritize mental health, raising concerns on the global scene. Subsequently, in 2015 mental health was included in the Sustainable Developmental Goals (SDGs) with three of the targets detailed in the sub-clauses of the 17 SDGs relating to mental health as follows (Mackenzie, 2016):

Target 3.4: Promote mental health and wellbeing

Target 3.5: Promote universal health coverage

Target 3.8: Strengthen the prevention and treatment of substance abuse (Mackenzie, 2016).

Notwithstanding, data on CAMH disorders in low and middle-income countries (LAMIC) are grossly limited. Hence, it is difficult to inform appropriate resource allocation and support policies that will address the mental health needs of children and adolescents (Erskine *et al*, 2015).

1.2 Justification

Children and adolescents' account for 2.2 billion individuals worldwide and 90% of them live in low and middle-income countries (LAMIC) where they make up about 50% of the population (Ibeziako, 2014). Growing evidence shows that neuropsychiatric disorders are the leading cause of morbidity among children and adolescents in LAMIC and are strongly related to other health and developmental outcomes (Patel *et al*, 2007) with long-lasting effects throughout life.

The Gambia has a population of 1.8 million people with 46% of them below 15 years of age (Gambia Bureau of Statistics, 2013). A national survey revealed that 1.5% of the total population suffers from severe mental disorders and another 5% have mild mental disorders that require medical attention (The Gambia Mental Health Strategic Plan, 2007-2012), and like other LAMICs, the treatment gap for mental disorders is huge. The Gambia still operates outdated mental health laws that were enacted nearly a century ago and do not address the issues of access to care, protection of patients from involuntary admission and treatment, protection of the rights of people with mental disorders, protection of rights of the caregivers, quality assurance, protection of vulnerable group and issues of legislative links with others (Esan *et al*, 2014).

The study on mental disorders in The Gambia was on the adult population. There is a need for epidemiological data and needs assessments on the child and adolescent population in The Gambia that can inform mental health policy and planning in The Gambia.

This study was an attempt to bridge this gap by providing the needed data on the prevalence of mental health disorders among children and adolescents in the Gambia. This is a first step in the direction towards creating an ideal, evidence-based and workable child and adolescent mental health policy and services for The Gambia.

1.3 Aims

The aim of this study was to determine the prevalence and correlates of mental disorders among children and adolescents in Gunjur, western region of The Gambia.

1.4 Specific objectives

This study was conducted with 5 specific objectives as follows:

1. To determine the prevalence of mental disorders among children and adolescents in the Gunjur western region of The Gambia.
2. To determine the pattern of mental disorders among children and adolescents in the Gunjur western region of The Gambia.
3. To identify the socio-demographic correlates of mental disorders among children and adolescents in Gunjur western region of The Gambia.
4. To determine the association between mental disorders and Body Mass Index (BMI) of the participants.
5. To determine the association between an obvious physical disability and mental health of the participants.

CHAPTER TWO

LITERATURE REVIEW

2.1 Period of childhood to adolescence

Theories of the stages of growth and development have been postulated variously by proponents including Jean Piaget, Lev Vygotsky, Lawrence Kohlberg and Erikson (Cherry, 2017). The stages of childhood have also been defined culturally by social institutions, customs and laws that make up the society (UNICEF, 2003). Universally, there are three stages of childhood namely, early childhood (0-8years), middle childhood (8-12 years) and adolescence (12-18years) (UNICEF, 2003).

2.1.1 Early childhood (0-8 years)

This stage of childhood involves tremendous growth with a focus on skills development such as sitting, walking, toilet training, using a spoon, scribbling and hand-eye coordination such as catching and throwing a ball (UNICEF, 2003). This stage also involves rapid changes in cognitive and language development (Rose *et al*,2010) such that by five years of age, a child is able to use up to 5 to 7 words in a sentence, use past tense and tell familiar stories using pictures as cues. Another crucial development that occurs during this period is the development of attachment which significantly influences a child's functioning and personality later in life (Churchill *et al.,* 2016).

Increased awareness and ability to detect developmental delays during the period of early childhood can increase access to early intervention and thus, reduce the need for special education placement later in life (Churchill *et al.,* 2016)

2.1.2 Middle childhood (8-12 years)

This is a developmental period between early childhood and adolescence. Sigmund Freud, in his psychoanalytic theory, describes it as a "latent phase" characterized by repressed sexual and aggressive urges and the development of cognitive skills, personality, motivation and inter-personal relationships (Blume *et al*, 2016). In other words, this stage is characterized by the development of physical, social, emotional and cognitive abilities, and also predicts successful outcomes in adolescence and adulthood (Blume *et al*, 2016). For instance, children who perform well during this period of life continue to do well, while those who do not, may experience setbacks (Charlesworth *et al*, 2007). Worldwide there are reports of an increase in the prevalence of school violence, eating disorders, drug use and depression among upper elementary school students 8-12 years (Laurens *et al*,2017). Hence, children at this stage will benefit from social and life skills that will help them to continue to develop into healthy adolescents and adults (Kandice *et al*, 2012).

2.1.3 Adolescence

Adolescence can be defined physiologically, culturally or cognitively. Most cultural definitions describe adolescence as a period that begins as the individual reaches sexual maturity and ends when the individual has established an identity as an adult within his or her social context (Moshman, 2014).

The period of adolescence is characterized by identity formation (Crocetti *et al*, 2016). Erik Erikson (1959) addressed the search for identity and independence in his framework of life-span development. He described emotional development and mood swings as peculiarities of the

period of adolescence which were attributable to rapid hormonal changes, and logical reactions to social, physical and cognitive changes during this period of life (Crocetti *et al*, 2016).

The period of adolescence is also characterized by pressures from academics, sexuality and the desire for unattainable standards of beauty often promoted and perpetuated by peers and the social media (WHO,2017). It is also the period of onset of many psychological disorders (WHO, 2017).

2.2 Prevalence of child and adolescent mental disorders

According to the World Health Organization (WHO), the prevalence of child and adolescent mental disorders ranges from 10-20%. Half of these mental disorders occur before age of 14 years while three-quarters occur by 24 years (WHO, 2005).

2.3 International studies of prevalence of child and adolescent mental health disorders

Roberts and colleagues reported prevalence rates ranging 1% to 51% and a mean prevalence of 15.89% for child and adolescent mental disorders worldwide (Roberts *et al*, 1998).

A systematic review of 41 studies gathered from 27 developing and developed countries to estimate the prevalence of child and adolescent mental disorders using PubMed, Psych INFO, and EMBASE search engines, found an overall prevalence of 13.4% of mental disorders (Polanczyk *et al*, 2015). The prevalence of specific mental disorders was as follows: anxiety disorder 6.5%, depressive disorder 2.6%, Attention-deficit hyperactivity disorder (ADHD) 3.4%. Researchers reported that estimates were not influenced by geographic location of studies and year of data collection (Polanczyk *et al*, 2015).

In a review of studies conducted in 51 Asian countries, a general prevalence of 10-20% for child and adolescent mental disorders was reported, though majority of the studies only used screening instruments and did not utilize a second stage detailed assessment for diagnostic confirmation (Srinath *et al*, 2010).

2.4 Prevalence of child and adolescent mental disorders in developed countries

United States (US) Mental Health Surveillance among children reported a prevalence of 13% to 20% for child and adolescent mental disorders. Suicide, as a result of mental disorders and other factors, was the second leading cause of death among children aged 12-17 years in 2010 (Perou *et al*,2013). Among individuals aged 3-17years, ADHD was the most prevalent disorder (6.8%), followed by behavioural/conduct disorder (3.5%), anxiety disorder (3.0%), depression (2.5%), Autism Spectrum Disorder (ASD) (1.5%). Tourette's syndrome had a prevalence of 0.2% among children aged 6-17 years. The prevalence of illicit drug use disorder and alcohol abuse disorders among adolescents aged 12-17 years was 4.2% while nicotine dependence was 2.8% (Perou *et al*, 2013).

According to the UK Social Survey Division, the prevalence of mental disorders among 18,000 children aged 5-15 years was 10% (Meltzer *et al*, 1999). The prevalence of specific mental disorders was as follows: conduct disorder 5%, emotional disorder (anxiety and depression) 4%, and hyperkinetic disorder 1%. Among children aged 5-10 years old, 10% of boys and 6% of girls had mental disorders while in the older group aged 11-15years, the proportions of boys to girls were 13% to 10% respectively (Meltzer *et al*, 1999).

A longitudinal study on the prevalence and development of psychiatric disorders in childhood and adolescence in Western North Carolina among children aged 9-16 years showed an average

3 month prevalence of 13.3%; with males having a prevalence of 42% and females 31% (Costello *et al*, 2003).

A cross sectional study of 9,806 school children conducted in Northeast China showed a prevalence of 9.49 % of DSM-IV child mental disorders. Anxiety disorders were the commonest (6.06%) followed by depression (1.32%) (Xiaoli *et al*, 2014).

A study in Germany among 2,863 children aged 7-17 years using the Strength and Difficulties Questionnaire (SDQ) reported the mental health problems prevalence as 14.5% (Sieberer *et al*, 2008) while a study by Farbstein *et al*, (2009) on 957 Israelis adolescents aged 14-17 years showed a prevalence of 17.7% of mental disorders. In Singapore, the prevalence of child mental disorders found among preschool children attending a general clinic was 7% compared to 12.5% prevalence found in the community (Choon *et al* , 2015).

2.5 Prevalence of child and adolescent mental disorders in developing countries

A systemic review and meta-analysis of 16 community-based studies on 14,594 children and adolescents and 7 school-based studies of 5,687 children and adolescents in India showed a prevalence of 6.46% (CI:95% 6.08-6.88) in community-based studies and 23.35% (CI;95% 22.25-24.45) in school-based studies of mental disorders (Malhotra *et al*, 2014).

A national survey in Chile examined the prevalence of child and adolescent mental disorders in 1,558 children and adolescents using the Diagnostic Interview Schedule for Children version-IV and reported a prevalence of 22.5%; more girls had mental disorders than boys (25.8% Vs. 19.3%) and more children aged 4-11years had mental disorders than older children aged of 12-18years (27.8% Vs. 16.5%).

In Puerto Rico, a study by Canino *et al*, (2004) on the prevalence of child and adolescent mental disorders showed an overall prevalence of 6.9% where ADHD was the most prevalent (8.0%) and adolescents were associated with higher rates of affective disorders. In Gujarat, India, Nair *et al*, (2017) reported a prevalence of 15% mental disorders in adolescents.

A high prevalence of mental disorders among adolescents in Sri-Lanka (32.2%) was reported by Agampodi *et al*, (2010). Maalouf *et al*, (2016) also reported a high (26.1%) prevalence of psychiatric disorders among adolescents in Lebanon, with anxiety disorders being 13.1% and ADHD 10.2%.

2.6 Prevalence of child and adolescent mental disorders in Africa

In Sub-Saharan Africa (Nigeria, Kenya, Ethiopia, South Africa and Uganda), a systematic reviewed meta-analysis of 9,713 children aged 0-16years from 5 rural and 5 urban community-based studies, revealed an overall prevalence of 14.3% child mental disorders (Cortina *et al* ,2012). Of these 10 studies, surveys that used screening instruments obtained a prevalence of 19.8% child mental disorders while studies that used diagnostic tools reported a lower prevalence of 9.5%. This however, shows that there is a significant level of mental health problems among children and adolescents in Sub-Saharan Africa with 1 in 7 children and adolescent with significant mental health difficulties and 1 in 10 having a specific mental disorder (Cortina *et al*, 2012)

A South African study in Western Cape Town demonstrated a prevalence of 17% of child and adolescent mental disorders and this prompted the need for policy development and planning of services. (Kleintzes *et al*, 2006). Another study by Flisher *et al*, (2012) on children and

adolescents of South Africa also showed a prevalence of 17% for any psychiatric disorder, 6% for ODD 5% for enuresis, 4% for separation anxiety 8% and for depressive disorders (8%).

A study conducted among secondary school adolescents aged of 9-18 years in South east Nigeria showed a 17.7% prevalence of depression. The study revealed that depression is often misdiagnosed in adolescents as conduct disorder and substance misuse disorder. In addition, findings reveal that depression accounts for a high risk of suicide in adolescents and factors attributed to depression include a family history of mood disorders and stressful life events (Chinawa *et al*, 2015).

Another cross-sectional study on Nigerian children attending primary care unit reported a mental disorders prevalence of 11.4% (Ayinmode *et al*, 2012).

2.7 Child and adolescent mental disorders in The Gambia

The only known study that estimated the overall prevalence of mental disorders in The Gambia was among the adult population and it reported a prevalence of 20%, with somatoform disorders accounting for 7.7%, mood disorders 6% and anxiety disorders 5.2% (Gambia Mental Health Report, 2012). The study also reported a 10% prevalence of illicit drugs use in the Kombo Central, and 37% among prison inmates (Gambia Mental Health Report, 2012). However, there are no studies that determine the prevalence of child and adolescent mental disorders in the Gambia.

There is also a wide treatment gap, as majority of people affected with mental disorders do not receive appropriate treatment. The country has only one psychiatry centre with 2 visiting psychiatrists from Cuba who do not have specialty training in child and adolescent psychiatry (Gambia Mental Health Report, 2012).

