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SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

MENTAL HEALTH AND RISKY SEXUAL BEHAVIOUR AMONG UNIVERSITY OF GHANA STUDENTS

BY

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DECLARATION

I, hereby declare that this is my original work, written under the supervision of Dr. Abubakar Manu of the Department of Population, Family and Reproductive Health. I further state that except for the references to other works, which have been duly acknowledged, this dissertation has not been presented either partly or wholly for any academic award.

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(Supervisor)

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DEDICATION

This work is dedicated to the Almighty God for He makes all things beautiful in His own appointed time. Also, to my mother, siblings and loved ones who rendered their unconditional and immense support throughout my study.

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I express my profound gratitude to God Almighty for how far He has brought me.

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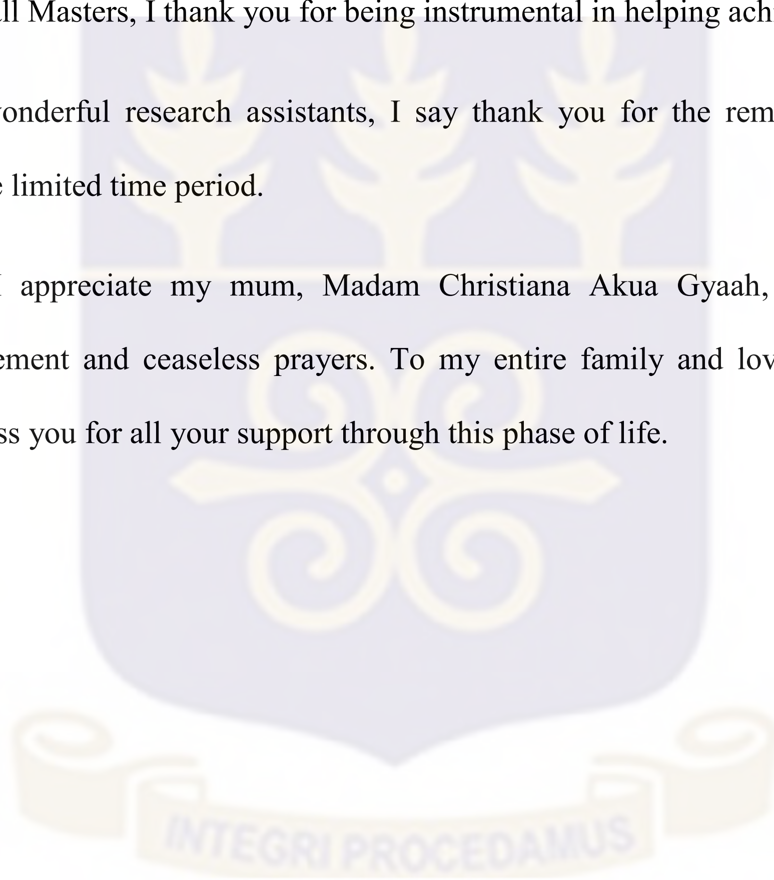
To the Hall Masters, I thank you for being instrumental in helping achieve this dream.

To my wonderful research assistants, I say thank you for the remarkable work done within the limited time period.

Finally, I appreciate my mum, Madam Christiana Akua Gyaah, for her words of encouragement and ceaseless prayers. To my entire family and loved ones, may God richly bless you for all your support through this phase of life.



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ABSTRACT

Background: Young people aged 10-24 years form the larger proportion of Ghana"s population; with the majority being sexually active, and are exposed to adverse health outcomes. Among the young age group, undergraduate students in the university are faced with various challenges on campus including stress, risky sexual behaviour and use of drugs. Although a major public health concern, only few studies have examined mental health as a catalyst to risky sexual behaviour among young people.

Objective: To determine the association between mental health and risky sexual behaviour among University of Ghana students.

Methods: This was a cross-sectional study using quantitative method. A self-administered questionnaire was used to collect data on demographic characteristics, level of knowledge on mental health and risky sexual behaviour of participants". The Beck"s Depression Inventory tool was adapted to assess the mental health status of the students.

A multi-stage stratified sampling procedure was used to select 682 students from the University of Ghana, main campus. A simple random sampling technique with probability proportional to size was used in the sampling process, to compute for the number of students to be used. 9 out of 13 halls were randomly selected and this was followed by a systematic selection of room numbers of the selected halls.

Sampling interval was computed and every 5th room was selected for each hall. Also, one student was chosen at random from selected rooms.

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The Pearson‟s Chi-square test was used to examine association between demographic characteristics, knowledge on mental health, assessment of mental health status and risky sexual behaviours of participants. Data entry was done using SPSS version 21 and data were analyzed using frequencies, bivariate and logistic regression in STATA version 14.0.

Results: The study comprised of 51.3% males and 49.7% females with a mean age of 21.13 years (SD= 2.4). The study found out that about 367 (53.8%) forming the majority of the students had limited knowledge on mental health. Moreover, students experienced different forms of mental health; 159 (23.7%) were stressed, 62 (9.3%) were anxious and 59 (8.8%) were depressed.

About 338 (49.6%) were engaged in risky sexual behaviours, and more male than female students were more likely to engage in risky sexual behaviours. A multivariate analysis showed a significant association between mental health and risky sexual behaviour.

Conclusion: Mental health is associated with risky sexual behaviour. There is the need to intensify mental health education among students to enable early detection and management.

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Table of Contents

DECLARATION i
DEDICATION ii
ACKNOWLEDGEMENTS iii
ABSTRACT iv
LIST OF TABLES ix
LIST OF FIGURES x
LIST OF ABREVIATIONS xi
DEFINITION OF TERMS xii

CHAPTER ONE 1
1.0 INTRODUCTION 1
1.1 Background 1
1.2 Problem Statement 4
1.3 Conceptual Framework 6
1.4 Justification 8
1.5 Study Objectives 9
1.5.1 General Objective 9
1.5.2 Specific Objectives 9
1.6 Research Questions 9

CHAPTER TWO 11
2.0 LITERATURE 11
2.1 Knowledge on Mental Health 11
2.2 Proportion of Students with Depression, Anxiety and Stress 13
2.3 Adolescent Risky Sexual Behaviour 15
2.4 Association between Mental Health and Risky Sexual Behaviour 17

University of Ghana http://ugspace.ug.edu.gh

CHAPTER THREE 19
3.0 METHODOLOGY 19
3.1 Study Design 19
3.2 Study Area 19
3.3 Study Population 20
3.4 Sample size calculation 20
3.4.2 Inclusion Criteria 22
3.4.3 Exclusion Criteria 22
3.4.4 Sampling procedure 22
3.5 Variables 23
3.5.1 Dependent Variable 23
3.6 Training of research assistants 25
3.6.1 Pre-testing 25
3.7 Data Collection Tools and Technique 26
3.8 Data Management and Analysis 26
3.9 Quality Control 27
3.9.1 Ethical Issues 28
3.9.2 Dissemination of Findings 30

CHAPTER FOUR 31
4.0 RESULTS 31
4.1 Introduction 31
4.2 Demographic Characteristics 31
4.3 Participants Knowledge on Mental Health 33
4.4 Mental Health Assessment 37
4.5 Sexual Behaviour of Students 38
4.6 Relationship Between Mental Health and Risky Sexual Behaviour 40

University of Ghana http://ugspace.ug.edu.gh

CHAPTER FIVE 44
5.0 DISCUSSION 44
5.1 Introduction 44
5.2 Demographic Characteristics of Participants 44
5.3 Knowledge on Mental Health 44
5.5 Risky Sexual Behaviour 46
5.6 Relationship Between Mental Health and Risky Sexual Behaviour 47
Limitations 48

CHAPTER SIX 49
6.0 CONCLUSIONS AND RECOMMENDATIONS 49
6.1 Introduction 49
6.2 Conclusions 49
6.3 Recommendations 50

REFERENCES 51

APPENDIX 1 56
CONSENT FORM 56

APPENDIX 2 60
SAMPLED QUESTIONNAIRE 60

University of Ghana http://ugspace.ug.edu.gh

LIST OF TABLES

Table 3.1: Beck‟s Depression Inventory Scores.. 24

Table 4.1: Distribution of Demographic characteristics of study participants 32

Table 4.2: Distribution on Participants Knowledge on Mental Health............................ 34

Table 4.3: Participants with Correct Answers for „knowledge on mental health‟............ 35

Table 4.4: Mental assessment distribution among gender 37

Table 4.5: Overall mental health assessment 38

Table 4.6: Students‟ sexual behaviour by sex.. 39

Table 4.7: Participants with risky sexual behaviour 40

Table 4.8: Bivariate analysis of demographic characteristics associated with risky sexual behaviour 41

Table 4.9: Bivariate analysis of knowledge, mental health and sex when depressed with risky sexual behaviour 42

Table 4.10: Multivariate analysis of age, mental health and sex when depressed with risky sexual behaviour: 43

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LIST OF FIGURES

Figure1.1: Conceptual framework showing the association between mental health and risky sexual behaviour 6
Figure 4.2: Distribution of mental health knowledge 36