2.8 Correlates of child and adolescent mental health disorders

Longitudinal follow-up studies of children and adolescents have provided information on the predictors and consequences of mental disorders (Merikangas *et al*, 2009). Correlates of child and adolescent mental disorders can be divided into child characteristics, family/parental characteristics and neighbor or broader contextual factors taking into consideration the multiple interacting domains and influences on child development (Merikangas *et al*, 2009 and Patalay *et al*, 2016).

2.7.1 Child factors as correlates of child and adolescent disorders

Studies have shown that gender, age, ethnicity, physical health, cognitive and psychological function, pre-and perinatal exposure to illness, physical stress, alcohol, drugs, poor nutrition, infections and life time environmental exposure to toxins, stress, social environment and stressful life events, cannabis use/illicit drugs, and child abuse are associated with mental disorders (Merikangas *et al*, 2009). A community-based study conducted among 957 Isreali adolescents aged 14-17 years found that externalizing disorders were more common in male and internalizing disorders were common in females (Fabsteins *et al*, 2010). A community-based study among 12,347 adolescents aged 11-17years found a higher prevalence of mental disorders in boys than girls; ethnicity was not significantly associated with mental wellbeing but participants who were Asian, Black or a members of another ethnic group were less likely to report symptoms of mental illness compared to their White counterparts (Patalay *et al*, 2016). Participants with higher cognitive abilities were less likely to have mental disorders while learning and communication difficulties and chronic illness were associated with child and adolescent mental disorders, however, obesity and overweigh were not significantly associated

with mental health disorders (Patalay *et al*, 2016). Another community-based study conducted by Frigerio et al (2009) among 3,401 Italian children aged 6-18years showed that the prevalence of mental disorders increases significantly with age among girls.

Other factors such as malnutrition, low birth weight, and certain micronutrient deficiencies including iodine are also associated with child and adolescent mental disorders (WHO, 2012).

2.7.2 Family/parental factors as correlates of child and adolescent disorders

Parental history of mental illness, low education, lower socio-economic status, unemployment, family dysfunction, inter-parental violence, migration and large family size are family factors that are associated with mental disorders (Merikangas *et al*, 2009)

Studies have also shown that living in a single parent household, being bullied by siblings and poor parent general health are predictors or risks factors for child and adolescent mental disorders (Patalay *et al*,2016). This report is corroborated by the findings of the study conducted by Frigerio *et al*, (2009) among adolescents in Italy which found that living with a single parent, a low level of education in mother and low family income were associated with emotional or behavioural disorders.

Similarly, in 2012, the WHO report showed that parents who had difficulty in bonding and exhibited negative attitudes towards their children increased the risk of stress and behavioural problems to their children (WHO, 2012). It also showed that intergenerational transfer of mental disorders is the result of interactions between genetic, biological, psychological and social risk factors occurring in early pregnancy and infancy (WHO, 2012).

2.7.3 Wider community factors as correlates of child and adolescent disorders

Poor access to basic services, injustices and discrimination, social and gender inequalities, exposure to war or disaster, poor housing/living conditions or environment, peer pressure and adverse media influences are associated with mental disorders (WHO, 2012).

However, school connectedness, perception of neighborhood safety/physical security, social and gender equality, social justice, tolerance and community integration, and equal access to basic services are considered resilient factors of child and adolescents mental health (WHO 2006 and Patalay *et al*, 2016)

2.9 Relevance of the study to child and adolescent mental health in The Gambia and Africa

As at the time of this study, there was no data on the prevalence, pattern and correlates of mental disorders among children and adolescents in The Gambia. Similarly, like most Sub-Saharan countries, no existing mental health policy or services cater to the widening treatment gap of child and adolescent mental disorders in the country. This study will provide the first set of data on child and adolescent mental disorders in The Gambia and can serve as a template for scaling up surveys child and adolescent mental health across the nation and other developing countries.

Furthermore, the reports generated from this study can be a useful resource in the development of child and adolescent mental health policies and services

CHAPTER THREE

METHODOLOGY

3.1 Study location

Gunjur is a coastal town located in the Western division of the Gambia known as the Brikama local government area (Gambia Bureau of Statistics, 2013). Gunjur is located 39 kilometers from Banjul, the capital of the Gambia and has an estimated population of 17,520 people; of which 46% are children below the age of 15 years. The most common ethnic group in Gunjur is Mandinka. Others include the Fula, Jola, Karninkas and Manjagos (Gambia Bureau of Statistic, 2016). Gunjur is a fishing village with beautiful sandy beaches and resorts for tourists and has a health Centre.

In The Gambia nearly 30% of the population live below the International Poverty line of 1.25 USD per day. In 2002/2003 a total of 79% of children were enrolled in primary schools of which 79% are boys and 78% were girls according to UNESCO and in secondary schools 39% were boys and 27% girls (Gambia Bureau of Statistics, 2016)

3.2 Study design

The study is a cross-sectional descriptive community study aimed at determining the prevalence, pattern and correlates of mental disorders among children and adolescents aged 4-16 years in Gunjur Western Division of the Gambia using interviewer administered questionnaires

3.3 Study population

3.3.1 Inclusion Criteria

1. All children and adolescents living in the Gunjur community aged 4 to16 years.

3.3.2 Exclusion criteria

1. All children and adolescents who did not assent or whose parents or adult caregivers did not consent to participate in the study
2. Children aged 4-10 years whose parents could not speak either Mandinka or English
3. Adolescents aged 11-16 years who could not speak either Mandinka or English
4. Children and adolescents who were too ill to participate or who had hearing or speech disability.

3.4 Sample size calculation

The minimum sample size was calculated using this formula

$$N=\frac{Z\alpha^2 P(1-P)}{D^2}$$

Where N= the minimum sample size required

Zα= standard normal deviation corresponding to two-sided level of significance (α) of 5% (1.96)

P= proportion of outcome (mental disorder/s)

D= degree of precision at 5%.

World Health Organization estimate prevalence of 20% of mental disorders in the population

N = (1.96) (1.96) x0.20 x0.80/0.05 (0.05)

N=245

It is adjusted to a non- respondent of 10%, which give a minimum calculated sample size of 270 for the study

3.5 Sampling technique

Gunjur was selected randomly by balloting from the regions of Western Division and a systemic random sampling technique was employed to select the households and the participants.

3.5.1 Selection of the household

Gunjur has a population of 17520 inhabitants with 2197 households. This was taken as the sampling frame therefore dividing the number of households with 270 gave a sampling interval of 8. After recruiting the first household randomly then the subsequent one was every 8th household.

3.5.2 Selection of children and adolescents

In each household only one child or adolescent was selected. In a household where there were more than one child or adolescent, a child and an adolescent were selected randomly. In a household with only adolescents or only children only one was selected randomly. A selected household with no children or adolescents then the household next to it was selected.

3.6 Study instruments

Data was collected with the following instruments:

The Socio-demographic Questionnaire (Omigbodun *et al*, 2008),

The School Health Questionnaire

The Strengths and Difficulties Questionnaire (SDQ) Self and Parent versions

Kiddie Schedule for Affective Disorders and Schizophrenia Lifetime version 2009 Working Draft (K-SADS-PL 2009 Working Draft) were used for data collection.

Prior to the study, the researcher was trained on both the SDQ and the K-SADS-PL 2009 by a consultant child psychiatrist from the Centre for Child and Adolescent Mental Health, University of Ibadan(CCAMH-UI)

3.6.1 Socio-demographic Questionnaire

This is a 44-item questionnaire designed to collect information regarding personal, family and school life of the respondent adapted from a 40-item socio-demographic questionnaire used in a Nigerian study on CAMH (Omigbodun *et al*, 2008). It was adapted and translated into Mandinka using the back-translation method for local use.

3.6.2 The School Health Questionnaire

This instrument was used to collect socio-demographic and health information of adolescents aged 13 to 16 years. World Health Organization and Center for Disease Control for Global School Based Health Surveillance System developed it. It is a self-completed questionnaire and was self-completed by the children. Out of the 12 core modules of this questionnaire, 6 core

modules (Alcohol Use Module, Drug Use Module, Mental Health Module, Protective Factors Module, Tobacco Use Module and part of the Violence and Unintentional Injury Module) was used to collect data from adolescents regarding alcohol and substance use, suicidality, violent behaviors, victimization to bullying and protective factors. This was translated into Mandinka using the back-translation method.

3.6.3 The Strengths and Difficulties Questionnaire (SDQ)

Overall mental health was assessed using the extended version of the SDQ. This is a 25-item behavioral screening questionnaire to identify children at high risk (Goodman, 2001). The SDQ assesses negative attributes in four subscales of mental symptoms (conduct problems, emotional symptoms, peer problems, hyperactivity-inattention) and positive attributes in terms of prosocial behavior in the previous 6 months (Brondbo *et al*, 2011). It explores whether the informant thinks the child has emotional or behavioural problems, and if they think so, it asks about the degree of stress and impairment in social competence. The teacher and parent versions can be administered to teachers and parents of children aged 4-16 years, while the self-report version can be completed by children aged 11-16 years (Goodman, 1997). The reliability and validity of this instrument has been shown to be acceptable (Muris, Meester 2003). This instrument is widely used (Klasen *et al*, 2000) including in many developing countries (Cortina *et al*, 2013). The instrument performs at least as well as the CBCL, with the added advantages of its brevity, better coverage of inattention, peer relationship and prosocial behavior, and its focus on strength.

After scoring the 25 items on a 3-point scale, (0=not true, 1=somewhat true, 2=certainly true), all items of the four problem areas (sub-scores of which range from 0 to 10 (Goodman, 1997)) were summed up to generate a total difficulty score between 0 and 40. Scores 0-13 were classified as

normal, 14-16 as borderline and 17-40 as abnormal (Meltzer *et al*, 2000). The SDQ- Impact questions (5 items) were asked to assess functional impact of the problems on the child and classified as 0=normal, 1=borderline and two and above as abnormal. Children scoring in the abnormal range in any subclass of disorders or in the total scores were further assessed using the K-SADS-PL 2009 Working Draft.

3.6.4 The Kiddie Schedule for Affective Disorders and Schizophrenia Lifetime version 2009 Working Draft (K-SADS-PL 2009 Working Draft)

The Schedule for Affective Disorders and Schizophrenia Lifetime version 2009 Working Draft (K-SADS-PL 2009 Working Draft), is a semi structured interviewer administered diagnostic interview instrument designed to assess current and past episodes of psychiatric disorders in children and adolescents aged 6-18 years according to DSM-IV criteria. It is adapted from the Kiddie Schedule for Affective Disorders and Schizophrenia Lifetime (K-SADS-PL) with modifications including the removal of any references to DSM-III, addition of screening and supplement questions for Pervasive Developmental Disorders and revision of the bipolar disorders section (Axelson *et al*, 2009). It is administered to children, parents or teachers to generate summary ratings. This instrument has two parts; the diagnostic screening part which surveys for and rates the primary symptoms of disorders and the diagnostic supplement part in which children who score above threshold during screening are assessed for the diagnosis of current and most severe past psychiatric episodes. In this study, the diagnostic supplement part was used by the author to make a diagnosis of present or severe past episode of DSM-IV disorder in children screened to have either of the emotional, conduct, peer relationship or hyperactivity/inattention problems on SDQ screening.

3.7 Study procedure

3.7.1 Adaptation of survey instruments

All interview instruments were translated into Mandinka. In order to preserve the original meaning of each item during translation, the back-translation method was used (Parry, 1996). A bachelor degree holder who was fluent in Mandinka and English Language translated the instruments to Mandinka first then a medical doctor who has also fluency in Mandinka and English language translated it back to English again. Interviewer administered all interview instruments unless the adolescent wanted to complete it by himself or herself which took 40 minutes.

3.7.2 Training of research assistants

Three research assistants were recruited for the study and all were degree holders in psychiatric nursing and were fluent in English and Mandinka. A day training of the socio-demographic questionnaire, school health questionnaire and the SDQ questionnaires were conducted for all data collectors. The researcher administered the K-SADS-PL.

3.7.3 Pretesting the instruments

A one-day pre-test study was conducted on a small sample of children and adolescents within the study sample age brackets in a different place from the study site. This is to assess the general feasibility of the procedures in terms of time, ease of understanding of the contents and level of proficiency of the assistants and to identify potential problems ahead of the main study.

It took an average of 40 minutes to complete the interview and scoring of results across all age groups age during the pretesting training. Interviewers had a good level of efficiency and were comfortable using the survey instruments this further enabled discussions and exchange of ideas.

3.8 Data collection process

Data collection was done during the weekends and the afternoon of the weekdays so that it did not interrupt the schooling of the children and adolescents. The data collection lasted from the 1st of February 2018 to the 10th of March 2018.

3.8.1 Stage one interview procedures

The sociodemographic questionnaire was administered to parents or guardians of all participants. The SDQ (P^{4-10}) and the SDQ (P^{11-17}) were also administered to parents of children aged 4-10years and aged 11-17 respectively. The SDQ (S^{11-17}) was administered to the adolescents to fill themselves.

The school health questionnaire was administered to age group of 13-16 years to assess for alcohol and substance abuse, suicidality and bullying. Scores of each SDQ subclass and total difficulty were determined by the interviewers by hand scoring.

3.8.2 Stage two interview procedures

All children who scored in the abnormal range scores as stated under the description of the SDQ on the parent completed SDQ P^{4-10} and also all adolescents who scores in the abnormal range on either the parent completed SDQ P^{11-16} or the self-completed SDQ (S^{11-16}) or who were found to have had suicidal ideations or attempts, substance or alcohol abuse by the School Health

Questionnaire, regardless of their SDQ score, were selected for further assessment using the K-SADS-PL 2009 Working Draft.

SDQ subclasses were paired with K-SADS-PL 2009 as shown in Table 3.8 below. Those who screened as having emotional problems by SDQ were assessed using the supplements for affective disorders, psychotic disorders and anxiety disorders. Those who screened as having conduct problems or hyperactivity/inattention problems were assessed using the supplements for behavioural disorders and substance use disorders. Children and adolescents with peer relationship problems were assessed using the supplements for conduct disorders and substance use disorders. Children and adolescents who screened positive for more than one SDQ subclass of disorders were assessed with each of the appropriate supplements for specific disorders as seen in the table 3.8 below.

Table 3.8

Abnormal SDQ subclass	**Diagnostic K-SADS-PL 2009 Working Draft supplement**	**Specific disorders**
Emotional problems	Affective disorders supplement	Depression, mania, hypomania, bipolar disorder
	Anxiety disorders supplement	panic disorder, separation anxiety disorder, social phobia, phobic disorders, generalized anxiety disorders, PTSDs, obsessive-compulsive disorders
Conduct problems	Behavioural disorders supplement	Conduct disorders, oppositional defiant disorders, ADHD,
	Substance use disorders supplement	Alcohol abuse, substance abuse
Hyperactivity	Behavioural disorders supplement	ADHD
Peer relationship problems	Conduct disorders, oppositional defiant disorders, ADHD,	
	Substance use disorders supplement	Alcohol abuse, substance abuse
	Behavioural spectrum disorders supplement	
	Affective disorders supplement	Depression, mania, hypomania, bipolar disorder
	Anxiety disorders supplement	panic disorder, separation anxiety disorder, social phobia, phobic disorders, generalized anxiety disorders, PTSDs, obsessive-compulsive disorders

3.9 Data Management

All data collected was cleaned, summarized in tables, charts and percentages. The Statistical Package for Social Sciences (SPSS) version 20 is used to analyze the data. Participants' socio-demographic characteristics are presented in percentages and frequencies. Overall prevalence, prevalence in gender and age of K-SADS-PL 2009 specific DSM-IV disorders and their patterns are presented in frequencies and percentages. Association of these disorders with selected socio-demographic characteristics was subjected to Chi-square test at a significance of 5%. For all significant associations were subjected to binary logistic regression at significance level of 5% and 95% confidence interval was carried out.

3.10 Ethical Considerations

3.10.1 Ethical approval

Ethical approval was obtained from The Ethics and Scientific Research Committee of the University of the Gambia and the Ministry of Health. The conduct of this study was guided by fundamental principles of voluntary participation; free, prior and informed consent; privacy and confidentiality. The consent form was clearly and fully described to the nature of the study, and the rights of the participants to withdraw from the study at any time without penalty or consequences.

3.10.2 Confidentiality of Data

The identity of the participants was anonymous and coded with numbers. All data gathered will only be accessible to the researcher and the team analyzing the data. The data also will be used in presentations.

3.10.3 Informed Consent

All information regarding the study procedure was clearly explained to all participants for decision making whether to participate or not and assent was obtained from the children and adolescents. For adolescents who were competent such as able to understand the research very well, consent was obtained from them. Parental permission was obtained from all participants.

3.10.4 Non- maleficence to Participants

The study did not either have any adverse effect to the participant nor does it pose any threat to the participants. No invasive procedure was carried out and maximum safety was ensured throughout the course of the study.

3.10.5 Beneficence

Children and adolescents who were diagnosed with mental disorders were provided with further information and were referred to see a psychiatrist at the General hospital. The participants were also given information on the relevance of the results in informing policy makers in providing child and adolescent mental health services in the community.

3.10.6 Voluntary Participation

The will to participate in this study was absolutely voluntary and participant had the right to withdraw at any time during the course of the study without any penalty. Participants were not required to answer questions they were not comfortable with or do not want to answer.

CHAPTER FOUR

RESULTS

A total of 270 households were randomly selected for this study and within each household one child was selected, hence there are 270 children selected from the households. All (100%) the children and their parents or guardians completed the interviews. No household or individual refused to participate in the study. The findings from participants in this study carried out in the Gunjur, western region of The Gambia, are presented by the objectives of the study as follows:

1. Determining the prevalence of mental disorders among children and adolescents
2. Determining the pattern of mental disorders among children and adolescents
3. Identifying the socio-demographic correlates of mental disorders among children and adolescents.
4. Determining the association between mental disorders and Body Mass Index (BMI) of the children and adolescents.
5. Determining the association between obvious physical disability and mental health of the children and adolescents.

4.1 Socio-demographic characteristics of participants

The socio-demographic characteristics provide background information about the entire sample size. This information was collected and analysed under three broad headings; personal, family and school-related characteristics of the participants.

4.1.1 Personal socio-demographic characteristics of the participants

Out of the 270 sample of children, there were 141(52.2%) females and 129 (47.8%) males giving a ratio of 1.1 females to 1 male. Participants ranged from 4 to 16 years in age, with an overall mean age of 8.91 years (SD: ±3.688 years) and a modal age of 7 years. There were 176(65.2%) children within the age group of 4-10 years and 94(34.8%) adolescents aged 11-16 years. Only twelve (4.4%) of the participants reported having a known medical illness and of this 12, 5(1.9%) had asthma, 4(1.4%) had anaemia, and 3(1.1%) had heart disease. Over a quarter 71(26.3%) had visited a health facility in the last six months prior to this study. The commonest conditions for hospital visits were diarrheal disease 24(8.9%), malaria 20(7.8%), dental caries 15(5.6%), and upper respiratory tract infections (URTIs) 12(4.4%).

Using the WHO BMI for age for children which considers children whose BMI falls within >+1SD as overweight, <-1SD as underweight and >+2SD as obesity, about two-thirds 166(61.5%) of the participants were normal weight, 84(31.3%) were underweight and 20(7.1%) were overweight.

Table 4.1.1 summarizes the personal socio-demographic characteristics

Table 4.1.1A: Personal socio-demographic characteristics

N=270

Variable	Frequency	Percentage (%)
Age (years)		
4-10	176	65.2
11-16	94	38.8
Total	**270**	**100**
Gender		
Females	141	52.2
Males	129	47.8
Total	**270**	**100**
Known Medical Illness		
Yes	12	4.4
No	258	95.6
Total	**270**	**100**
Types of medical conditions		
Asthma	5	1.9
Anaemia	4	1.4
Heart Disease	3	1.1
None	258	95.6
Total	**270**	**100**
Presence of obvious physical disability		
Yes	3	1.1
No	267	98.9
Total	**270**	**100**

Table 4.1.1B: Personal socio-demographic characteristics

N=270

Variable	Frequency	Percentage (%)
Types of physical disability		
Limb deformity	2	0.7
Cleft lip/palate	1	0.4
None	267	98.9
Total	**270**	**100**
Children BMI		
Underweight	84	31.1
Normal weight	166	61.5
Overweight	20	7.4
Total	**270**	**100**
Use of health services in the last six months		
Yes	71	26.3
No	199	199
Total	**270**	**100**
Health conditions for the hospital visits		
Diarrhoea	24	8.9
Malaria	20	7.4
Dental caries	15	5.6
*URTI	12	4.4
None	199	73.7
Total	**270**	**100**
Repeated use of health services in the previous six month		
Yes	71	26.3
No	199	73.7
Total	**270**	**100**

***URTI- Upper Respiratory Tract Infections**

4.1.2 Family socio-demographic characteristics

Three-quarters 205(75.9%) of the participants' households had four or less children. Thirty-four (12.6%) of the participants reported that they had a family member with a mental disorder. Of the 34 participants who reported a family member with a mental disorder, 2(0.7%) had their mother affected, 2(0.7%) their father, 4(1.4%) a brother and 26(9.6%) other relatives. Table 4.1.2 summarizes the family socio-demographic characteristics.

Table 4.1.2A: Family socio-demographic characteristics

N=270

Variable	Frequency	Percentage (%)
Parents alive		
Both parents alive	257	95.2
Father dead	6	2.2
Mother dead	3	1.1
Both parents' dead	4	1.5
Total	**270**	**100**
Parent's marital status		
Married	242	89.6
Separated/divorced unmarried or deceased	28	10.4
Total	**270**	**100**
Child living with a remarried parent		
Yes	44	16.3
No	226	83.7
Total	**270**	**100**
The only Child		
Yes	8	3.0
No	262	97.0
Total	**270**	**100**
Number of children		
Four or less	205	75.9
More than four	65	24.1
Total	**270**	**100**
Work Before or After School		
Yes	23	8.3
No	247	91.7
Total	**270**	**100**
Parental Conflict		
Yes	22	8.1
No	248	91.9
Total	**270**	**100**

Table 4.1.2B: Family socio-demographic characteristics

N=270

Variable	Frequency	Percentage (%)
Mother's educational level		
No formal education	111	41.1
Primary school	40	14.8
Secondary school	97	35.9
Post-secondary school	22	8.2
Total	**270**	**100**
Mother's occupation		
Unskilled/semiskilled	21	91.1
Skilled/professional	246	8.9
Total	**270**	**100**
Father's educational level		
No formal education	116	42.9
Primary school	8	2.9
Secondary school	105	38.9
Post-secondary school	41	15.3
Total	**270**	**100**
Father's occupation		
Unskilled/semiskilled	160	60.6
Skilled/professional	104	39.4
Total	**264**	**100**
Psychiatric illness in family member		
Yes	34	12.6
No	236	87.4
Total	**270**	**100**
Family members with psychiatric illnesses		
Mother	2	0.7
Father	2	0.7
Brother	4	1.4
Other relatives	26	9.6
No family member	236	87.6
Total	**270**	**100**

4.1.3 School socio-demographic characteristics of the participants

Majority 243(90.0%) of the participants was in school and one in about every 13 (7.4%) participants had difficulties with their teachers. The proportion of children that reported being bullied was 11. 5% (28).

The table 4.1.3 below summarizes the school sociodemographic characteristics.

Table 4.1.3 School socio-demographic characteristics

N=270

Variable	Frequency	Percentage (%)
Child in school		
Yes	243	90.0
No	27	10.0
Total	**270**	**100**
Grade repetition		
Yes	42	17.3
No	201	83.7
Total	**243**	**100**
Difficulties with Teachers		
Yes	18	7.4
No	225	93.3
Total	**243**	**100**
Child complained of being bullied		
Yes	28	11.5
No	215	88.5
Total	**243**	**100**
Repeated bullying		
Yes	12	4.9
No	231	95.1
Total	**243**	**100**

4.2 Prevalence of mental disorders

The prevalence of mental disorders is reported as proportion of participants who screened positive on the Strengths and Difficulties Questionnaire (SDQ) at the first stage of the study, and prevalence on the K-SADS-PL (2009) among participants who screened positive on the SDQ.

4.2.1 Prevalence of SDQ abnormalities in participants

One-quarter 65(24.1%) of the participants screened positive on at least one of the four subclasses of the SDQ or the total difficulties score. The proportion of males who screened positive on the SDQ was twice that of females [Males=45(34.8%) Vs Females=20 (14.2%)].

The proportion of participants in the children's age group (4-10 years) who screened positive on the SDQ was 24.4%(43) Similarly, the proportion of participants in the adolescent age group (11-16 years) who screened positive on the SDQ was 23.4%(22).

4.2.2 Prevalence of DSM-IV Disorders using K-SADS-PL 2009

All 65 participants who screened positive on the SDQ were interviewed using the K- SADS-PL. Sixty-four met the criteria for DSM-IV psychiatric diagnosis, giving a prevalence of 23.7% in the entire sample population. The prevalence of DSM-IV psychiatric disorders in males was 44 (34.1%) males and 20 (14.2%) in females. Of children aged 4-10 years old, 42(23.9%) had a mental disorder and 22(23.4%) had a mental disorder in the adolescent age group (11-16 years) old. This is summarised in Table 4.2.2

Table 4.2.2: Results of First Stage and Second Stage Assessments Distributed by Gender and Age

Variable	Result of SDQ screening N=270		Result of K-SADS-PL 2009 Working Draft interview N=270	
	Positive n = 65 (24.1%)	Negative n = 205 (75.9%)	Diagnosed	Not diagnosed
Gender				
Male	45(34.8)	84(65.2)	44(34.1)	85(65.8)
Female	20(14.2)	121(85.8)	20(14.2)	121(85.8)
Total	**65(24.1)**	**205(75.9)**	**64(23.7)**	**206(76.3)**
Age (years)				
4-10	43(24.4)	133(75.6)	42(23.9)	134(76.1)
11-16	22(23.4)	72(76.6)	22(23.4)	72(76.6)
Total	**65(24.1)**	**205(75.9)**	**64(23.7)**	**206(76.3)**
Age group 4-10 years				
Males (N=77)	26(33.8)	51(66.2)	25(32.5)	52(67.5)
Females (N=99)	17(17.2)	82(82.8)	17(17.2)	82(82.8)
Total	**43(24.4)**	**133(75.6)**	**42(23.9)**	**134(76.1)**
Within 11-16 years				
Males (N=52)	19(36.5)	33(63.5)	19(36.5)	33(63.5)
Females (N=42)	3(7.1)	39(92.9)	3(7.1)	39(92.9)
Total	**22(23.4)**	**72(76.6)**	**22(23.4)**	**72(76.6)**

4.3 Patterns of DSM-VI Disorders in Participants

The prevalence of disruptive behavioural disorders (Conduct Disorder (CD), Oppositional Defiant Disorder (ODD) and Attention Deficit Hyperactivity Disorder (ADHD)) was 48(17.8%). Anxiety disorders (Generalized Anxiety Disorder (GAD), separation anxiety and social phobia), affective disorders (depression) and substance abuse had a prevalence of 11(4.1%), 11(4.1%) and 9(3.3%) respectively.