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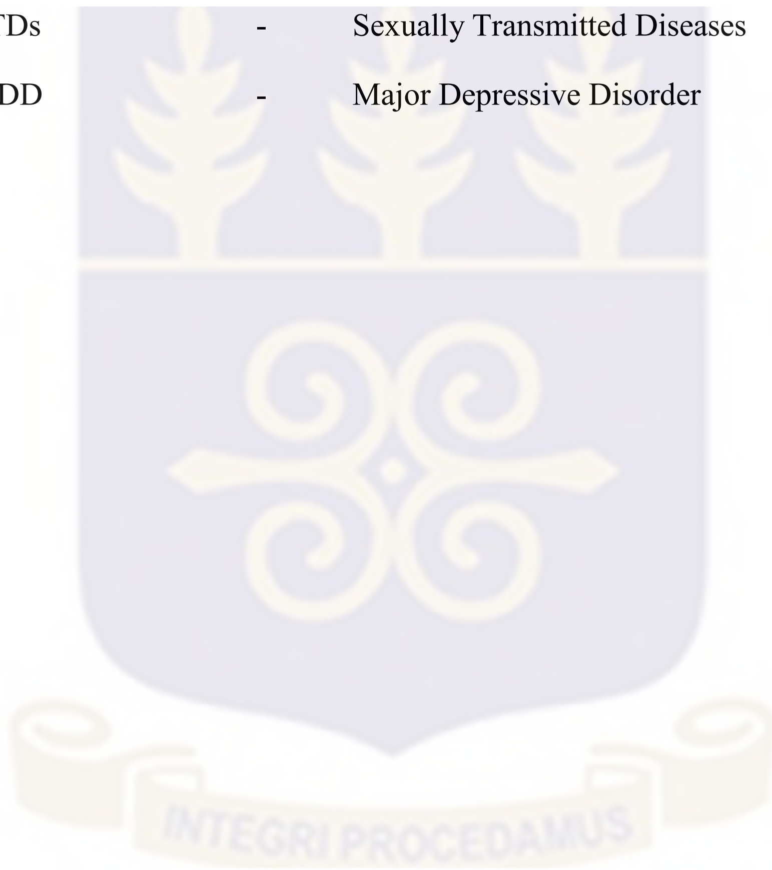
LIST OF ABREVIATIONS

WHO	-	World Health Organization
UNFPA	-	United Nations Fund for Population Activities
GDB	-	Global Disease Burden
BDI	-	Beck‟s Depression Inventory
SPSS	-	Statistical Package for Social Sciences
STDs	-	Sexually Transmitted Diseases
MDD	-	Major Depressive Disorder



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DEFINITION OF TERMS

Mental Health: Measures individual‟s condition in regards to depression, anxiety and stress

Risky Sexual Behaviour: Refers to the involvement with at least one of the following in the previous 12 months; (1) Multiple sexual partnerships (2) Condom use at last sex (3) Casual sexual partners (4) Inter-generational sex (5)Sex whilst drunk (6) Sex with commercial sex workers

Sexual Behaviour: Refers to a person‟s involvement in the following in the previous 12 month; (1) Ever had sexual intercourse (2) Failure to use condom on first sex (3) Condom use at last sex (4) sex when depressed

Inter -generational sex: Sex with someone 10 years or more older than the participant

Youth: A person between ages 15 years to 24 years

Young people: Persons of age 10 to 24 years

Depression: Feeling of severe unhappiness

Anxiety: An emotion characterised by feeling of tension

Stress: Reaction to an external stimulus

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Young people aged 10-24 years form about 1.8 billion of the worlds‟ population, and nearly 90 percent live in low to middle-income countries (Sawyer et al., 2012). In Africa, particularly, sub-Saharan Africa, research has revealed that majority of the people in this age group, including university students, engage in risky sexual behaviours and this leads to undesirable outcomes on family, relationships and health, (Mirzaei, Ahmadi, Saadat, & Ramezani, 2016). Besides, higher percentage of adolescents are involved in unprotected sex, have multiple sexual partners and they are also intricate in inter-generational sex (Doku, 2012).

In addition to risky sexual behaviour, poor mental health among the youth, especially the students is also a key public health issue. Students suffer from different mental problems such as mild depression, anxiety and stress. A greater proportion is exhibited by females rather than males (Bilgel and Bayram 2014). Also report from Merikangas et al., (2010), shows that about 75 percent of the United States (US) youth are suffering from poor mental health. Subsequently, a longitudinal national survey in the US formed a relationship between depressive symptoms and unprotected sex among the young people (Agardh, Cantor-Graae, & Östergren, 2012). Furthermore, studies have also show that mental health accounts for the larger percentage of disease burden among the youth globally (Vikram &Alan, 2007). This has affected their sexual and reproductive health and educational outcome (Vikram &Alan, 2007).

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Young people entering into university undergo an important stage in their human transitional period from adolescent to young adulthood (Conklin, 2012). This is a crucial period and students are faced with various life challenges such as academic and economic stress, and struggling to make major life decisions such as an informed choice on their sexual life (Chen et al., 2013). Meanwhile, adolescents are predominantly vulnerable to mental health problems since they have to deal with drastic physical, mental and social changes during puberty (Tsutsumi, Izutsu, & Matsumoto, 2011)

Similarly, young people‟s population has considerably improved due to the decline in mortality caused by infectious diseases, malnutrition and childhood death but replaced with sexual reproductive health issues, substance abuse, mental health, injury and chronic diseases among other global disease burden (GDB) which are evident during adolescence (Sawyer et al., 2012)

However, very little attention is given to the youth in relation to their sexual health seeking behaviours especially in Africa. Even though various researches done in developed countries have revealed that there is a correlation between mental health and risky sexual behaviours among the youth, governments in Africa have not given adequate attention to it (Agardh, Cantor-Graae et al. 2012).

Most adolescents are regularly identified in various societies by their social roles and age. In Sub-Saharan countries including Ghana, the culture limits sex education for the youth, and this contributes to unhealthy sexual reproductive health decision (Doku, 2012).

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Though, depression is among the top 3 mental health cases in Ghana and the youth forming the majority of the 736 number of cases reported in the year 2007 making 11.65 percent of the total cases in the same year (WHO, 2007). This has still not triggered the need to explore more rather than substance abuse related to sexual risky behaviours.

To get the best mental, sexual and reproductive health of the youth is through good supportive systems in the society, the family, friends and institutions are needed. The daily youthful life involves risky decision making that needs guidance and protection overall that they do in order to get an improved health outcome. These are essential in cultivating the youth to their full potential (Viner et al., 2012).

Currently, little is known about the association between mental health and risky sexual behaviour amongst youth especially undergraduate students. Since the adolescence is characterized by rapid transformation and unrestricted growth, public health programmes and policies for prospective development among the youth should be prominent.

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1.2 Problem Statement

The prevalence of mental depression, anxiety and stress were 28 percent among the undergraduate students in the University of Ghana main campus in 2015 (Kugbey, Osei-Boadi, & Atefoe, 2015). It was also noticed that 33.3 percent of the student population of the University of Ghana in the main campus were sexually active, and many of them are involved in risky sexual behaviour (Ahiataku, 2016).

Many students" exhibit signs of varying levels of poor mental health such as poor concentration during lecture sessions, difficulty remembering previous studies, feeling of worthlessness/pessimism and many more. Some of the students also engage in diverse risky sexual deeds such as multiple sexual partners, unprotected sex, and inter-generational sex among others.

Evidence shows that poor mental health including depression, anxiety and stress among university undergraduate students is associated with substance abuse, economic hardship, and academic stress (Agardh et al., 2012). Some studies have indicated that, sexual misconduct among university students is associated with poverty, peer pressure, mental problems such as depression, and substance abuse (Chen et al., 2013).

Depression and risky sexual behaviour can affect the students" academic performance; worsen mental health status, exposed them to sexually transmitted infections (STIs) and HIV and ultimately flippancy in adulthood.

Most researches done in various developed countries have established an association between mental health and risky sexual behaviour among the youth (Tsutsumi et al., 2011). But little research has been conducted in most Sub-Sahara

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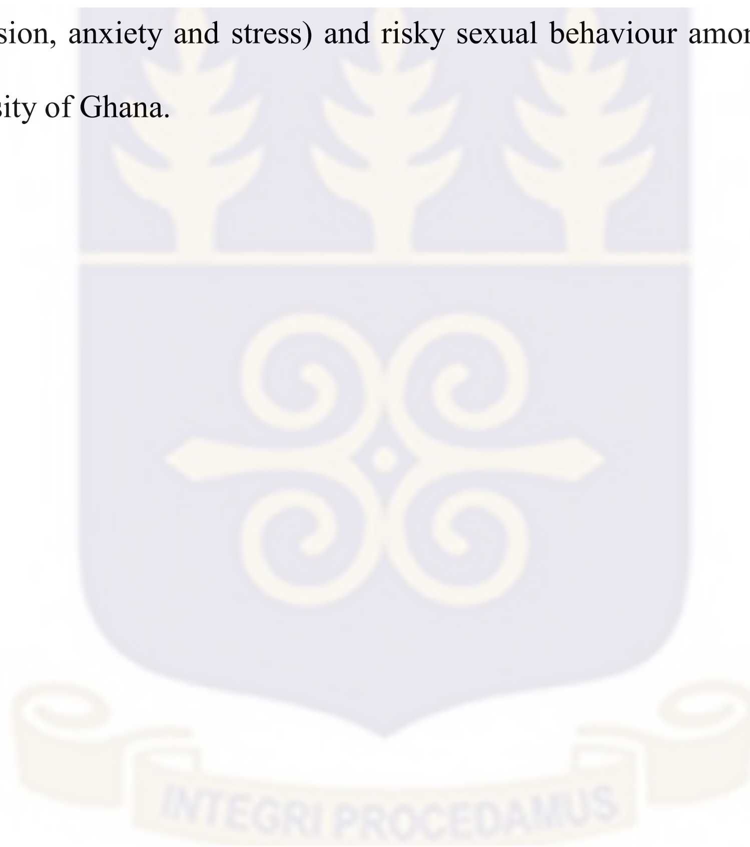
countries including Ghana. The few studies in Ghana have shown other associated factors like substance abuse with risky sexual behaviour unlike mental health.

Furthermore, mental health problems and risky sexual behaviour commence in young adulthood that are mostly vulnerable. It is not clearly known, if risky sexual behaviour among students in University of Ghana campus is correlated with the depression among the students.

This study is aimed at investigating the association between mental health (depression, anxiety and stress) and risky sexual behaviour among students in the University of Ghana.