The prevalence rates of specific disorders were ADHD 11.5% (31), conduct disorder 5.6% (15), depression 4.1% (11) and substance abuse 3.3% (9). Among children aged 4-10 years, 28 (15.9%) had ADHD, 8(4.5%) conduct disorder, and 5 (2.8%) had depression. In the adolescent age group (11-16 years), rates of disorders were substance abuse 9.6% (9), conduct disorder 7.4% (7), and depression 6.4% (6).

See Tables 4.3a and 4.3b

Table 4.3A: Pattern of Distributions of Mental Disorders among Participants

N = 270	
DSM-IV disorders	**n (%)**
Affective disorders	
Depression	11(4.1)
Anxiety disorders	
Generalized anxiety disorder	3(1.1)
Social phobia	3(1.1)
Separation anxiety	5(1.9)
Behavioural disorders	
ADHD	31(11.5)
ODD	2(0.7)
Conduct disorder	15(5.6)
Substance abuse	
Substance abuse	9(3.3)

Table 4.3B: Distribution of Individual DSM-IV Disorders among Age Group

Age groups	DSM-IV disorders	n (%)
4-10 years	ADHD	28(15.9)
(N=176)	Conduct Disorder	8(4.5)
	Depression	5(2.8)
	Separation Anxiety	4(2.3)
	Social Phobia	3(1.7)
	ODD	1(0.6)
	GAD	1(0.6)
11-16 years	Substance Abuse	9(9.6)
(N=94)	Conduct Disorder	7(7.4)
	Depression	6(6.4)
	ADHD	3(3.2)
	GAD	2(2.1)
	Separation Anxiety	1(1.1)

4.4 DSM-IV Comorbidities in Participants

One quarter 14(24.9%) of participants who were diagnosed with DSM-IV disorders had more than one diagnosis. Only 5(7.8%)participants had both ADHD and Conduct Disorder and also 5(7.8%)participants had Substance abuse and Conduct Disorder. Comorbidities with depression was 6.3%(4). See Table 4.4 below

Table 4.4: Distribution of DSM-IV Comorbidities Among Participants

N=64

Variable	n (%)
Presence of comorbidity	
Present	14(24.9)
Absent	50(75.1)
Total	**64(100)**
Comorbidities of ADHD	
Conduct Disorder	5(7.8)
Comorbidities of Substance Abuse	
Conduct Disorder	5(7.8)
Comorbidities with depression	
Generalized Anxiety disorder	1(1.6)
Substance Abuse	1(1.6)
Social phobia	1(1.6)
Separation anxiety	1(1.6)
Total	**4 (6.3)**

4.5 Correlates of Mental Disorders in Participants

4.5.1 Personal sociodemographic characteristic associated with DSM-IV with participants

The males with a DSM-IV diagnosis to females was [34.1%(44) Vs.14.2%(20); p<0.001)] and the difference was significant. Participants who visited the health facility in the last 6 months prior to the study with DSM-IV diagnosis to those who did not was [39.4%(28) Vs. 18.1%(36); (p=0.017)]. Age, presence of known medical illness, obvious physical disability and BMI were not associated with a DSM-IV diagnosis (p>0.05). This is shown in Table 4.5.1.

Table 4.5.1: Personal socio-demographic characteristics associated with DSM-IV disorders in participants

Variable	Result of K-SADS-PL 2009 Working Draft N=270		Total N=270	X^2	p-value
	Diagnosed Frequency n = 64 (23.7%)	Not diagnosed Frequency n = 206 (76.3)			
Gender					
Female	20(14.2)	121(85.8)	141(100)	14.787	<0.001*
Male	44(34.1)	85(65.9)	129(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Age (years)					
4-10	42(23.9)	134(76.1)	176(100)	0.007	0.933
11-17	22(23.4)	72(76.6)	94(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Medical illness in child					
Yes	5(45.5)	6(54.5)	11(100)	3.000	0.083
No	59(22.8)	200(77.2)	259(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Hospital visit in the last 6 months					
Yes	28(39.4)	43(60.6)	71(100)	13.797	<0.001*
No	36(18.1)	163(81.9)	199(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Obvious physical disability in child					
Yes	1(33.3)	2(66.7)	3(100)	0.156	0.693
No	63(23.6)	204(76.4)	267(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Children BMI					
Normal weight	37(4.5)	129(95.5)	166(100)	3.965	0.138
Overweight	2(10)	18(90)	20 (100)		
Underweight	25(29.8)	59(70.2)	84(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		

*p-value is significant at 5%

4.5.2 Family socio-demographic characteristics associated with DSM-IV Disorders with participants

Table 4.5.2 shows the association between DSM-IV diagnosis and family characteristics. The presence of parental conflicts was significantly associated with DSM-IV diagnosis when compare to those who report no family conflict [11 (50%) vs. 53 (21.4%); p=0.002]. The proportion of participants who were the only child of their parents with DSM-IV psychiatric disorder and participants who had siblings was [50% (4) vs 22.9% (60), p=0.076] but the difference was not significant. See table 4.5.2 below

Table 4.5.2A: Family related sociodemographic characteristics associated with DSM-IV Disorders in Participants

Variable	Result of K-SADS-PL N=270		Total	X^2	p-value
	Diagnosed n = 64 (23.7%)	Not diagnosed n = 206 (76.3%)			
Parental marital status					
Married	56(23.1)	186(76.9)	242(100)	0.409	0.522
Separated/divorced or unmarried or deceased	8(28.6)	20(71.4)	28(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Living with a remarried parent					
Yes	14(31.8)	30(68.2)	44(100)	1.914	0.167
No	50(22.1)	176(77.9)	226(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Parental conflict					
Yes	11(50.0)	11(50.0)	22(100)	9.158	0.002*
No	53(21.4)	195(78.6)	248(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Mother's educational level					
No formal education or primary or junior	48(23.4)	157(76.6)	205(100)	0.039	0.845
Secondary or post-secondary	16(24.6)	49(73.6)	65(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Only child					
Yes	4(50.0)	4(50.0)	8(100)	3.152	0.076
No	60(22.9)	202(77.1)	262(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		

*p-value significant at 5%

Table 4.5.2: Family related sociodemographic characteristics associated with DSM-IV Disorders in Participants (contd)

Variable	Result of K-SADS-PL N=270		Total	X^2	p-value
	Diagnosed n = 64 (23.7%)	Not diagnosed n = 206 (76.3%)			
Number of children					
4 or less	49(23.9)	156(76.1)	205(100)	0.019	0.892
More than 4	15(23.1)	50(76.9)	65(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		
Psychiatric illness in family					
Yes	11(32.3)	23(67.7)	34(100)	1.609	0.205
No	53(22.5)	183(77.5)	236(100)		
Total	**64(23.7)**	**273(76.3)**	**270(100)**		

4.5.3 School socio-demographic characteristics associated with DSM-IV disorders in participants

There was no association between having a mental illness and school attendance [not in school= (25.9%) Vs. in-school= (23.5%); p=0.285]. A significant association was found between a

diagnosis of mental disorders and participants who repeated a grade 22(52.8%) and those who did not repeat 35(17.4%) ($p<0.001$, reported difficulties with teachers [Difficulties 13(72.2%) vs. Not difficulties 44(19.6%); $p<0.001$] and experienced bullying [bullied=14(50%) vs. not bullied=43(20%); $p<0.001$]. This is summarized in table 4.5.3 below

Table 4.5.3: School sociodemographic characteristics associated with DSM-IV Disorders in Participants

Variable	Result of K-SADS-PL N=270		Total	X^2	P-value
	Diagnosed n = 64 (23.7%)	Not diagnosed n = 206 (76.3%)			
Is child in school					

Yes	57(23.5)	186(76.5)	243(100)	0.082	0.775
No	7(25.9)	20(74.1)	27(100)		
Total	**64(23.7)**	**206(76.3)**	**270(100)**		

		N= 243#			
Grade repetition					
Yes	22(52.8)	20(47.2)	42(100)	25.019	<0.001*
No	35(17.4)	166(82.6)	201(100)		
Total	**57(23.5)**	**186(76.5)**	**243(100)**		
Difficulties with teacher					
Yes	13(72.2)	5(27.8)	18(100)	25.748	<0.001*
No	44(19.6)	181(80.4)	225(100)		
Total	**57(23.5)**	**186(76.5)**	**243(100)**		
Bullying					
Yes	14(50.0)	14(50.0)	28(100)	12.418	<0.001*
No	43(20.0)	172(80.0)	215(100)		
Total	**57(23.5)**	**186(76.5)**	**243(100)**		
Was bullying repeated?					
Yes	6(50.0)	6(50.0)	12(100)	4.953	0.026*
No	51(22.1)	180(77.9)	231(100)		
Total	**57(23.5)**	**186(76.5)**	**243(100)**		

***p-value is significant at 5%

4.5.4 Socio-demographic characteristics associated with specific DSM-IV disorders in participants

4.5.4.1 Socio-demographic characteristics associated with specific DSM-IV disorders in participants

Twenty-one {21(16.7%)} males met the criteria for ADHD and 10(7.1%) females (p=0.018). A higher proportion of male participants had a diagnosis of conduct disorder (10.1%) and substance abuse disorder 6.9%(9) compared to their females' counterparts 1.4%(2), 0%(0) respectively (p=0.002, 0.001). The diagnosis of ADHD among participants in the child age group (4-10years) and participants in the adolescent age group (11-16years) [28(15.9%) Vs. 3(3.2%)]; p=0.002). Substance abuse disorder in the adolescent age group (11-16years) compared to participants in the child age group (4-10 years) was [9(9.6%) vs. 0(0%)]; p<0.001).

The proportions of participants whose parents were separated/divorced /deceased with Separation Anxiety Disorder to participants whose parents were married was [7.1%(2) vs. 1.2%(3), (p=0.028)] and the difference was significant. Participants who experienced parental conflict have conduct disorder [5(22.7%), p=, 0.001] and ODD [1(4.5%), p=0.030] was significant compared to those who did not.

Higher proportion of participants with difficulties with teachers were more like to have GAD 2(11.1%), p-<0.001), ADHD 5(27.8%), p=<0.001), ODD 1(5.6%), p=0.021), Conduct disorder 5(27.8%), p=<0.000) and Substance Abuse 3(16.7%), p=<0.001) than those with no difficulties with teachers. A significant proportion of participants who experienced bullying also had Separation Anxiety 2(7.1%), p=0.044) and ADHD 9(32.1%), p=<0.001). This is summarized in Table 4.5.4.1 below.

Table 4.5.4.1 Socio-demographic characteristics of participant significantly associated with specific mental disorders

N=270

Variable	Gender		Total	X^2	p-value
	Male n (%)	Female n (%)			
ADHD					
Present	21 (16.3)	10 (7.1)	31 (11.5)	5.594	0.018
Absent	108 (83.7)	131 (92.9)	239 (88.7)		
Total	129(100)	141(100)	270(100)		
Conduct disorder					
Present	13(10.1)	2(1.4)	15(5.6)	9.627	0.002
Absent	116(89.9)	139(98.6)	255(94.4)		
Total	129(100)	141(100)	270(100)		
Substance abuse					
Present	9(7.0)	0(0.0)	9(3.3)	10.176	0.001
Absent	120(93.0)	141(100)	261(96.7)		
Total	129(100)	141(100)	270(100)		
	Age group				
	4 – 10 years (N=176)	**11 – 16 years (N=94)**			
ADHD					
Present	28 (15.9)	3 (3.2)	31 (11.5)	9.751	0.002
Absent	148 (84.1)	91 (96.8)	239 (88.5)		
Total	176(100)	94(100)	270(100)		
Substance abuse					
Present	0 (0)	9 (9.6)	9 (9.6)	17.432	<0.001
Absent	176 (100)	85 (90.4)	261 (88.5)		
Total	176(100)	94(100)	270(100)		
	Hospital visits in the last six months				
	Yes	**No**			
Depression					
Present	7 (9.9)	4 (2.0)	11 (4.1)	8.188	0.004
Absent	64 (90.1)	194 (98.0)	258 (95.9)		
Total	71 (100)	198 (100)	269 (100)		
ADHD					
Present	14 (19.7)	17 (8.6)	31 (11.5)	6.352	0.012
Absent	57 (80.3)	181 (91.4)	239 (88.5)		
Total	71 (100)	198 (100)	270 (100)		

p-value significant at 5%
X^2 –Chi Square

Table 4.5.4.1 Socio-demographic characteristics of participant significantly associated with specific mental disorders (contd)

N=270

Variable	Parent's marital status		Total	X^2	p-value
	Married	Divorced/separated			
Separation anxiety					
Present	3(1.2)	2(7.1)	5(1.9)	4.812	0.028
Absent	239(98.8)	26(92.9)	265(98.1)		
Total	242(100)	28(100)	270(100)		
	Parental Conflict				
	Yes	**No**			
Conduct Disorder					
Present	5(22.7)	10(4.0)	15(5.6)	13.460	<0.001
Absent	17(77.3)	238(96.0)	255(94.4)		
Total	22(100)	248(100)	270(100)		
ODD					
Present	1(4.5)	1(0.4)	2(0.7)	4.716	0.030
Absent	21(95.5)	247(99.6)	268(99.3)		
Total	22(100)	248(100)	270(100)		

p-value significant at 5%
X^2 –Chi Square

Table 4.5.4.1 Socio-demographic characteristics of participant significantly associated with specific mental disorders (contd)

N=243

Variable	Difficulties with Teachers		Total	X^2	p-value
	Yes	No			
ADHD					
Present	5(27.8)	23(10.2)	28(11.5)	5.038	0.025
Absent	13(72.2)	202(89.8)	215(88.5)		
Total	18(100)	225(100)	243(100)		
GAD					
Present	2(11.1)	1(0.4)	3(1.2)	15.552	<0.001
Absent	16(88.9)	224(99.6)	240(98.8)		
Total	18(100)	225(100)	243(100)		
ODD					
Present	1(5.6)	1(0.4)	2(0.8)	5.334	0.021
Absent	17(94.4)	224(99.6)	241(99.2)		
Total	18(100)	225(100)	243(100)		
Conduct disorder					
Present	5(27.8)	10(4.4)	15(6.2)	15.667	<0.001
Absent	13(72.2)	215(95.6)	228(93.8)		
Total	18(100)	225(100)	243(100)		
Substance abuse					
Present	13(16.7)	4(1.8)	7(2.9)	13.206	<0.001
Absent	15(83.3)	221(98.2)	236(97.1)		
Total	18(100)	225(100)	243(100)		
	Experience of bullying				
	Yes	**No**			
Substance abuse					
Present	1(3.6)	6(2.8)	7(2.9)	0.054	0.816
Absent	27(96.4)	209(97.2)	236(97.1)		
Total	28(100)	215(100)	243(100)		
ADHD					
Present	9(32.1)	19(8.8)	28(11.5)	13.199	<0.001
Absent	19(67.9)	196(91.2)	215(88.5)		
Total	28(1000	215(100)	243(100)		
Separation anxiety					0.044
Present	2(7.1)	3(1.4)	5(2.1)	4.061	
Absent	26(92.9)	212(98.6)	238(97.9)		
Total	28(100)	215(100)	243(100)		

p-value significant at 5%
X^2 –Chi Square

4.6 Socio-demographic characteristics of participants independently associated with DSM-IV disorders

Participants' socio-demographic characteristics significantly associated with DSM-IV diagnoses on the Chi Square analysis were subjected to binary logistic regression to test whether they are high predictors of DSM-IV disorders. Males were six times more likely to be diagnosed with DSM-IV disorders than females and this was significant ($p<0.001$). Table 4.6 shows the results of binary regression analysis below.

Table 4.6 Socio-demographic characteristics of participants independently associated with DSM-IV disorders.

N=270

Characteristics	OR	95% CI	p-value
Gender			
Male(ref)	6.05	3.77-9.71	<0.001*
Female	1		
Visit of hospital last six months			
Yes	1.536	0.954-2.477	0.077
No (ref)	1		
Parental conflict			
Yes	1	0.434-2.307	1.000
No (ref)	1		
Grade Repetition			
Yes	0.909	0.496-1.666	0.758
No (ref)	1		
Difficulties with teachers			
Yes	0.365	0.137-1.079	0.069
No(ref)	1		
Bullying			
Yes	1	0.477-2.098	1.000
No(ref)	1		
Repeated bullying			
Yes	1	0.323-3.102	1.000
No(ref)	1		

*p-value significant at 5%

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

This study is a community based descriptive cross-sectional study carried out to determine the prevalence, pattern and correlates of mental disorders in children and adolescents in Gunjur in the Western Division of The Gambia.

The findings of this study are discussed under three broad headings as follows:

a. Socio-demographic characteristics of the participants
b. Prevalence of SDQ abnormalities in the participants
c. Prevalence of the mental disorders in the participants
d. Socio-demographic correlates associated with mental disorders

5.1.1 Sociodemographic characteristics of participants

5.1.1.1 Personal sociodemographic characteristics of participants

There were more participants in the child age group (4-10years) compared to those in the adolescent age group (11-16years) in the study sample. Also, there were more female participants than male participants. These results are in keeping with the population distribution in The Gambia which shows that children aged 1-10 years account for 31.7% of the population while adolescents account for 23.4% (Gambia Bureau of Statistics, 2013). Similarly, the male to female ratio in The Gambia is 1:1.02 respectively with more girls and women in the population.

5.1.1.2 Family related sociodemographic characteristics of participants

Most of the participants had parents who were married and a lesser proportion had their parents separated, divorced or dead. In terms of the parents' level of education, the proportion of mothers that had no formal education or stopped at junior secondary school (equivalent to 9 years of formal education) was higher than that of the fathers. This is a reflection of The Gambia literacy rate which is higher in males than in females (70.5% Vs. 48.6%). Consequently, males are more likely to be employed and earn more money than their females counterparts (Gambia Bureau of Statistics, 2013).

5.1.1.2 School-related sociodemographic characteristics of participants

The proportion of participants who reported being in school was higher than those out of school (90% Vs. 10%). Majority of those in school were in primary school (equivalent to 1-6 years formal of schooling) (75.6%) and only a few (14.4%) were in secondary school (equivalent to 7-12 years formal of schooling). This is in line with the educational enrolment rate in the Gambia which shows that more than 90% of the children were enrolled in a primary school. However, enrollment rate drops as the level of education rises (Gambia Education Information Management System, 2014).

5.1.2 Prevalence of SDQ disorders in participants

The first stage of this study found a high prevalence of SDQ abnormalities (24.1%) in children and adolescents which is within the estimate obtained by Roberts *et al*, (1998) in a meta-analysis which pooled 52 studies from 20 countries, done in the US which obtained prevalence

rates of child and adolescent mental disorders ranging from 1% to 51% with a mean prevalence of 15.9%.The results of this reveal high prevalence rates of SDQ abnormalities, above the global estimates of child and adolescent mental disorders worldwide (WHO, 2005).It is however in keeping with high prevalence rates conducted in Sri Lanka on mental health problems in adolescents using SDQ which obtained a prevalence of 32.2% (Agampodi *et al*, 2010) . It is also in keeping with research conducted on children and adolescents in the community in Bangladesh which obtained a prevalence of 25% in adolescents (Mallik *et al*, 2017).

The prevalence (34.1%) of mental illness in males was higher than in females (14.2%). The prevalence in 4-10 years (23.9%) surpasses the prevalence in the adolescent age group of 11-16 years (23.4%). However, the prevalence in males in the adolescent age group (36.5%) was more than the prevalence in the males of the children age group 4-10 years (33.8%). The females in children 4-10years had a prevalence of 17.2% compare to 7.1% of prevalence of the adolescent age group 11-16 years. This is in keeping with the study on the Chilean population of child and adolescent mental disorders (Vincente *et al*,2012) which revealed a higher prevalence in the children age group (27.8%) than the adolescents age group (16.5%).

5.1.3 Prevalence of DSM-IV disorders in participants

This study found a prevalence of 23.7% of child and adolescents mental disorders based on the K-SADS-PL 2009 Working Draft. This is in keeping with some research findings on the prevalence of DSM-IV disorders in both developing and developed settings. There is no local data on the prevalence of child and adolescent mental disorders in The Gambia. However, a

research conducted on mental disorders among adult population aged 15 years and above, showed a prevalence of was 20% (Gambia Mental Health Report, 2012).

Community based studies conducted in the United States of America (USA) among children and adolescents aged 4-18years reported a prevalence of psychiatric disorders ranging from 17-22% among children and as high as 30% among adolescents (Merikangas *et al*,2010 and Stoep *et al*, 2000).Similarly, studies reporting the prevalence of mental disorders among children and adolescents in developing countries show a prevalence of 32.7% among primary school pupils in Kenya, 23% among in-school adolescents in India, 22.5% among children and adolescents in Latin American community and 32.2% among adolescents in Sri Lanka communities (Nair *et al*, 2017;Agampodi *et al*, 2010;Malhotra *et al*,2014;Vincente *et al*, 2012; Ndetei *et al*, 2015)

Nevertheless, the prevalence of mental disorders found in the current study is higher than in the global estimates child and adolescent mental disorders of 10-20% (WHO, 2005). It is also higher than the prevalence reported by several studies both in developing and developed countries. For instance, a systemic reviewed study of child and adolescent mental disorders in Sub-Saharan Africa showed a prevalence of 14.3% (Cortina *et al*, 2012). Similarly, the reported prevalence of mental disorders among primary school pupils in Nigeria was11.4% (Ayinmode *et al* ,2012). Studies on the Asian continent showed a prevalence of 10-20%(Srinath *et al*,2010) and prevalence in Germany was 14.5% (Siebere *et al*, 2008).

The differences in prevalence rates across countries can be attributed to the socio-cultural differences of the study populations and the instruments used in different studies (Malhotra *et al*,2017). Furthermore, The Gambia has no specialized psychiatrist or mental health services for its entire population. There are only two foreign psychiatrists situated in the capital hospital in

Banjul (Gambia Mental Health Report, 2012) and no child psychiatrist hence, children and adolescents with mental disorders are seen by paediatricians or general practitioners and often times mental disorders in children and adolescents go unrecognized and unattended to.

The current study showed a higher prevalence of DSM-IV disorders in males than females (34.1% Vs. 14.2%) which is in keeping with the findings of a study conducted by Costello *et al,* (2003) on the prevalence and development of psychiatric disorders in children and adolescents in Western North Carolina. The Costello *et al, (*2003) reported a higher prevalence of mental disorders among males than females (42% Vs.31%). The findings of the current study showed a higher prevalence of mental disorders among participants in the child age group (4-10years) than those in the adolescent age group 11-16 years (23.9% Vs. 23.4%). This is not in agreement with a study conducted by Meltzer *et al,* (1999) on the prevalence of mental health disorders among children and adolescents in Great Britain which reported a prevalence of 16% among children aged 5-10years and 23% among adolescents aged 11-15 years. The difference in prevalence could be due to cultural differences in the study population. However, a study in Chile by Vincente *et al,* (2012) had a higher prevalence of mental disorders among children aged 4-11years than those in the older age group 12-18years (27.8%) Vs.16.5%). This is in keeping with this study with higher prevalence rates in the children than the adolescents age group.

The overall prevalence of psychiatric disorders was higher among boys than girls in the current study (34.1% Vs.14.2%) and the trend was maintained across both age groups. Furthermore, the prevalence of psychiatric disorders among girls in the child age group, 4-10years was higher than that of the girls in the adolescent age group; 11-16 years (17.5% Vs. 7.1%) while the prevalence of psychiatric disorders among male participants was higher in the adolescent age group than in the child age group (36.5% Vs. 32.5%). These reports are similar to the findings of Meltzer *et al,*

(1999) which recorded a higher prevalence of mental disorders among boys in the adolescent age group than those in the child age group.

5.1.4 Patterns of specific DSM-IV disorders

In this study, behavioural disorders were the most common with an overall prevalence of 17.8%. This is similar to the trend of higher prevalence of behavioural disorders reported by Vincente *et al,* (2012) among children and adolescents in Chile. Furthermore, ADHD was the commonest specific psychiatric disorder recorded in this study (11.5%). This is in agreement with the global point prevalence of ADHD among children and adolescents which varied from 1.7% to 17.8% (Merikangas *et al,* 2009). ADHD was also reported as the commonest specific psychiatric disorder among children and adolescents in Puerto Rico (Canino et *al,* 2004).

The prevalence of conduct disorder in this study was 5.6% which is also close to the median 12-month global prevalence of 6.0%, but higher than the prevalence reported in UK (1.5%) and the U.S.A (2.0% to 3.22%) (Merikangas *et al,* 2009). This shows some disparities between countries.

The prevalence of depression among this study participants was 4.1% which is in line with the global median estimate of 4.0% (Merikangas *et al,* 2009), but lower than the rate reported among South African child population (8.0%) (Flisher *et al,* 2012). The prevalence of the anxiety disorders in this study was 4.1% which is lower than the global median prevalence of 8% (Merikangas et al 2009) and 6.06% recounted among Chinese child population (Xiaoli *et al,* 2014). GAD had a prevalence of 1.1% in this study and this is lower than the rates reported by Flisher *et al,* (2012) among South African child population (11.0%) and 5% reported by Cholakottil *et al,*(2017) among Indian children and adolescents. The 1.1% prevalence of social phobia found in this study is lower than the prevalence reported by Flisher *et al, (*2012)

(5%).Similarly, the 1.9% prevalence of Separation Anxiety Disorder is lower than the rate of 4.0% reported by Flisher (2012) in South African children.

The prevalence of substance use disorder in this study was 3.3% which was within the global estimate range of 1% to 24%, with a median of 5% (Merikangas *et al,* 2009). The 0.7% prevalence of ODD in this study is lower than rates reported among Puerto Rican and UK children and adolescents (5.5% Vs. 2.8%) (Canino *et al,* 2004 and Merikangas *et al,* 2009).

In this study, ADHD was commoner in the child age group, 4-10years than the adolescent age group, 11-16 years while conduct disorder was more common in the adolescent age group. Both disorders were more prevalent in males than females. This pattern of ADHD and conduct disorder is similar to reports from other studies (Merikangas *et al,* 2009, Canino *et al,* 2004).