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1.3 Conceptual Framework

This section discusses the mechanism through which multiple factors influence young people to engage in risky sexual behaviours and its association with mental health as illustrated in Figure 1.1.

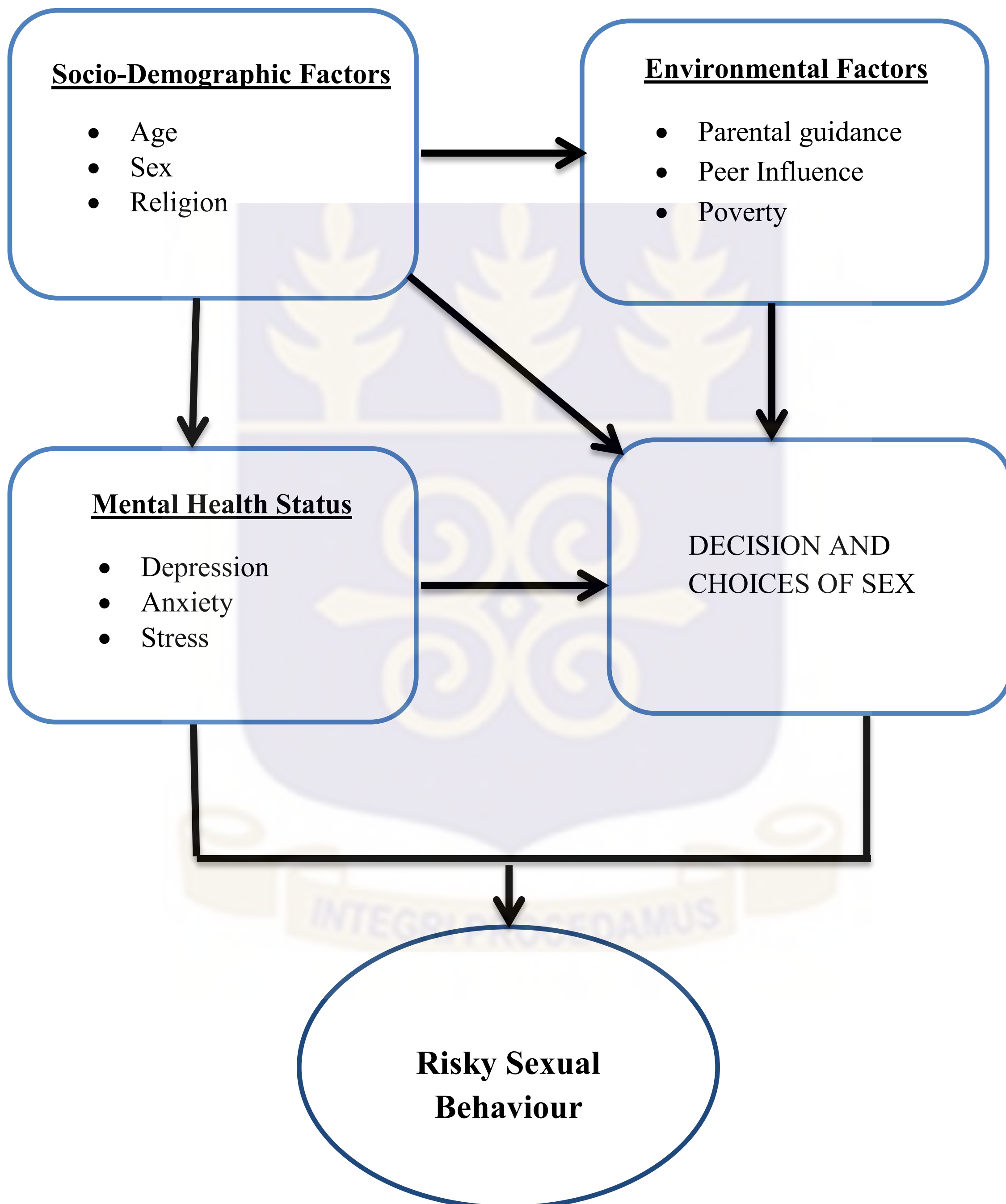

Figure1.1: Conceptual framework showing the association between mental health and risky sexual behaviour

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Figure 1.1, shows the various factors that functions as predators to influence the risky sexual behaviour among the undergraduate students in the University of Ghana.

Most undergraduate students in the University of Ghana are in their teen ages. This makes them vulnerable to peer influence. The sex of the individual significantly determines whether or not they will communicate their sexual life to their parents or guardians from whom they can get the necessary advice and counseling on sex on campus. Also, adherences to religious beliefs have an influence on how they respond environmental factors.

Peer pressure is a serious circumstance which most undergraduate students will want to comply, in order to avoid alienation and earn acceptance from their peers. Some students make friends who indulge in risky sexual behaviours such as unprotected sex. The experienced students will discuss the pleasure of such behaviours with the innocent ones and expect them to also engage in similar behaviour. These discussions affect the students‟ decisions regarding sex and may influence them to make unsound sexual decisions and engage in unprotected sex to explore the pleasure their peers claim to enjoy. Poverty can influence a discipline student to also engage make erroneous sexual decisions. For example, some female students engage in transactional and inter-generational sex, in which they are unable to refuse unprotected sex, just to earn money to enjoy campus life.

In addition, parental guidance and upbringing, parents‟ continuous communication with and support to their children in the university can affect the decisions students make about sex.

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It is also known that poor mental health influence students to engage in risky sexual behaviours. For instance, depression, anxiety and stress can directly influence a student"s sexual decisions and behaviours. The sum effect of all the variables in this conceptual framework culminate into influencing the quality of the decisions the student makes about sex and engage in risky sexual behaviours. These decisions ultimately, determine the risky sexual behaviours the student practices in daily living on campus.

Generally, all these create enabling environment for students to indulge in risky sexual behaviours on the University of Ghana main campus.

1.4 Justification

Previous studies have established that there are high proportions of students who suffer varying mental problems such as depression, anxiety and stress in University of Ghana main campus. Some studies have also revealed that 33.3 percent of the students are sexually active and involve in risky sexual behaviours. Up to date, no studies have been conducted to explore the association between mental health among students of University of Ghana campus and risky sexual behaviours. This study was to examine the relationship between mental health and risky sexual behaviours among students. Identifying a relationship between these problems may contribute to developing a solution to mitigate the increasing risky sexual behaviours among students in the University of Ghana.

Findings from this study will serve as a baseline data for future studies. It may also be used by the university authorities to develop policies, especially for students with serious mental health problems.

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In addition, the findings may inform the university authorities to conduct medical examination and screen students regularly so that their health problem behaviours and provision of mental health services on campus can be initiated.

Furthermore, this study will inform parents and guardians to make an effort to provide financial, emotional and social support to the adolescents in the university. Also, findings from this study can be used to inform students to avoid risky sexual behaviours and seek mental health as soon as they experience signs and symptoms.

1.5 Study Objectives

1.5.1 General Objective

This study was to examine the association between mental health and risky sexual behaviour among students of the University of Ghana main campus.

1.5.2 Specific Objectives

The specific objectives were to:

1. Assess the level of knowledge of students on mental health;
2. Determine the proportion of students with depression, anxiety and stress;
3. Determine the proportion of students who engage in risky sexual behaviour;
4. Determine the relationship between mental health and risky sexual behaviour among University of Ghana students.

1.6 Research Questions

To address the study objectives, the following questions were asked:

- How much knowledge do students of the University of Ghana know about mental health?

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- What proportion of students suffer from depression, anxiety and stress?
- To what extent do students engage in risky sexual behaviours?
- What is the relationship between mental health and risky sexual behaviour?

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CHAPTER TWO

2.0 LITERATURE

This chapter consists of reviewed literature relevant to the study. That is, researches that discuss the adolescents" knowledge on mental health problems, proportion of the students with mental health, risky sexual behaviours of adolescents as well as the association between mental health and risky sexual behaviour.

2.1 Knowledge on Mental Health

Low mental health correlates strongly with other health issues such as poor reproductive and sexual health development concerns among the young people especially; substance abuse, violence, less success in academics (Okello, Abbo, Muhwezi, Akello, & Ovuga, 2014).

The World Health Organization (WHO, 2014) has defined mental health as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and able to make contribution to his or her community".

However, Global Disease Burden (GDB), estimates a 0.523 and 0.655 proportion of the world population with severe anxiety and depression respectively, contributes to the disease burden worldwide (WHO, 2013).

Despite the fact that mental health issues are common, public alertness and knowledge is usually poor, irrespective of the people concerned (Pingitore and Sansone, 2008).

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Also, the condition for early detection and management of mental health is through the acquisition of knowledge. (Lauber, Ajdacic-Gross, Fritschi, Stulz, & Rössler, 2005)

Nonetheless, most of these sign and symptoms commerce from childhood when there is loss of guardians‟. This leads to withdrawal, anxiety and depression during adolescence (Ing et al., 2015). Okello et al., (2014) pointed out that "Although mental health literacy as a research concept has received considerable attention in other parts of the world, it still remains relatively unexplored in low-income countries especially among young people".

Ghana being part of the Anglophone West African countries has low priority regarding mental health as well as relatively low levels of knowledge and unavailability of resources to facilitate the spread of information to all (Abdulmalik et al., 2015). Also, social environmental factors are the leading causes of depression in Western countries (Journal of Psychiatry, 2000)

In addition, Davies et al. (2016) reports that depression has a significant effect on students when untreated, this disturbs their academic work and the skills needed for them to finish their tertiary education. Thus invariably, tends to affect their career development. Although males and females exhibit different levels of stress during campus life such as pressure during examination, they are less likely to have a grip on positive health attitudes and good coping strategies.

Most mental distress on campus are considered „normal‟ and so affected students do not seek help (Davies, Wardlaw, Morriss, & Glazebrook, 2016).