Depressive disorder was commoner in the adolescent age group than the child age group and was commoner in girls than boys. This is also in agreement with Canino *et al*, 2004, Merikangas *et al,* (2009). Anxiety disorders were also commoner in females than in males while substance use disorder was commoner in males than females. This pattern is similar to the global epidemiology of child and adolescent mental disorders (Merikangas *et al,* 2009).

The prevalence of co-morbidities in this study is 24.9%. This is higher than the prevalence of 15.5% reported by Xiaoli *et al,* (2014) among the children in Northeast China but is similar to the prevalence of co-morbidities (24.8%) obtained by Vincente *et al,* (2012) among children and adolescent in Chile.

5.1.5 Sociodemographic Correlates of DSM-IV disorders in participants

The socio demographic characteristics that are found to be associated with DSM-IV disorders are elaborated.

5.1.5.1 Personal sociodemographic characteristics associated with DSM-IV disorders in participants

In this study, gender and hospital visits in the last six months prior to the study were the only socio-demographic characteristics that were associated with DSM-IV disorders. This is in agreement with the findings of Leon *et al*, (2017) that repeated visits to the emergency unit are associated with child and adolescent mental health problems. Similarly, gender and age are highly associated with mental disorders in other studies (Merikangas *et al*, 2009, Canino *et al* ,2004, Frigerio *et al*, 2009). This study also found that males were significantly more likely to receive a DSM-IV diagnoses than females.

Being underweight is associated with mental disorders in young people (WHO, 2012). Also, according to Belue *et al*, (2009) obese or overweight children are more likely to suffer from depression, behavioural problems and social marginalization and are often victims of bullying. Another study by Henninge (2008) supports this finding with its report that being both underweight and overweight are linked to mental and physical problems. However, in the current study, being overweight or underweight was not significantly associated with DSM-IV disorders. According to Belfer, (2008), childhood physical disability is associated with mental disorders. Butler *et al*, (2017) also states that mental disorders occurring alongside physical conditions are very common and have a negative impact on quality of life over time. However, in this study, having a physical disability was not significantly associated with having a DSM-IV disorder.

This could be attributed to the small sample size and the fact only 3(1.1%) of participants had a physical disability.

5.1.5.2 Family related sociodemographic characteristics of participants associated with DSM-IV disorders

Family sociodemographic characteristics such as single parents, parents being unmarried, separated or divorced, low maternal education, large family size, parental conflict/violence and the presence of mental illness in a family member are associated with mental disorders in children and adolescents (Meltzer *et al*,2000; Merikangas *et al*,2010). In this study, there was no significant association between the marital status of parents and the presence of mental disorders, this finding could be a reflection of the strong role that extended families and kinship systems play in raising children. Usually, when there is parental discord, other family members can take over the care of the children thereby reducing the impact of the discord. (Kea, 2017; Trommlerova *et al*,2015). In addition, divorce is not socially acceptable in many African communities and families are often compelled to stay together even in the presence of challenges. However, there was a significant relationship between parental conflict and performance on the KSADS. Previous studies have shown that parents' relationship quality may directly or indirectly affect children's behaviours, growth and development (Goldberg *et al*, 2014; Cue *et al*, 2007; Fergusson, 1994).

5.1.5.3 School-related sociodemographic characteristics of participants associated with DSM-IV disorders

In this study, difficulties with teachers in school, being a victim of bullying and grade repetition were associated with having a child and adolescent mental disorder. This is in agreement with studies from other parts of the world (Fabsteins *et al*,2009, Schulte *et al*,2016, Sayal *et al*, 2015, Yen, 2010, Riittakerttu *et al*, 2011, and Patalay *et al*, 2016).

The relationship between mental health problems and school/academic performance is bidirectional (Masten *et al*,2005). On one hand, an existing psychiatric illness can impinge on school performance thereby causing repetition of grades depending on the nature of the illness (Masten *et al*,2005). For example, children who suffer from disorders such as attention deficit hyperactivity disorder, autism spectrum disorders can have difficulties with learning. On the other hand, some psychiatric disorders such as depression, conduct disorder and oppositional defiant disorder could be triggered by poor school performance and grade repetition (Fröjd *et al*, 2008; Patel *et al*, 2007). Furthermore, experiencing difficulties might be a reflection of an underlying mental illness like conduct disorder.

5.1.6 Sociodemographic characteristics of participants associated with specific DSM-IV disorders

This section comprises of findings of analysis of association between sociodemographic characteristics and specific DSM-IV disorders in comparison with other studies.

5.1.6.1 Personal Sociodemographic characteristics of participants associated with specific DSM-IV disorders

In this study, the proportion of conduct disorder, Depression and GAD is higher in the adolescent age group than those in the child age group. This is in keeping with global estimates of reported by Merikangas *et al*,(2009) and the prevalence reported by Canino *et al*, (2004) among children and adolescents in Puerto Rico.

However, the prevalence of ADHD in this study is higher among the child age group than those in the adolescent age group and this is in keeping with the epidemiology of ADHD in Chilean children and adolescents reported by Eloisa *et al*, (2012)

The higher prevalence of ADHD, substance abuse and conduct disorder among male participants compared to females found in this study is also in agreement with the global estimates of Merikangas *et al*, (2009).

The study also found that internalizing disorders (depression and anxiety disorders) were more prevalent in girls than boys and externalizing disorders (ADHD, conduct disorder, ODD) were more prevalent in boys than girls. This is in agreement with studies conducted among children and adolescents in other parts of the world (Bonnie *et al*,1999; Warner *et al*,2010; Schlack *et al*,2013).

5.1.6.2 Family related sociodemographic characteristics of participants associated with specific DSM-IV disorders

This study found higher proportion of the participants with externalizing disorders (ADHD, conduct disorder) associated with parental conflict, but conduct disorder was the only one that was significant enough to be associated with parental conflict. This is similar to Paige *et al*, (2007) which illustrated that parental conflict is a robust predictor of children's psychological adjustment and symptoms of conduct disorder.

However low maternal education was not significantly associated with any other DSM-IV disorder in this study contrary to Frigerio *et al*, (2009) in an Italian population, which stated that low maternal education and single parenting is associated with depression and anxiety disorders. The dissimilarities could be alluded to different populations studied because in the Gambia women having high educational levels are still few (Gambia Bureau of Statistics 2013). It could also be due to the small sample size of the study.

Having a family member with mental illness as associated with mental disorders such as ADHD, CD, anxiety disorders and mood disorders (Maalouf *et al*, 2016) in the Lebanon population but mental illness in the family was not significantly associated with any of the DSM-IV disorder in this study.

5.1.6.3 School related sociodemographic characteristics of participants associated with specific DSM-IV disorders

This study found that grade repetition was significantly associated with depression, ADHD, CD and substance abuse. This trend is similar to reports from studies by Schulte *et al*, (2016) and

Rao *et al*, (2009) which reported a significant association between externalizing and internalizing disorders and grade repetition.

Bullying was significantly associated with ADHD in this study while difficulties with teachers was significantly associated with ADHD, CD, substance use disorder and depression. This is in agreement with findings of Patalay *et al*, (2016) and Maalouf *et al*, (2016).

5.1.6.4 Sociodemographic characteristics of participants independently associated with DSM-IV diagnosis

Gender was found to be independently associated with increased likelihood of having a DSM-IV disorders in this study. After subjecting the significant socio-demographic characteristics to regression analysis, boys were 6.05 times more likely to have a mental disorder compared to their female counterparts.

5.2 Conclusion

This study found that DSM-IV mental disorders are common among children and adolescents in the community of Gunjur, Western division of The Gambia. The overall prevalence of mental disorders is higher among boys than girls and higher among those in the child age group (4-10 years) than those in the adolescent age group (11-16 years). Behavioural disorders are the most prevalent mental disorders, followed by affective disorders, substance use disorder and anxiety disorders. Socio-demographic characteristics such as gender, parental conflicts, grade repetition in school, having difficulties with teachers and being bullied are associated with mental disorders. This study provides the first set of information on the prevalence and patterns of the mental disorders among children in the Gambia and throws light on likely socio-demographic variables that impact on the mental wellbeing of children.

5.2.1 Strengths of the study

The strengths of this study are it is a community-based study and the first study done in The Gambia to determine the prevalence, correlates and patterns of child and adolescent mental disorders.

The use of both SDQ as a screening tool and K-SADS-PL working draft 2009 for diagnoses of mental disorders, which are standardized diagnostic tools helped to establish diagnosis and the association between physical health (BMI), obvious physical disability and mental disorders was determined.

5.2.2 Limitations of the study

1. This study was a cross-sectional survey and therefore does not depict causal relationship. In addition, the study was conducted in only one of the 5 regions in The Gambia and may not be representative of the entire nation.

5.3 Recommendations

This study showed that about one in four children in Gunjur region of the The Gambia has a mental disorder. Surveys on the prevalence, patterns and correlates of child mental disorders should be scaled up across the nation so as to obtain representative data that can adequately inform policy. Needs assessments for child and adolescent mental health services should be conducted to help inform service development

In the interim, health workers should be trained to identify and address mental health problems among children and adolescents in the Gambia. Awareness campaigns on child mental health and disorders should be conducted across the country

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APPENDIX I

Socio-Demographic Questionnaire

Dukare nying nyinin kaarolol jabing nyeh. Amang keh examoti. N lfita keeh dino long a naa laa jaata kendayaa

Walaadah folo

Personal Information

1. A teh mu munneti?: A) Musoo B) Kewo
2. A ye sanji jelu le soto?
3. Mun tuh maa le A wuluo tah? _____ _____

   lungo karoo sanjo
4. A beh grade jaluo?
5. A ye saasaa soto le kom minj sukur saasaa, hypothyroidism Anin jusu kono saasaa? A) Haadee B) Hani
6. Ni Haadee, Akakeh Nyadileh?_____
7. A taata Lopitanoto niŋ Kari wooro tam bi lah leh bang? A) Hadee B) Hani
8. Na ya tara Haa, si nya Jaluo? _____
9. Purr Saasaa Jumaa? _____
10. A Kaa mune keh na be suwo kono?

A) Feyaa Anin din dino lu B) Tele jube woo foor Kacha Anin A Koto lu Anah Wululal C) Adam Maa Alaa Bung Kono D) Maa long

E) Feng doo [A kah muneh keh]_____

Section II

Family information

11. Ye din jelu leh soto? _____
12. A mu I lah din jelu njang ngo leh ti? _____
13. I futuh tah leh:

    A) N futuh tah leh B) N tala tah leh C) A fama banj tah leh D) A bama banj tah leh E) A fama nah bama banj tah leh F) manj futuh
14. Na ya tara I lah jabiro muh folo leh ti, sinj, Al beh sabatirin dulaa kerinj leh bang? A) Haadee B) Hani
15. Al yee nyoh saboh soto le nying kari woro tam bi lah? A) Haadee B) Hani
16. I nin doh futuh leh nunj ? A) Haadee B) Hani
17. Ni Haadee, Si nya jelo? _____

    A) I Wululah fulol B) Bãma C) Fãma D) A Mãma E) Mãma Musoo F) Mãma Kewo G) doh[jumaa]
18. I Sabatitah moh Jel leh buluh kabrinj Eh din dinj mah foh sinj? _____
19. Ni A yaa Tara I sabatitah móh jaama bulu, I tooh safeh, yeh waatoh menj keh jeh Aninj fóh A yeh Mutah kuu le foor A meh Mutah Kuu.

I be Menj Bulu | Sanji jumaa fooh sanji jumaa | A yeh mutah kuu leh foor A meh Mutah kuu

_____ _____ _____

_____ _____ _____

_____ _____ _____

20. Foh A kah Dokuwo Keh, A kah Kodoh soto da menj na ji tah Karang Mbonjo tooh? A) Haa B) Hani

21. Ni haa, A kah Muneh keh?_____

22. Jumaa leh yaa kuluh Kabring a din diŋ?

23. A fama dang tah mintoo leh Karang Mboŋo tooh?

A) A tah taah Karantah leh toh B) Primary School C) Junior School D) Secondary School E) Post-secondary (Non-University) F) University degree and above H) Ma loong

24. A be Munj Dokuwo leh lah [A kah muneh keh] _____/Ma loong

25. A bama dang tah mintoo leh Karang Mbonjo tooh

A) A tah taah Karantah leh toh B) Primary School C) Junior School D) Secondary School E) Post-secondary (Non-University) F) University degree and above H) Ma loong

26. A be Muŋ Dokuwo leh lah [A kah muneh Keh] _____/Ma loong

27. I baah dinjol kono moh be jeh leh menj yeh saasaa soto menj buka jara noo kom minj suhkur saasaa, yeleh seleh saasaa, Lanjulo Anin Diminjo menj Kalanjo manj long menj kah tin naa A kah tah Lopitanoto waato wati?