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The mean prevalence of depression among undergraduate students is 30.6% and this is frequently experienced by university students than their counterparts who have no tertiary education (Davies et al., 2016). Furthermore, university students usually subject themselves to these stresses and are unwilling to seek for help.

Adolescents find it easier to assess information from health professionals, parents and older friends which increases their understanding and knowledge. Therefore, experience built on knowledge will grow through education to implement health literacy skills (Tomás, 2016).

Mental health literacy is an important factor in determining future progress in community health, therefore researches have indicated increased mental health knowledge about mental illness which enables the youth to easily seek for help and this boost health outcomes (Wei, McGrath, Hayden, & Kutcher, 2015). Additionally, depression was noticeable with its symptoms such as decreased pleasure in activities, hopelessness, insomnia, loss of appetite and less energy (Jabson, Farmer, & Bowen, n.d. 2014)

There are agreements that most mental health issues are treatable through early intervention actions aiming at quality of care and positive public attitudes (Malla, Joober, & Garcia, 2015).

2.2 Proportion of Students with Depression, Anxiety and Stress

Adolescent depression is the commonest among mental health problems which affects one-fifth of this population, indicating it"s public health importance (Cook, Peterson, & Sheldon, 2009). This situation causes substantial amount of misery

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and functional impairment, of about 4.4 percent of GDB, and it is considered to be one of the leading form of ill-health among young people (Moussavi et al., 2007b).

According to Wei et al. (2015), mental health literacy is centered on depression, anxiety and other mental health among the youth. Similar, survey done in Sri Lanka indicated that most students had signs of anxiety and depression during any mental health programme done. However, severe depression was significant among females likewise anxiety in males (Rodrigo et al., 2010).

Various studies have established that students normally experience mild depression, stress and anxiety, with females exhibiting significant increased levels more than males (Bilgel, 2014).

Also, various studies done in developed countries like Norway, shown that most female students are likely to develop mental problems such as depression as compared to the males (Olsen et al. 2013).

Moreover, depression manifests symptoms such as loss of pleasure, hopelessness, insomnia, loss of appetite and less energy (Jabson, Farmer, & Bowen, 2014).

About 10 percent of the adolescents had symptoms of major depressive disorder (MDD) and males to females with a ratio of 1:2(Cook et al., 2009).

Furthermore, Gramstad et al. (2013) shows that students on campus experience high levels of anxiety, depression and stress as compared to other adolescents. That is, the environment of the individual cultivates stress which causes imbalances in the system and this upsets the psychological and physical well-

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being of the individual. Besides, depression is the expression of uncontrolled anger and which is more dominant during puberty (Bilgel, 2014).

Consequently, depression accounts for the highest contributor to the decline of health as compared to any chronic disease (Moussavi et al., 2007a). Most of the youth engage in multiple sexual relationships especially when depressed (Caminis et al., 2007). Similarly, the research established that there was a sole relation between sexual initiation and depression.

2.3 Adolescent Risky Sexual Behaviour

Sexual behaviour is an action of an individual which is greatly influenced by socio-cultural and ethical concerns. The Ghanaian society like other Sub-Saharan African countries demoralizes premarital sex among the sexually active young people (Doku et al., 2015). There have been much theoretical studies on sexual behaviour since the 18th century based on various techniques especially medical and psychological attitudes of individuals. Even though, public alertness on this research is generally minimal. Risky sexual behaviours brings about adverse results on family, relationships and the health of the individual (Mirzaei et al., 2016).

Undergraduate students attain autonomy and enjoy privacy especially on campus without their parents‟ presence; this often leads to engagement in risky lives. Some of these include early sex, unprotected sex, involvement with high risk individuals and inter-generational sex (Dingeta, Oljira, & Assefa, 2012). Similarly, Vivancos et al. (2013), reports that most undergraduate students experienced early sex debut hence engage in risky sexual behaviours and mostly diagnosed of sexually transmitted diseases (STDs).

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Nonetheless, the youth are equipped with information and skills which will help them to make an informed choice through sex education. Young people who form the majority of public health population are the most ignored especially those in the Universities (Sipsma et al., 2013). It is presumed that these tertiary students are "well educated and health conscious". This accounts for limited research among this age group (Chanakira, O"Cathain, Goyder, & Freeman, 2014).

According to Oppong Asante, Meyer-Weitz, & Petersen (2015), a greater percentage of disease burdens leading to death among the youth are associated with depression, mostly in developing countries. This established the fact that there was a strong association between poor mental health and risky sexual behaviours (Oppong Asante, Meyer-Weitz, & Petersen, 2015).

In addition, various studies done on Uganda"s campus indicated a strong correlation between multiple sexual partners and condom use among depressed female students and anxiety among males who engage in risky sexual behaviours persistently (Agardh et al., 2012).

However, Bennet and Bauman, (2000), found that an extremely troubled youth may use sexual activity as an alternative to relieve tension, and seek affection through risky sexual behaviour. This young individual ends up sorting sex as a self-medication to the mental health issues.

Despite considerable studies conducted among students, little research has been done among tertiary students with mental health and engaging in risky sexual behaviour (Dingeta et al., 2012). There is also no evidence of effective sexual

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education on risky sexual behaviour in early adulthood (Vivancos, Abubakar, Phillips-Howard, & Hunter, 2013).

2.4 Association between Mental Health and Risky Sexual Behaviour

Variations in sexual behaviour have resulted in long periods of recurrent unified relationships. Investigation on the effects of multiple heterosexual partners on mental health, specifically, whether higher numbers of partners were linked to later anxiety, depression, and substance dependency (Ramrakha, Caspi, Dickson, Moffitt, & Paul, 2000), resulting that young people with depression were more likely to be involved in risky sexual behaviour.

Meanwhile, young people are involved in radical physical, mental and social changes at adolescence and sexuality growth affirms their gender identity (Tsutsumi et al., 2011).

Similar report by Seth et al. (2012) indicates that there is a high prevalence of youth engaging in risky sexual behaviour during major depressive disorders.

Various researches done, found that adolescents who are sexually active and show symptoms of depression mostly engage in sexual risky behaviour, comprising of several partners and unprotected sex that is not using condoms (Shrier et al., 2009).

According to Bennett & Bauman, (2000), to harmonise health care for the young people including mental health, sexual and social facets there is the need to examine sexual behaviour in young people with depression, anxiety and stress since it is the utmost to be considered in health care.

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Additionally, Tsutsumi et al., (2011), studies show that poor mental health state of young people in relationship with risky sexual behaviour is more prominent in the midst of defenseless group who needs much help in terms of sexual and reproductive health that incorporates both mental and psychological factors.

Subsequently, adolescents who were sexually abused exhibited risky sexual behaviour. Hence, males with sexual abuse imprison themselves in alcohol and indulge in risky sexual behaviours (Tsutsumi et al., 2011). Likewise, Lehrer, Buka, Gortmaker, & Shrier, (2006) study report shown that most elevated depressive symptoms among adolescents were anticipated with no condom use at last sex and also had a link with multiple sexual partner and also, having a sexual partner with concurrent partners without condom use. This was alarming since it increased sexually transmitted diseases (Moussavi et al., 2007a) and females were the most engaged in risky sexual behaviour.

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CHAPTER THREE

3.0 METHODOLOGY

This section describes the study method which covers the study design, study area, variables, and method of data collection, data analysis, ethical considerations and quality control measures.

3.1 Study Design

The study used a cross-sectional design involving a quantitative approach to gather data from students within the University of Ghana main campus.

3.2 Study Area

The study took place in the University of Ghana main campus, which is about 13 kilometers north-east of Accra, the capital city of Ghana. The University was established in 1948 as the University College of the Gold Coast, and attained a full university status in 1961. The university has four colleges, nineteen schools, five institutes and eleven centers of learning (University of Ghana, 2016).

The University of Ghana is the oldest and largest of the eight public universities in Ghana. Currently, the student population is over 40,000; of which about 85.4% are undergraduates. The enrolment ratio is about 1.4 males to 1 female.

The unique mandate of the University was social sciences, basic Science, Agriculture, liberal arts and Medicine, but the program of study was expanded to offer more technology-based and vocational courses as well as postgraduate training.

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The university has a population of 227 senior administrative and profession staffs. There are also 1179 senior members who engage in teaching and research (University of Ghana, 2016)

Presently, there are 32 local institutional affiliations with the University of Ghana teaching non-degree, Bachelor"s degree and post-graduate degree programmes.

Also, the university awards diplomas and degrees. Moreover, the University of Ghana partners with the International Association of Universities (IAU) among others. It is a member of the League of World Universities, which comprise of 47 renowned research universities all over the world. It has also established academic and research relations with many Universities and Research Institutions globally. Since, the University has made an effective contribution at the national and international level in the areas of research.

3.3 Study Population

The population of this study was all undergraduate students in the University of Ghana main campus.

3.4 Sample size calculation

The sample size was calculated using the Cochran (1977) formula as follows:

$$N = \frac{Z^2\ p\ (1 - p)}{d^2}$$

Where:

N: sample size

Z: value of confidence interval at 95%

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p: prevalence of risky sexual behaviour

d: margin of error 5%

The following parameters were used to calculate the sample size;

p= Estimated prevalence of risky sexual behaviour among students in the University of Ghana was 33.3% or 0.333 (Ahiataku, 2016)

Z= Confidence level at 95% (standard value of 1.96)

d= margin of error 5% (0.05)

$$N = \frac{1.96^2 \times 0.333\ (1 - 0.333)}{0.05^2}$$

$$N = \frac{1.2793 \times 0.667}{0.0025}$$

$$N = \frac{0.85329}{0.0025}$$

$$N = 341.32 \approx \mathbf{341}$$

3.4.1 Sample Size Adjustment

Due to loss of sampling efficiency in stratified sampling, a design effect[1] (D) is used in an effort to improve precision. Thus, the sample size was adjusted with design effect of 2, resulting in a final sample size of **682.**

[1] Under cluster sampling there is a loss of precision thus, the design effect, which is an adjustment factor is multiplied by the computed sample size from simple random sampling to improve sampling effectiveness or precision.

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3.4.2 Inclusion Criteria

- All undergraduate students who resided on University of Ghana, main campus.

3.4.3 Exclusion Criteria

- Undergraduate students, who were distant, pursued special programme (sandwiched) and non-resident in the University of Ghana.

3.4.4 Sampling procedure

A multi-stage stratified sampling procedure was used to select 682 students from the University of Ghana main campus. A simple random sampling technique with probability proportional to size was used in the sampling process, to compute for the number of students to be used. 9 out of 13 halls were randomly selected and this was followed by a systematic selection of room numbers from a list obtained from the administrators of the selected halls of residence.

The sample size for the study was divided by the number of halls selected. Hence a uniform number was selected from various halls. Also, this controlled for bias with regards to the unisex halls.

$$Hall\ sample\ size = \frac{Study\ sample\ size}{Number\ of\ halls\ selected}$$

$$Therefore; \frac{682}{9} = 75.7 \quad \approx \mathbf{76}$$

Appropriate sampling intervals were computed for the respective halls of residence. Thereafter, 76 students were systematically selected from each of the nine halls.

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One student was interviewed per room. Thus, in rooms that contain more than one undergraduate student of the same level, the lottery method was used to select one. Here, numbers were on pieces of papers and placed in a small open bag and thoroughly mixed, and one selected by the student who was included in the study.

3.5 Variables

3.5.1 Dependent Variable

The dependent variable was risky sexual behaviour.

A composite measure consisting of the following six variables were used;

a) Multiple sexual partners in the last 12 months
b) Ever used condoms at last sex
c) Casual sexual partners in the last 12 months
d) Ever had sex whilst drunk
e) Ever had sex with commercial sex worker
f) Ever had sex with someone ten (10) years or over

Four out of the six questions were previously coded as Yes=1 and No= 2. Condom use at last sex was reversed-coded. The remaining questions; multiple and casual sexual partners in the last 12 months were previously coded as 0=1 for those who had 1-2 partners and ≥ 3 partners were coded as 1=2. These were recoded as No= 0 and Yes =1. All were sum up to create a new variable; hence the scale was categorized into two, which is anyone who scored zero (0) was referred as low risk and one (1) as high risk.

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3.5.2 Independent Variables

The independent variables included the following:

- Demographic characteristics includes age, sex and religion
- Mental Health factors comprises of depression, anxiety and stress
- Environmental factors include parental guidance, peer influence and poverty
- Decision on sexual behaviour and Choice

Variable like demographic characteristics were directly measured using the questionnaire, but the Becks depression inventory (BDI) standard tool was used to assess mental health status of students. The BDI is a 21–item, self- rated scale and graded 0-3 used to measure the mental health status of individuals with different levels of depression in addition to stress and anxiety The items are summed and possible score ranges from 0-63 (Beck A. T., Steer R. A., Brown G. K.,1996).

The Beck 1996 used the following scores (Table: 3.1) as a cut off for classifying various levels of depression.

Table 3.1: Beck's Depression Inventory Scores

Score	Level of depression	Coding
0-10	Normal students	0
11-16	Stressed students	1
17-20	Anxious students	2
21-30	Moderate depression	3
31-40	Severe depression	4
Over 40	Extreme depression	5

Source:Beck A. T., Steer R. A., Brown G. K. (1996)

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These were recoded as anyone who scored 0-10= 0 was normal, those who scored 11-30= 1experienced moderate depression and the remaining who scored 31 and above were having severe depression. Recoding was done to obtain two categories with normal mental health being zero (0) and one (1) for anyone who scored 11 or higher were categorized as depressive for logistic regression analysis.

In relation to the students‟ knowledge on mental health, 9 standard questions from the website (www.medicinet.com/depression-quiz/quiz.htm) plus one (1) created question were used to assess. Anyone who scored < 6 was coded zero (0)which is low knowledge on mental health and ≥ 6 score = 1, had high knowledge on mental health.

3.6 Training of research assistants

A two day training session was held for the research assistants to ensure that they understand the research and also prepared for the field work issues including;

1) The study objectives and the sensitive nature of the topic
2) Methods of sampling participants
3) Ensured confidentiality
4) Informed consent

3.6.1 Pre-testing

The study instrument was pre-tested among 10 students at the Central University College, Mataheko Campus. This was to assess the clarity, reliability and completeness of the questions. Afterwards, the research instrument was refined to help improve the actual study.

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3.7 Data Collection Tools and Technique

A structured questionnaire was used to obtain the quantitative data from the students. The questionnaire sought information on participants" demographic characteristics, level of knowledge on mental health and risky sexual behaviours of students. This was designed and administered in the English Language.

In addition, mental health was assessed using the Beck Depression Inventory (BDI). This was 21 self-rated scale questionnaire which was evaluated based on the scores allocated to each level score at the end of the data collections. This is a test tool that measures severity of depressive symptoms.

Questionnaires were distributed by research assistants and participants were required to complete the questions. Also, a follow-up was done to ensure that questionnaires were completed and collected.

3.8 Data Management and Analysis

All questionnaires were cross-checked for completeness. Data cleaning was done and entered into SPSS version 21, then doubled checked for accuracy and lastly exported to STATA 14.0 for analysis.

Data cleaning and verification were done to ensure good quality data. For each variable identified the number missing and incorrectly entered data. Missing data were excluded from the analyses.

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Where an input needs to be corrected, the variables were listed and needed corrections done. Also, Pearson"s chi-square, bivariate and multivariate analyses (logistic regression) were used to determine associations and the strength of association respectively.

Categorical variables such as demographic characteristics were described in frequencies and percentages in a Table.

Descriptive statistics were used to describe the background characteristics, participants" as well as their knowledge on mental health. They were presented as percentages summarized in table and charts. The Pearson"s chi-square analysis was used to find the factors that were associated with risky sexual behaviour.

All significant variables were further analyzed using the multivariate logistics regression model to determine predictors of risky sexual behaviour. Odds ratio and their confidence intervals at 95% used to assess the strength of association. A p-value of less than 0.05 was used to determine statistical significance.

There were twelve missing variables in analyzing the mental health assessment of the participants. Sexually active participants were used to test the risky sexual behaviours of the students.

3.9 Quality Control

The following quality control measures were explored to ensure accuracy and reliability:

- ❖ Research assistants underwent an intensive two days training prior to the study
- ❖ The training discussed study objectives and sensitive nature of the topic;
- ❖ Confidentiality issues were discussed;

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- The research tools were discussed
- Meeting were held as frequently as possible to discuss challenges faced by the coordinators;
- Filled questionnaires were scrutinized and ensured for completeness and accuracy on daily basis;
- Questionnaires which were not properly filled were sent back to participants to complete.

3.9.1 Ethical Issues

The following ethical issues were considered in this study;

1. Ethical clearance was obtained from the Ghana Health Service Ethics Review Committee, with **ID NO: GHS-ERC 29/02/17.**

2. A written letter was taken from the Population, Family and Reproductive Department of the School of Public Health and permission was sought from the University of Ghana Dean of students" as well as the management of the various halls selected for the study in order to seek their co-operation.

3. Anonymity and confidentiality was ensured throughout the study. The participants" identity remained anonymous as no personal identity was connected to the data. Data was left confidential that no one had access to the study data.

4. Consent was sought from all participants after a detailed explanation of the study was given. Participation in this study was voluntary. Participants were at liberty to withdraw from the study at any time; however, full participation was encouraged.

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5. This study did not have any risk. However, there were uneasiness in responding to some sensitive questions in relation to ones‟ sexual behaviour and mental health. Some questions focus directly on the participant personal life, and that lead to a discomfort in answering of those questions. Hence, participants were free to skip any questions that were uncomfortable answering.

6. There was no direct benefit to the participants of this study. However, information provided can contribute to the global knowledge on mental health and risky sexual behaviour. The information can help identify the young population at risk of mental health and those who engage in risky sexual behaviour.

7. Participation was absolutely voluntary. Participants were at liberty to withdraw from the study. However, we encouraged participants to part-take and complete the questions since their views were very much needed in helping us to examine the association between mental health and risky sexual behaviour. The opinion gathered can help in the development of policies.

8. There was no compensation for participating in this study.

9. The study data was protected with a password, stored on a computer and an external drive. Hard copies were locked in file cabinets with access limited to the principal investigator.

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3.9.2 Dissemination of Findings

The findings of the study will be distributed to the following:

- A copy will be sent to the School of Public Health, University of Ghana library.
- Copies will be sent to the main library of the University of Ghana and other related departments.
- A scientific paper will be written for publication in a reputable journal.

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CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents analyses and results of the study. Analysis was presented under the following headings; demographic characteristics of participants, students‟ knowledge on mental health, assessment on mental health and sexual behaviours of participants‟.

4.2 Demographic Characteristics

Table 4.1 presents a brief report on the demographic characteristics of 682 participants. This comprises of 51.3% males and 49.7% females. Students‟ age ranged from 16 years to 34 years with a mean age of 21.13 years (SD= 2.4). About one-third of the participants were Christians and the remaining religious affiliations were 8.9% Muslims, 0.9% traditionalist and those with other belief form 0.9%.

Study data were collected from 9 halls of residence with one-fourth each from different academic levels ranging from level 100 to 400. Almost half of the students resided with both parents (58.2%), also 27.6% stayed with single parent and remaining 14.2% resided with different relations.