A) Haa B) Hani

28. Ni Haa, Jumaa? _____

29. Saasaa jumaa_____

30. I baah diŋol kono mooh be jeh leh menj nyamata? A) Haa B) Hani

31. Ni haa, jumaa? _____ (I Fama, Bama, koto\doko kewo, koto\ doko musoo)

32. I baah diŋol kono mooh be jeh leh menj kah dolo miŋ? A) HaaB) Hani

33. Ni hadee, A kah keh sinya jelu?

A) Wati jang B) Sibito ninj Dimaso C) Sinya jamaa lokunjo kono D) Waato wati

34. Foh Yeh Sabati Dolah Faa ling neh ninj Kari wuro tam bi lah leh bang? A) Haadee B) Hani

Section III

School related questions

35. Foh A kah katãh Karang mbonjo toh leh bang? A) Haa B) Hani

36. A examu kaitoh yetandi naa, nga jube foh A kah kata le _____

37. A Nenee tuta Tembeh killing karang mbonjo toh leh bang? A) Haa B) Hani

38. Ni Haa, sinya jelu? _____

39. Sinya jelu leh I kah lah booko jube foh I sah loong A kah meng keh karang Mboŋo tóh ?

A) Waato wati B) sinya jaama C) waati doh be jeh D) A kewo mang siya E) Neneh ma keh

40. Kodi A naa lah karamu buh kah wali? A) Haa B) Hani

41. Ni Haa, A kah wali kuh jaama leh tuh? _____

42. Foh A neneh yah foyen neh koh Mooh lu kah Batan di leh Karang Mboŋo tóh bang? A) Haa B) Hani

43. Ni Haa, muŋ tumaa? A)Tili tang saba tam bi lah B) Kari wuro tam bi lah C) Kari tang Aniŋ fula tam bi lah D) A tam bi tah Kari tang Aniŋ fula ti

44. Sinya jelu leh Mooh lu Kah Batandi?

45. A) sinya kiliŋ B) sinya jaama Bari sinj yaa bulah leh C) sinya jaama hani bi I ba kang.

Others

46. Looh (janfoo)……..
47. Balo…….
48. BMI…….
49. Fooh A lanjur tah leh bang

APPENDIX II

School Health Questionnaire

Nying Nyining Kari nanol Kah nyinkaro keh Doloh meng kuwo leh lah. A dah bi jeh yeh Doloh meng dedah suwo kono. Doloh Habu kiling kah keh dino kuwo ti Amang keh doloh meng ngo ti. Cupu kiling, Kabo Aniŋ kah Doloh niŋ feŋg jahaseh woh lem muh Doloh minjo ti.

50. I kah Doloh minj neh bang\ I neneh yeh Doloh minj neh?

    A) Neneh mang Doloh minj nah mang keh Habu kiling ti
    B) Haa, nka keh leh Bari maa keh nying tili tang saba tam bi lah.
    C) Haa, hani bi mba kang

51. I beh sanji jelu waato meng yeh Doloh miŋg ngo dati? _____

Tim mill tam malo, Di yamu kuh Bali ya Aniŋ fohnoo kah yi tan di leh koh I siratah leh bakeh.

52. I lah Baluwo kono, sinya jelu leh yeh Doloh miŋ fóh I siratah bakeh?

    A) neŋeh maa keh
    B) Sinya 1 or 2
    C) Foh sinya 10
    D) A tam bi tah sinya 10

53. I lah Baluwo kono, Sinya jelu leh Doloh miŋo yah tin nah yeh noh sabo keh aniŋ I badiŋo, I Tiri maa, Karang Mboŋ tah baliya, Anin kello?

    A) neŋeh maa keh
    B) Sinya 1 or 2
    C) Foh sinya 10
    D) A tam bi tah sinya 10

Nying nying karol mel beh duma beh nying kah lah drug mah kuwolelah . A dah beh drug gul kono Nyamo, amphetamines, munco, inhalants, koleh sero anin a nyogno.

54. A neneh yeh sir fengo mah leh bang?

    A) Hani, Neneh mang sira fengo mah
    B) Haa, Nka mah leh bari sang tambi tah karo lah kbiring nga bula.
    C) Haa, hani bi mba kang

55. I Kah Sira feng jumaa leh mah?

    A) Nyamo
    B) Amphetamines
    C) munko
    D) Inhalants
    E) koleh

F) Benzene
G) Chat
H) Cannabis

Nying nying karo wurol beh nying kah lah I nedia fengol lah anin I terimah.

56. Nying kari tang Anin fulol meng tambi tah, si nya jelu leh yah kala muta koh I kideh tah?

A) A neneh mang keh
B) Nka fama lah
C) Wato doll
D) Wati jaama
E) Wato wati

57. Nying kari tang Anin fulol meng tambi tah, sinya jelu leh yeh meraku soto meng kah tinna I buka sino suto?
A) A neneh mang keh
B) Nka fama lah
C) Wato doll
D) Wati jaama
F) Wato wati

58. Nying kari tang Anin fulol meng tambi tah, I nenneh yeh fang faah mero soto leh bang?
A) Haa
B) Hani

59. Nying kari tang Anin fulol meng tambi tah, yeh fero siti leh I beh fang faah lah nya meng bang?
A) Haa
B) Hani

60. Nying kari tang Anin fulol meng tambi tah, Sinya jelu leh yah kata puru keh fang faah?
A) A neneh mang keh
B) Sinya kilin
C) Sinya 2 foh 3
D) Sinya 4 for 5
E) Sinya wuro anin meng siyata wuro ti

61. Yeh Terima sutung jelu leh sutoh?
A) 0
B) 1
C) 2
D) 3 anin meng siya ta sabati

Nying nying kari nanol beh nying kah lah cigah Anin manis saba kowol lah.

62. A neneh yeh cigah saba leh bang?

A) Hani, Nenneh mang cigah saba.
B) Haa, Nka keh leh nung bari sing A yeh karo soto kabiring fama tah lah
C) Haa, adung hani bi mba kang.

63. A nenneh yeh saba fengo maah leh meng mang keh cigah ti?
A) Hani, neneh mang saba feng maah

B) Haa, Bari a yeh karo soto sign kbiring nga maah
C) Haa, Hani bi mba kang.

64. (Ni hani bi I kah saba), I neneh yah kata leh puru kah cigah sabo bulah?
    A) Haa, bari mah bula noo
    B) Hani, neneh maah kata puru kah bulah
    C) Hani, neneh maah kata, bari sinya jaama nka mera puru kah bulah.
65. I wulu lal kono moh bi jeh leh meng kah saba feng ngo maah bang?
    A) Haa, N fama \ N gati kewo
    B) Haa N bama\ N gati musoo,
    C) I folol beh
    D) Maa loong

Nying nynin karo beh nynin ka lah nyaping kan ngo lah. Nyaping kan ngo soto tah ni Mooh Kilin foh mooh jaama yeh moh barama, Anin jorang ngo lah (menk koh Podong ngo, Muroo foh kido). Mooh fulol meng kah nyang tah sembo lah ni kele tah woh mang keh nyaping kan ngo ti.

66. Nying kari tang Anin fulol meng tambi tah, mooh neneh nyapita I kan leh bang?

    A) Hani, A neneh mang keh
    B) Haa, Sinya kilin dorong
    C) Haa, I Nyapita N kan meng tam bi tah sinya kilin (Sinya jelu ____)

Nying Nynin karo beh nynin ka lah keleh kowol lah. Kelo ki teh N Aya tara mooh fulah menk kah nyang tah sembo lah yeh nyoh lipa.

67. Nying kari tang Anin fulol meng tambi tah, I nin mooh keleh tah leh bang?

    A) Hani, Ning mooh mang keleh
    B) Haa, sinya kilin foh fulah
    C) Haa, Sinya jaama.

Nying nynin karol beh nynin kah lah Tohnying kuwo lah . Tohnyiro keh tah ni moh kilin foh mooh jaama yeh kuh jawo foh doh yee. Saaysaay yah mang keh tohnyiro ti.

68. Tali tang sabo meng tam bi tah, mooh yeh tohnyeh leh bang?

    A) Hani , mooh mang tohnyeh.
    B) Haa, loong kilin foh fula dorong
    C) Haa, loong jaama
    D) Haa, Domang ding A be keh lah loong ngo loong ti .
69. I ka mung tohnyri nyah leh keh lah?
    A) I kang lipa, danfu, pushseh, mining mining di, foh keh sorong mbung kono
    B) I kang jeleh leh katu ning I tol mang muh lung
    C) I was made fun of with sexual jokes, comments or gestures
    D) I was left out of activities on purpose or completely ignored
    E) I was made fun of because of how my body or face looks
    F) I was bullied in some other way

APPENDIX III

The Strength and difficulties Questionnaire

Puru Nying nynin karol, tombo fengo keh boxo kono kah yehtandi fooh Amang keh toh nyati, Tohnyah ding beh jeh foh tohnyah sahayaring lem. A beh mooh lu mah koye lah ni yeh lah kato dango keh kah nying nynin karol gabi. Nying nynin karol lah jabo beh bolah I dingo lah maa nya nying kari wuro meng tam bi tah.

I dingo tuh ..... Kewo/Musoo

Sang juma leh A wulu tah.....

	Amang keh Tohnyati	A si keh noh Tohnyati	tohnyah tohnyah Tohnyah lem
Considerate of other people's feelings	□	□	□
Daha Baliya, Mah mang siya, A buka ting kung noo	□	□	□
Wato wati A kongo, kono barh diming lah Anin saasaa	□	□	□
A din ding dolu fuh A lah fen ngo lah, koming feyran ngo, Domoro, pencilo	□	□	□
A kah Kang faah junah	□	□	□
A kah lafi leh A dam mah yeh feya	□	□	□
A kah tuh mah kuring, Kebba yeh meng fa yeh A kah keh	□	□	□
A kah hakili teng kung baliya soto	□	□	□

A kah mooh lu makoi mel kanfata, saasaa tah	□	□	□
A bulol buka teng kung, A kah tuh A balo mah lah	□	□	□
A yeh terima Kendeh kilin soto	□	□	□

	Amang keh Tohnyati	A si keh noh Tohnyati	tohnyah tohnyah Tohnyah lem
A kah tuh din ding dolu kelindi lah Anin tohnyiro	□	□	□
A buka Sewoo, A kah tuh kumbo leh lah	□	□	□
A kah lafi din ding dolu lah	□	□	□
Kodi Aka Hakilo tuh noh feng toh A yeh meh	□	□	□
Nal tahta dulah kutoh toh A tuh I bala leh, A buka deyamu.	□	□	□
A beteya tah din dingol toh A Siya ta mel ti	□	□	□
A kah feniya foh Adoung aka sunyaro keh	□	□	□
ding ding dolu kah tohnyeh leh / I kah buhteh	□	□	□
Aka mooh lu makoi (A wulu lal, Karamo, din ding dolu)	□	□	□
A keh mera leh jang ning Abe feng kelah	□	□	□
A kah sunyaro keh suwo kono, karang mbongo toh anin dula koteng	□	□	□
Anin kebbal leh diyata A moh nyol ti	□	□	□

Aka sila junna,/ A sila tah kuh jaama lah	□	□	□
A yeh fen ngo feng dati A kah labang	□	□	□

A lafita kah feng lafa jeh foh yeh mero kuh suto I lfita kah meng lafa?

Dukare nying kayto yeh leh maa – nynin karo dol beh jeh.

I yah mera leh koh I dingo kah koleh yah soto puru kah yi tandi A kah meng kala muta, foh kah tuh feng kilin kang a yeh meh jeh, A jekoo Anin puru Anin mooh doh yeh beng?

	Haa-	Haa-	Haa-
	Koleh yah	A kah	A kah koleh yah
Hani	Nding	Koleh yah soto	Soto bahkeh
□	□	□	□

Ni Haa ning nynin karol jabi nyeh I kah koleh yah kuwo meng soto ?:

• Wati juma leh yeh ning koleh kuwol soto?

Doyatah	1-5	6-12	A tambi tah
Karoti	kari	Kari	Sanji kilin
□	□	□	□

• Kodi Nying Koleh yal buh keh dino niyo kuya?

Hani buka Tuss kala	Domang nding Dorong	A kah batandi	A kah batandi Bakeh fang
□	□	□	□

• Foh nying Koleh yal keh dingo lah loong ngo loong Hajo Tinya bang?

Hani Abuka	Domang nding	A kah	A kah Batndi
Tuss kala	Dorong	Batandi leh	Bakeh leh

Sukono Buluwo	□	□	□	□
Teri Soto	□	□	□	□
A lah karang ngo	□	□	□	□
Fehya	□	□	□	□

• Foh Nying koleh yah yeh duhno Landi I badingol kang leh?

Hani Abuka Tuss kala	Domang nding Dorong	A kah Batandi leh	A kah Batndi Bakeh leh
□	□	□	□

Signature ..... Date .....

Bama/Fama/Doh (I mah muneh ti :)

A Baraka I lah Makoy loh tooh

The Strengths and Difficulties Questionnaire P [11-17]

Puru Nying nynin karol, tombo fengo keh boxo kono kah yehtandi fooh Amang keh toh nyati, Tohnyah ding beh jeh foh tohnyah sahayaring lem. A beh mooh lu mah koye lah ni yeh lah kato dango keh kah nying nynin karol gabi. Nying nynin karol lah jabo beh bolah I dingo lah maa nya nying kari wuro meng tam bi tah.

I dingo tuh ..... Kewo/Musoo

Sang juma leh A wulu tah.....