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Table 4.1: Distribution of Demographic characteristics of study participants

Characteristics	Frequency (N=682) Percentage (%)
Age	Mean = 21.13, Mode = 20, SD = 2.4
Sex	
Male	350 (51.3)
Female	332 (48.7)
Level	
100	171 (25.1)
200	170 (24.9)
300	171 (25.1)
400	170 (24.9)
Religion	
Christian	609 (89.3)
Muslim	61 (8.9)
Others	12 (1.8)
Family Structure	
Both parents	397 (58.2)
Single Parent	188 (27.6)
Others	97 (14.2)

Source: Field Survey, 2017

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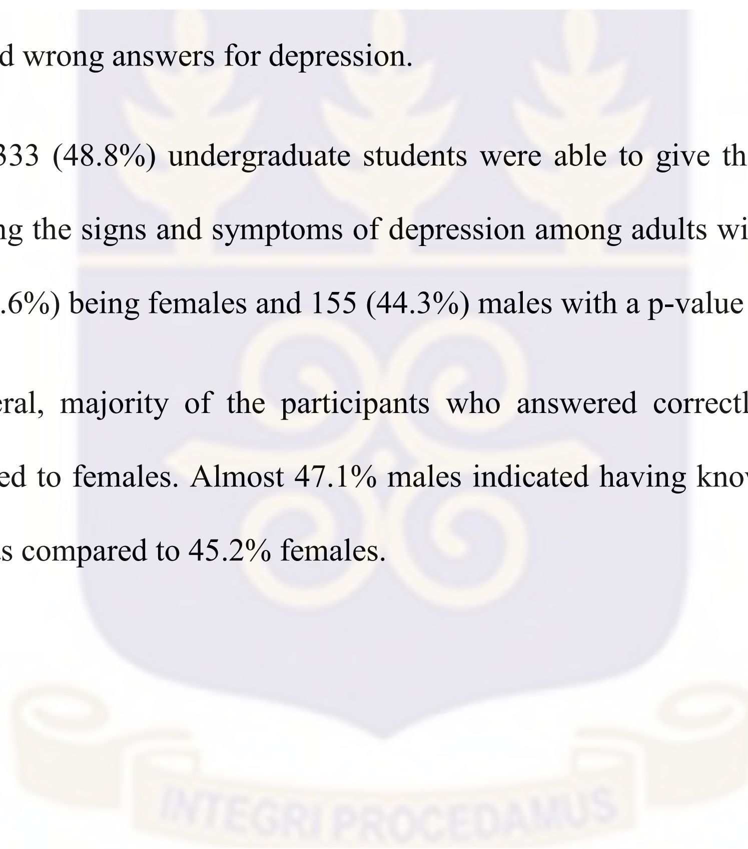
4.3 Participants Knowledge on Mental Health

Table 4.2 shows the distribution of participants‟ knowledge on mental health. Almost one-third of the participants gave an accurate answer for each question. There was a statistically significance in some key questions as indicated in Table 4.3 which were poorly answered by the students. This indicates that the limited knowledge on mental health would impede students from noticing a mentally ill colleague and seeking for prompt help. But the study report showed that about 89% of the participants stated that mental health was treatable. Whilst, 461 (67.2%) provided wrong answers for depression.



About 333 (48.8%) undergraduate students were able to give the correct answers regarding the signs and symptoms of depression among adults with the majority of 178 (53.6%) being females and 155 (44.3%) males with a p-value of 0.009.

In general, majority of the participants who answered correctly were males as compared to females. Almost 47.1% males indicated having knowledge on mental health as compared to 45.2% females.

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Table 4.2: Distribution on Participants Knowledge on Mental Health

Characteristics	Response	Sex		Total N (%)	P-value
		Male n (%)	Female n (%)		
Depression	Emotional disorder	180 (26.4)	172(25.2)	352 (51.6)	0.037*
	Mood disorder and mental illness	124 (18.2)	97 (14.2)	221 (32.4)	
	Personality disorder	22 (3.2)	20 (2.9)	42 (6.2)	
	Psychotic disorder	24 (3.5)	43 (6.3)	67 (9.8)	
Signs and symptoms of depression	Loss of pleasure in activities	121 (17.7)	76 (11.1)	197 (28.9)	0.009*
	Thoughts of suicide	60 (8.8)	64 (9.4)	124 (18.2)	
	Body aches and fatigue	14 (2.1)	14 (2.1)	28 (4.1)	
	All of the above	155 (22.7)	178 (26.1)	333 (48.8)	
Depression is one part of mental disorder	Happiness	31 (4.5)	12 (1.8)	43 (6.3)	0.043*
	Mania	122 (17.9)	124 (18.2)	246 (36.1)	
	Hoarding	22 (3.2)	19 (2.8)	41 (6.0)	
	Anxiety	175 (25.7)	177 (26.0)	352 (51.6	
Postpartum depression?	Depression during pregnancy	31 (4.5)	32 (4.7)	63 (9.2)	0.113
	Depression after childbirth	247(36.2)	245 (35.9)	492 (72.1)	
	Depression due to breastfeeding	31 (4.5)	14 (2.1)	45 (6.6)	
	None of the above	41 (6.0)	41 (6.0)	82 (12.0)	
Depression and anxiety disorders are the same.	True	137(20.1)	126 (18.5)	263 (38.6)	0.585
	False	212 (31.1)	206 (30.2)	418 (61.3	
Causes depression	Environmental factors	86 (12.6)	87 (12.8)	173 (25.4)	0.921
	Genetics	38 (5.6)	39 (5.7)	77 (11.3)	
	Biological factors	20 (2.9)	19 (2.8)	39 (5.7)	
	All of the above	206 (30.2)	187 (27.4)	393 (57.6)	
Treatment for depression	Antidepressants	28 (4.1)	19 (2.8)	47 (6.9)	0.247
	Psychotherapy (talk therapy)	94 (13.8)	101 (14.8)	195 (28.6)	
	Self-care	50 (7.3)	59 (8.7)	109 (16.0)	
	All of the above	178 (26.1)	153 (22.4)	331 (48.5)	
Symptoms of depression in children and teen	Increased energy and alertness	27 (4.0)	43 (6.3)	70 (10.3)	0.072
	Increased hunger	19 (2.8)	24 (3.5)	43 (6.3)	
	Irritability, sadness and crying	245 (35.9)	220 (32.3)	465 (68.2)	
	All of the above	59 (8.7)	45 (6.6)	104 (15.2)	
Depression in an overreaction to stress in life.	True	244 (35.8)	264 (38.7)	508 (74.5)	0.02*
	False	106 (15.5)	68 (10.0)	174 (25.5)	
Mental health treatable	Yes	315 (46.2)	292 (42.8)	607 (89.0)	
	No	35 (5.1)	40 (5.9)	75 (11.0)	

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Table 4.3: Participants with Correct Answers for 'knowledge on mental health'

Knowledge Assessment	Sex		Total	P- value
	Male n (%)	Female n (%)	N (%)	
Depression means	124 (35.4)	97 (29.2)	221 (32.4)	0.049*
Signs and symptoms of depression	155 (44.3)	178(53.6)	333 (48.8)	0.009*
Depression forms another part of mental disorder	122 (34.9)	124 (37.3)	246 (36.1)	0.275
Postpartum depression	247 (70.6)	245 (73.8)	492 (72.1)	0.197
Depression and anxiety disorders are the same.	213 (60.9)	206 (62.0)	419 (61.4)	0.405
Causes of depression	206 (58.9)	187 (56.3)	393 (57.6)	0.277
The treatment for depression	178 (50.9)	153 (46.1)	331(48.5)	0.121
Depression in an overreaction to stress in life	106 (30.3)	68 (20.5)	174 (25.5)	0.002*
Mental health treatable	315 (90.0)	292 (88.0)	607 (89.0)	0.232

Source: Field Survey, 2017

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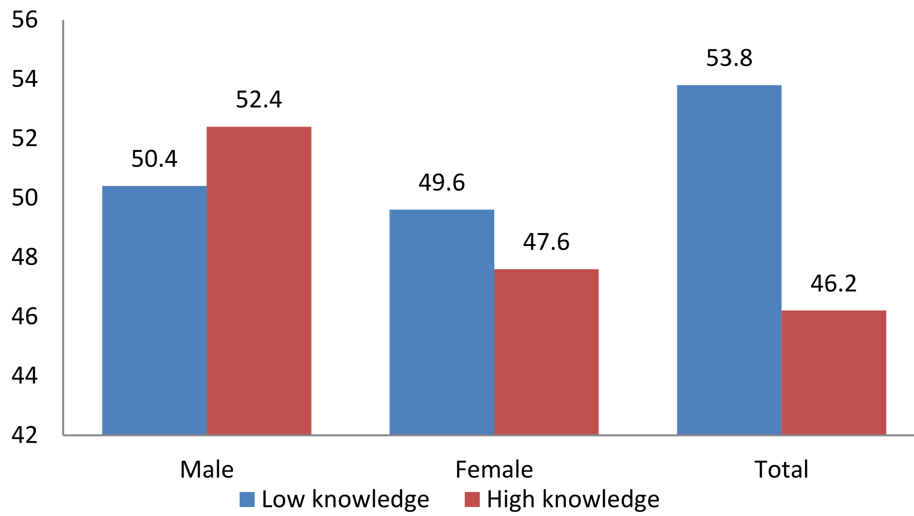

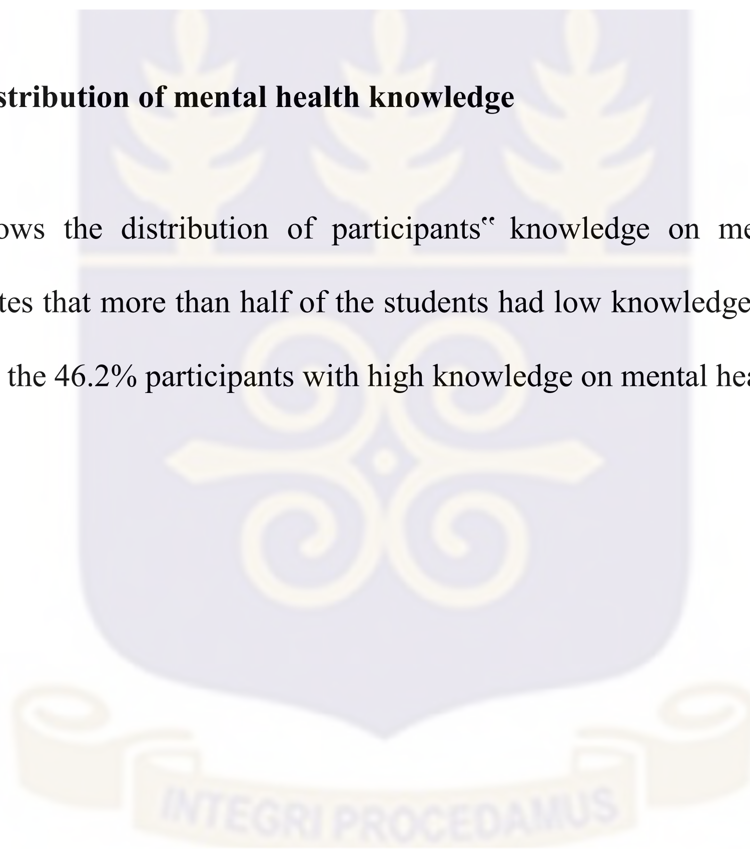

Figure 4.2: Distribution of mental health knowledge

Figure 4.2 shows the distribution of participants‟ knowledge on mental health. The diagram indicates that more than half of the students had low knowledge on mental health as compared to the 46.2% participants with high knowledge on mental health.

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4.4 Mental Health Assessment

Table 4.4: Mental assessment distribution among gender

Mental Health Assessment	Sex		Total N (%)
	Male n (%)	Female n(%)	
Normal	201 (58.6)	189 (57.8)	390 (58.2)
Mild disturbance (Stress)	79 (23.0)	80 (24.5)	159 (23.7)
Border line depression (Anxiety)	28 (8.2)	34 (10.4)	62 (9.3)
Moderate depression	17 (5.0)	17 (5.2)	34(5.1)
Severe depression	16 (4.7)	6 (1.8)	22 (3.3)
Extreme depression	2 (0.6)	1 (0.3)	3 (0.4)

Source: Field Survey, 2017

Table 4.4 shows no substantial difference between the observed depression by sampled male and female of the University of Ghana, undergraduates.

Results show that 3(0.4%) students were experiencing extreme depression with two being males and one female. Regarding to severe depression, 22(3.3%) undergraduates, with males being the majority 16 and 6 females were identified as having the condition. Also, 34(5.1%) participants had moderate depression with 17 each for male and female.

Majority of the students 390 (58.2%) were within the normal range of mental health, with males forming 201 (58.6%) and females 189 (57.8%) with a mean of 1.73(SD=1.083). Among the participants, 159 (23.7%) were experiencing mild stress, with 79 (23.0%) males and 80 (24.5%) females.

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Table 4.5: Overall mental health assessment

Mental Health Assessment	Sex		Total
	Male n(%)	Female n(%)	N (%)
Normal	201 (58.6)	189 (57.8)	390 (58.2)
Moderate Depression	107 (31.2)	114 (34.9)	221 (33.0)
Severe Depression	35 (10.2)	24 (7.3)	59 (8.8)

Source: Field Survey, 2017

This study revealed that 33% of the students experience moderate depression and 8.8% (n=59) had severe depression in which the males forms the highest number of 35 as compared to the females of 24.

4.5 Sexual Behaviour of Students

Table 4.6 shows that more than 95 percent of students have had sex with more than one person. The males form the majority, 56.7 percent as compared to the females. Almost one-third of the students were engaged in sex whilst drunk, males were likely to engage in sex whilst drunk as compared to females. Also, more males than females had had casual sexual partners. The remaining variables did not show any difference in data.

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Table 4.6: Students' sexual behaviour by sex

Characteristics	Sex		Total N = 338 (%)	P value
	Male=180 n(%)	Female=158 n(%)		
Multiple sexual partners				
Yes	171 (95.0)	151 (95.6)	322 (95.3)	0.506
No	9 (5.0)	7 (4.4)	16 (4.7)	
Condom used at last sex				
Yes	88 (48.9)	89 (56.7)	177 (52.5)	0.093
No	92 (51.1)	68 (43.3)	160 (47.5)	
Casual sexual				
Yes	160 (88.9)	127 (80.4)	287 (84.9)	0.021*
No	20 (11.1)	31 (19.6)	51 (15.1)	
Sex with commercial sex workers				
Yes	39 (21.8)	23 (14.6)	62 (18.4)	0.058
No	140 (78.2)	135 (85.4)	275 (81.6)	
Sex whilst drunk				
Yes	52 (29.1)	36 (22.9)	88 (26.2)	0.125
No	127 (70.9)	121 (77.1)	248 (73.8)	
Intergenerational sex				
Yes	63 (35.0)	77 (48.7)	140 (41.4)	0.007
No	117 (65.0)	81 (51.3)	198 (58.6)	

Source: Field Survey, 2017. ***No*** *indicates no risk;* ***Yes*** *indicates high risky sexual behaviour*

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Table 4.7: Participants with risky sexual behaviour

Risky Sexual Behaviour	Gender		Total
	Male n(%)	Female n(%)	N (%)
Low Risk	50 (27.8)	43 (27.2)	93 (27.5)
High Risk	130(72.2)	115 (72.8)	245 (72.5)

Source: Field Survey, 2017

Table 4.7 presents the distribution of risky sexual behaviour among students. The data indicates that majority of students engaged in a high risk sexual behaviour was 72.5% and low risk sexual behaviour, 27.5%.

4.6 Relationship Between Mental Health and Risky Sexual Behaviour

Table 4.8 shows that there was an association between the demographic characteristics and risky sexual behaviour of students. Respondents younger than 20 years were less likely to be engaged in risky sexual behaviour as compared to those 25 and above.

Additionally, data reported that most young people in level 400 were more likely to engage in risky sexual behaviour as compared to those in level 100. This suggests that risky sexual behaviour increases with educational attainment (32.7 vs. 13.1).

There was no statistically significant difference between religion and risky sexual behaviour.

Generally, there were no significant difference between the remaining demographic characteristics and risky sexual behaviour.

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Table 4.8: Bivariate analysis of demographic characteristics associated with risky sexual behaviour

Characteristics	Risky Sexual Behaviour			
	Low n(%)	High n(%)	X^2	p-value
Age group				
16-19	16 (17.2)	24 (9.8)		
20-24	73 (78.5)	180 (73.5)	11.181	**0.004***
≥ 25	4 (4.3)	41 (16.7)		
Academic level				
100	12 (12.9)	32 (13.1)		
200	23 (24.7)	63 (25.7)	0.818	0.845
300	31 (33.3)	70 (28.6)		
400	27 (29.0)	80 (32.7)		
Religion				
Christian	80 (86.0)	214 (87.3)		
Muslim	9 (9.7)	24 (9.8)	0.446	0.800
Other	4 (4.3)	7 (2.9)		
Family Structure				
Both parents	55 (59.1)	124 (50.6)		
Single parent	27 (29.0)	73 (29.8)	3.267	0.195
Others	11 (11.8)	48 (19.6)		
Religiosity				
Less religious	23 (24.7)	67 (27.3)	0.236	0.367
More religious	70 (75.3)	178 (72.7)		

Source: Field Survey, 2017

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Table 4.9: Bivariate analysis of knowledge, mental health and sex when depressed with risky sexual behaviour

Variables	Risky Sexual Behaviour			
	Low n(%)	High n(%)	X²	p-value
Knowledge				
Low knowledge	46 (49.5)	118 (48.2)	0.046	0.463
High knowledge	47 (50.5)	127 (51.8)		
Mental Health status				
Normal	62 (68.9)	118(48.6)		
Depression	28 (31.1)	125 (51.4)	10.929	**0.001***
Sex when depressed				
No	73 (78.5)	123 (50.2)	22.146	**0.000***
Yes	20(27.5)	122 (49.8)		

Source: Field Survey, 2017

There was a statistically significant association between mental health and risky sexual behaviour, that is, those who were depressed are more likely to engage in risky sexual behaviour. Also, a significant association was showed regarding sex when depression was about 42 percent of the students engage in risky sexual behaviour. But findings did not show any significance in relation to knowledge level of students.

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Table 4.10: Multivariate analysis of age, mental health and sex when depressed with risky sexual behaviour:

Variables	B (S.E)	Odds Ratio	95% Confidence Interval (P-value)
Age			
16 - 19	Reference	Reference	Reference
20 - 24	0.6(0.4)	1.8	0.8 – 3.7
≥ 25	**2.2(0.7)**	**8.7***	**2.2 – 34.3 (0.02)**
Mental Health status			
Normal	Reference	Reference	Reference
Depression	**0.8(0.3)**	**2.3***	**1.4 – 3.9 (0.001)**
Sex when depressed	**1.1(0.3)**	**3.1****	**1.7 – 5.5 (0.000)**

Significant differences between variables and Risky sexual behaviours are indicated as follows: * $P < 0.05$ and ** $P < 0.0001$

The data presented in Table 4.10 reveals that three variables predict risky sexual behaviour among students. The variables include older age OR 8.7, CI = 2.2-34.3, p-value (0.02) suggesting that students 25 years and above are almost 9 times more likely to engage in risky sexual behaviour compared to their younger counterparts.

Secondly, depression was significantly associated with mental health, OR=2.3, CI = 1.4-3.9. This indication that students with depression were more than twice likely to engage in risky sexual behaviour as compared to those who did not show symptoms of depression.