	Amang keh Tohnyati	A si keh noh Tohnyati	tohnyah tohnyah Tohnyah lem
Considerate of other people's feelings	□	□	□
Daha Baliya, Mah mang siya, A buka ting kung noo	□	□	□
Wato wati A kongo, kono barh diming lah Anin saasaa	□	□	□

A din ding dolu fuh A lah fen ngo lah, koming feyran ngo,

Domoro, pencilo	□	□	□
A kah Kang faah junah	□	□	□
A kah lafi leh A dam mah yeh feya	□	□	□
A kah tuh mah kuring, Kebba yeh meng fa yeh A kah keh	□	□	□
A kah hakili teng kung baliya soto	□	□	□
A kah mooh lu makoi mel kanfata, saasaa tah	□	□	□
A bulol buka teng kung, A kah tuh A balo mah lah	□	□	□
A yeh terima Kendeh kilin soto	□	□	□

	Amang keh Tohnyati	A si keh noh Tohnyati	tohnyah tohnyah Tohnyah lem
A kah tuh din ding dolu kelindi lah Anin tohnyiro	□	□	□
A buka Sewoo, A kah tuh kumbo leh lah	□	□	□
A kah lafi din ding dolu lah	□	□	□
Kodi Aka Hakilo tuh noh feng toh A yeh meh	□	□	□
Nal tahta dulah kutoh toh A tuh I bala leh, A buka deyamu.	□	□	□

A beteya tah din dingol toh A Siya ta mel ti	□	□	□
A kah feniya foh Adoung aka sunyaro keh	□	□	□
ding ding dolu kah tohnyeh leh / I kah buhteh	□	□	□
Aka mooh lu makoi (A wulu lal, Karamo, din ding dolu)	□	□	□
A keh mera leh jang ning Abe feng kelah	□	□	□
A kah sunyaro keh suwo kono, karang mbongo toh anin dula koteng	□	□	□
Anin kebbal leh diyata A moh nyol ti	□	□	□
Aka sila junna,/ A sila tah kuh jaama lah	□	□	□
A yeh fen ngo feng dati A kah labang	□	□	□

A lafita kah feng lafa jeh foh yeh mero kuh suto I lfita kah meng lafa?

Dukare nying kayto yeh leh maa – nynin karo dol beh jeh.

I yah mera leh koh I dingo kah koleh yah soto puru kah yi tandi A kah meng kala muta, foh kah tuh feng kilin kang a yeh meh jeh, A jekoo Anin puru Anin mooh doh yeh beng?

	Haa-	Haa-	Haa-
	Koleh yah	A kah	A kah koleh yah
Hani	Nding	Koleh yah soto	Soto bahkeh
□	□	□	□

Ni Haa ning nynin karol jabi nyeh I kah koleh yah kuwo meng soto ?:

• Wati juma leh yeh ning koleh kuwol soto?

Doyatah	1-5	6-12	A tambi tah
Karoti	kari	Kari	Sanji kilin
□	□	□	□

• Kodi Nying Koleh yal buh keh dino niyo kuya?

Hani buka Tuss kala	Domang nding Dorong	A kah batandi	A kah batandi Bakeh fang
□	□	□	□

• Foh nying Koleh yal keh dingo lah loong ngo loong Hajo Tinya bang?

	Hani Abuka Tuss kala	Domang nding Dorong	A kah Batandi leh	A kah Batndi Bakeh leh
Sukono Buluwo	□	□	□	□
Teri Soto	□	□	□	□
A lah karang ngo	□	□	□	□
Fehya	□	□	□	□

• Foh Nying koleh yah yeh duhno Landi I badingol kang leh?

Hani Abuka Tuss kala	Domang nding Dorong	A kah Batandi leh	A kah Batndi Bakeh leh
□	□	□	□

Signature ..... Date .....

Bama/Fama/Doh (I mah muneh ti :)

A Baraka I lah Makoy loh tooh

Strengths and Difficulties Questionnaire S [11-17]

Puru Nying nynin karol, tombo fengo keh boxo kono kah yehtandi fooh Amang keh toh nyati, Tohnyah ding beh jeh foh tohnyah sahayaring lem. A beh mooh lu mah koye lah ni yeh lah kato dango keh kah nying nynin karol gabi. Nying nynin karol lah jabo beh bolah I dingo lah maa nya nying kari wuro meng tam bi tah.

I dingo tuh ..... Kewo/Musoo

Sang juma leh A wulu tah.....

	Amang keh Tohnyati	A si keh noh Tohnyati	tohnyah tohnyah Tohnyah lem
Considerate of other people's feelings	□	□	□
Daha Baliya, Mah mang siya, I buka ting kung noo	□	□	□
Wato wati I kongo, kono keh diming lah Anin saasaa	□	□	□
I kah din Mooh lu fuh I lah fen ngo lah, koming feyran ngo, Domoro, pencilo	□	□	□
I kah Kang faah junah	□	□	□
I kah lafi leh A dam mah yeh feya	□	□	□
I kah tuh mah kuring, Kebba yeh meng fa yeh A kah keh	□	□	□
I kah hakili teng kung baliya soto	□	□	□
I kah mooh lu makoi mel kanfata, saasaa tah	□	□	□
I bulol buka teng kung, A kah tuh A balo mah lah	□	□	□
yeh terima Kendeh kilin soto	□	□	□

	Amang keh	A si keh noh	tohnyah tohnyah

	Tohnyati	Tohnyati	Tohnyah lem
I kah tuh din ding dolu kelindi lah Anin tohnyiro	□	□	□
I buka Sewoo, A kah tuh kumbo leh lah	□	□	□
I kah lafi din ding dolu lah	□	□	□
Kodi Ika Hakilo tuh noh feng toh A yeh meh	□	□	□
Nal tahta dulah kutoh toh A tuh I bala leh, A buka deyamu.	□	□	□
I beteya tah din dingol toh A Siya ta mel ti	□	□	□
I kah feniya foh Adoung aka sunyaro keh	□	□	□
ding ding dolu kah tohnyeh leh / I kah buhteh	□	□	□
Ika mooh lu makoi (A wulu lal, Karamo, din ding dolu)	□	□	□
I keh mera leh jang ning Abe feng kelah	□	□	□
I kah sunyaro keh suwo kono, karang mbongo toh anin dula koteng	□	□	□
Inin kebbal leh diyata A moh nyol ti	□	□	□
Ika sila junna,/ A sila tah kuh jaama lah	□	□	□
Ni yeh fen ngo feng dati I kah labang	□	□	□

I lafita kah feng lafa jeh foh yeh mero kuh suto I lfita kah meng lafa?

Dukare nying kayto yeh leh maa – nynin karo dol beh jeh.

I yah mera leh koh I dingo kah koleh yah soto puru kah yi tandi A kah meng kala muta, foh kah tuh feng kilin kang a yeh meh jeh, A jekoo Anin puru Anin mooh doh yeh beng?

	Haa-	Haa-	Haa-
	Koleh yah	A kah	A kah koleh yah
Hani	Nding	Koleh yah soto	Soto bahkeh
□	□	□	□

Ni Haa ning nynin karol jabi nyeh I kah koleh yah kuwo meng soto ?:

• Wati juma leh yeh ning koleh kuwol soto?

Doyatah	1-5	6-12	A tambi tah
Karoti	kari	Kari	Sanji kilin
□	□	□	□

• Kodi Nying Koleh yal buh keh dino niyo kuya?

Hani buka Tuss kala	Domang nding Dorong	A kah batandi	A kah batandi Bakeh fang
□	□	□	□

• Foh nying Koleh yal keh dingo lah loong ngo loong Hajo Tinya bang?

	Hani Abuka Tuss kala	Domang nding Dorong	A kah Batandi leh	A kah Batndi Bakeh leh
Sukono Buluwo	□	□	□	□
Teri Soto	□	□	□	□
I lah karang ngo	□	□	□	□
Fehya	□	□	□	□

• Foh Nying koleh yah yeh duhno Landi I badingol kang leh?

Hani Abuka Tuss kala	Domang nding Dorong	A kah Batandi leh	A kah Batndi Bakeh leh

□ □ □ □

Signature ..... Date .....

Bama/Fama/Doh (I mah muneh ti :)

A Baraka I lah Makoy loh tooh

APPENDIX IV

K-SADS-PL Questionnaire

APPENDIX V

Informed consent letter

I am a postgraduate student from the child and adolescent mental health, University of Ibadan, Nigeria. I will be conducting a community base study on the prevalence and correlates of mental disorders in Gunjur community western Division of The Gambia. I want to identify the rate of mental disorders among children and adolescent and their associated risk factors in the community.

The study will involve interview to the caregiver and the child. This will take a maximum of 40 minutes of your time. Your participation in the study is voluntary and it does not pose any threat or risk to you and your child. You are free to withdraw from the study at any time and it does not have any consequences. Children identify from the study having any mental disorder will be referred appropriately.

The data of the study is strictly confidential and will be managed by the Centre for child and adolescent mental health, University of Ibadan. The report of the study will be submitted to ministry of health of the Gambia so that it can help in setting up or scaling services of children and adolescent mental health.

Some of the questions in the study will be personal and honest answers is required. You are free to ask any question at any time for clarifications.

If you agree to participate in the study please sign or thumb print.

……. ……..

Signature/thumb print of caregiver signature of the investigator

APPENDIX VI

CONSENT/ASSENT STATEMENT

If you have understood fully the study and would be willing to participate in the study please kindly sign or thumb print in the space provided.

…… ……

Signature/thumbprint of child/adolescent signature of investigator

.

Informed consent letter

N tuh Muh Dr. Kalilu Jagne leh ti , Mbeh karang lafa lah University of Ibadan, Nigeria. Mbeh meng karang kang woh lem muh din dingol lah hakili jaata Kenday.Nata puru kah jube meng kh nyama sabu Aniŋ kah jube foh A be siyaring Gunjur Kabilo kono Western region Gmbia. N lafita kah loong foh hakili saasaa siyata din dingol kono Aniŋ fonding kell anin meng kah Sabu ning Kabilo kono.

Mbeh molu nying kala mel beh mara ring din dingol lah. Ning beh minuti tang nani (40) I lah wato toh. Puru I dah yeh keh ning jube rotuh, Amang keh forrseh ti. A dung nih I dah keh tah jeh mantora koh ti jeh. Nih yah Dati I sib buh noo jeh Wato wati Diyateh Lah. Ding dinol mel yah long koh kabiring nga nying jubero keh nga jeh koh yeh Hakili saasaa soto mbeh Samba lah Jarali Dulah.

Nah Jabiro meng Soto Mhah Kantala Adung A maralo beh tara lah University of Ibadan koto. Nah report meng soto Mba Dilah Gambia Mansa Kunda lah Puru yeh loong I beh makoye roh kela nya meng.

Nyining karo dol beh jeh, I beh nying kala fengol I kah meng keh Suturo kono. Kah Toh nyah Fooh nying jabirol toh woh leh bel mool Makoye lah. I sah nyining karo keh noh ni Feng mang Koye I lah.

Ni I para tah puru I Daah yeh keh nying Jubero tuh A sign Wara yeh Bulu komba Tampeh.

……. ……..

Signature/Tampeh signature of the investigator

APPENDIX VI

CONSENT/ASSENT STATEMENT

Ni yeh Fahamuro keh, Adung I para Tah puru I Daah yeh keh Jeeh Dukareh duma sign wara yah Tampeh I bulu Komba lah.

…… ……..

Signature/tampeh Ding dino signature of investigator

APPENDIX VII

The Gambia Government/MRC Joint
ETHICS COMMITTEE

C/o MRC Unit: The Gambia at LSHTM,
Fajara
P.O. Box 273, Banjul
The Gambia, West Africa
Fax: +220 – 4495919 or 4496513
Tel: +220 – 4495442-6 Ext. 2308
Email: ethics@mrc.gm

21 February 2018

Dr Kalilu Jagne
Edward Francis Small Teaching Hospital
Banjul

Dear Dr Jagne

R017 040v2, Prevalence and correlates of child and adolescent mental disorders in Gunjur, the Western Division of The Gambia

Thank you for submitting your proposal for consideration by The Gambia Government/MRC Joint Ethics Committee.

I am happy to approve your proposed study.

With best wishes

Yours sincerely

Mr Malamin Sonko
Chairman, Gambia Government/MRC Joint Ethics Committee

Documents submitted for review:

- RePubliC letters – 29 December 2017; 13 February 2018
- Project proposal
- Questionnaire (diagnostic interview) – version 1.0 – October 1996
- Questionnaire (socio demographic)
- Response letter – 5 February 2018

APPENDIX VIII

Republic of the Gambia
Ministry of Health & Social Welfare
The Quadrangle
Banjul

Tel: 4222117//4227300/4227301 *Fax: 4229325*

Ref: DHS/AD/2017/01(35) **4th December, 2017**

TO: Regional Director of Health Service – Western Region II
Officer-In-Charge – Gunjur Health Centre

APPROVAL TO CONDUCT RESEARCH – *PREVALENCE AND CORRELATES OF CHILD AND ADOLESCENT MENTAL DISORDERS IN GUNJUR*

I write to inform you that the bearer of this letter **Dr. Kalilu Jagne,** Centre for Child and Adolescent Mental Health, University College Hospital, University of Ibadan, Nigeria wants to undertake a community base study in Gunjur, the Western Division of The Gambia starting from the 15th December 2017 – 28th February 2018.

Soliciting your usual support and cooperation.

DIRECTOR OF HEALTH SERVICES
Sign:
Date:
Ministry of Health & Social Welfare

Dr. Samba Ceesay
Deputy Director of Health Services

Cc: Permanent Secretary - MoHSW
Dr. Kalilu Jagne - University of Ibadan (Nigeria)
File