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CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This study sought to investigate the relationship between mental health and risky sexual behaviour among undergraduate students of the University of Ghana. The findings of the study are discussed under the following sections: demographic characteristics of participants, knowledge on mental health and relationship between mental health and risky sexual behaviour.

5.2 Demographic Characteristics of Participants

The study involved 682 participants made up of 53.1% males and 46.7% females. There were a substantial number of females involved in the study conforming to the University of Ghana, Legon ratio of males to females,1.4:1 (University of Ghana, 2016). The students were between the ages of 16 -34 years with a mean age of 21.1 years (SD= 2.4). The majority 450(66%) of participants were between the ages 20-24 years, 178 (26.1%) were adolescents between the ages of 16 -19 years and the remaining 54 (7.9%) were 25 years and above. This is similar to the age structure of studies done in the North eastern China among adolescents and young people in the tertiary institution (Chen et al., 2013).

5.3 Knowledge on Mental Health

In assessing the knowledge on mental health among students in the University of Ghana, the study report showed that a little above half (53.8%) had limited knowledge on mental health compared to students who had knowledge on mental health, which was similar to the findings of Pingitore & Sanson, (2008) and Davies et al. (2016), who reported low knowledge on mental health among young people in low and middle income countries.

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Similarly, this study agrees with Lauber et al.(2005), that limited acquisition of knowledge contributes to delay detection and management of mental health problems. However, the results of the study contradicts the findings by Wei et al., (2015), that an increase in mental health knowledge among the youth. This difference originated from reviewed 69 articles, knowledge on mental health using different measurement tool and different methods. This was on knowledge specific disorders such as depression.

This study report shows that more than two-thirds of the students acknowledged that mental health problems were treatable. This complements Malla et al. (2015) study among the youth in Canada that early interventions and good public attitude towards mentally ill students will aid in their recovery.

More than half of the participants specifically males had knowledge on childhood depression compared to females. Similarly, Ing et al. (2015), conducted a study among 606 participants in Cambodia reported that most depression commence from childhood.

This study indicated that females had higher (53.6%) knowledge on mental health symptoms compared to males. Similarly, a study by Davies et al. (2016) among 483 students in two British Universities reported that females had higher knowledge on mental health symptoms.

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5.4 Mental Health Assessment

The observed incidence of moderate and severe depressions among the undergraduate students of University of Ghana, Legon were 33% and 8.8% respectively, which moderate depression was found to be high (20%) in a study conducted in San Francisco by Cook et al. (2009) showed relatively low in severe depression rate of 10%. Resulting from the national survey in the Western country and the case study method employed.

Rodrigo et al. (2010) study on symptoms of anxiety and depression among adolescent students in Sri Lanka indicated that most females had moderate depression compared to males which was similar to this current study report showing 51.6% of females students experiencing moderate depression. However, males were found to have had severe depression which contrasted the research done by Bilgel et al. 2014 suggesting most females" youth are experiencing severe depression.

The present study show the incidence of stress and anxiety were lower in males than females. This contradicts research done by Bilgel et al. (2014), reported a moderately high scores in females than males in a Turkish universities in an Urban setting of the study.

5.5 Risky Sexual Behaviour

Radical sexual behaviour such as multiple sexual partners and non-use of condom were reported among 616 adolescents in Japan with a history of childhood abuse in the study conducted by Tsutsumi et al. (2011).The study presented similar findings which show that approximately half of the students were involved in risky sexual

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behaviours. Evidence in this study shows that a little above half (52.5%) of the sexually active students never used condoms at the last sexual activity.

This is equally significant in the study conducted by Agardh et al. (2012) where non-users of condoms even had multiple sexual partners.

The present study reported that one-third of the sexually active males students engaged in risky sexual behaviour (example; sex with commercial sex workers) than females. Similar to the high number of youth especially males, were involved in high risk individuals (Dingeta et al., 2012).

This study showed that approximately half of the students had ever had sex and engaged in risky sexual behaviour. This result agrees with an earlier study that early sexual debut as a predictor to the high prevalence of risky sexual behaviour among the youth (Seth et al., 2012).

5.6 Relationship Between Mental Health and Risky Sexual Behaviour

Evidence from developed countries confirms an association between mental health and risky sexual behaviours among young people (Seth et al., 2012; Bilgel, 2014 and Sipsma et al., 2013).The result of these studies corelates with the study report which indicated that Unversity of Ghana students who experienced moderate depression were two times more likely to engage in risky sexual behaviour.

Sexually active adolescents exhibits sypmtoms of depression by having multiple and casual sexual partners and also engaging in unprotected sex (Shrier et al., 2009). This study report supports this finding and shows an association between mental health and risky sexual behaviour.The findings of the report indicate that

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the effect of mental health on risky sexual behaviour which agrees with studies done by Tsutsumi et al. (2011) and Ramrakah(200).

The results show that young people engaging in multiple sexual relationship is related to depression especially which makes them defendless.

Seth et al. (2012), reports an increase in depressive symptoms among adolescents who anticipate that most youth having sex without condoms also engage in multiple sexual relationships. This study reports findings that there is a relatioship between mental health and risky sexual behaviour.

Limitations

- The main limitation of this study is a cross-sectional study of 12 months; hence the possibility of recall bias since there is no mechanism to verify the responses. However, since a substantive number of participants‟ were used, might offset the findings minimizes the effect of any bias in the large amount of data gathered.
- Findings may not represent majority of the students in the tertiary institutions since it was only conducted in University of Ghana, main campus.

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CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion of the findings. Also, recommendations to address mental health and risky sexual behaviour are made.

6.2 Conclusions

This study report shows that majority of the University of Ghana students had limited knowledge on mental health; suggesting that most students will not be able to identify a colleague with mental health problems and therefore will delay in seeking for help.

This study therefore concludes that, many participants 25 years and above were highly engaged in risky sexual behaviour compared to the younger counterparts. Almost half of the students have ever had sex and were involved in risky sexual behaviours, such as non-use of condom at last sex.

Findings of the study indicated that students‟ with mental health problems were two times more likely to engage in risky sexual behaviour than students with normal mental health status.

There was a statistically significant association between mental health and risky sexual behaviour among the respondents.

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6.3 Recommendations

The findings of this study have an important implication for young people in the universities and the country at large. The following recommendations were made:

1) Findings of this study can be used for further studies and effective mental health and sexual behaviour programing for the university students.
2) Intensify mental health education among students to enable early detection and management.
3) The university should develop and make available policies relating to depressed students and focusing on quality of care being rendered.
4) The Counseling Centre of the University of Ghana should be strengthened to identify depressed students and provide them necessary counselling support.
5) Expand sexual communication to cover the effective use of condoms to equip sexually active students to engage in practices.

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APPENDIX 1

CONSENT FORM

Project Title: Mental Health and Risky Sexual Behaviour among University of Ghana Students

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General Information about the study

This research study was undertaken by Florence Nana Amoah, a student of the School of Public Health, University of Ghana, Legon, as a part requirements for the Master of Public Health. The study sought to gain a better understanding, of mental health and risky sexual behaviour among University of Ghana students.

Studies have shown the association between mental health and risky sexual behaviour in most developed countries. However, little is known about mental health and risky sexual behaviour among students. The aim of this study was to examine the association between mental health and risky sexual behaviour among students in the University of Ghana.

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Findings would enable us to identify the population at risk of mental health problem and social factors influencing risky sexual behaviour among University students. This would address the gaps in our knowledge process that is the significances of mental health among young people.

Procedures

Students were randomly selected from halls in the University of Ghana and were included in the study. Participants eligible were required to complete an interviewer –administered questionnaire. Question that were asked includes the socio-demographic factors, risky sexual behaviour, level of knowledge on mental health and the association between the two variables (mental health and risky sexual behaviour).

An expected time of 20 minutes was allocated for the interview survey

Risk and Benefits

This study does not have any risk. However, there was uneasiness in responding to some sensitive questions in relation to ones‟ sexual behaviour and mental health. Some questions focus directly on the participant personal life, and this might lead to a discomfort in answering of those questions. You are free to skip any question you may be uncomfortable answering.

There is no direct benefit to the participants of this study. However, information you provide would contribute to the global knowledge on mental health and risky sexual behaviour. The information would help identify the young population at risk of mental health and also engaged in risky sexual behaviour. More researches would be conducted and this can help in policy making.

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Right to Refuse

Your participation is absolutely voluntary. Participants are at liberty to withdraw from the study. However, we encouraged participants to part-take and complete the questions since your views are very much needed in helping us to examine the association between mental health and risky sexual behaviour. The opinion gathered will help in the development of policies.

Anonymity and Confidentiality

We would like to assure you that the information provided and gathered will strictly be confidential and strictly used for research purposes. Data analysis will be done at collective level to ensure anonymity. Your name and personal details will not be published in any report.

Compensation

There is no compensation for participating in this study

Contact for additional Information

If you have any question later, you may contact;

Florence Nana Amoah: 02666777193, email fnamoah@st.ug.edu.gh

Your right as a Participant

If you have any question about your rights as research participants, you may contact the Administrator of GHS Ethical Review Committee at the following address:

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Hannah Frimpong

GHS- Ethical Review Committee

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VOLUNTARY CONSENT

I declare that the above document describing the purpose, procedure as well as risks and benefits of the research titled **"(Mental Health and Risky Sexual Behaviour among Students in the University of Ghana)"** has been clearly explained to me in my native language. I have been given the opportunity to have any questions about the research answered to my satisfaction. I hereby, voluntary agree to participate as a subject in this study.

I --- have been informed thoroughly on the complete importance of the study. I voluntarily consent to be part of this study, based on my understanding of the research. I based this on the confidentially given by the research, after my personal details have been taken by the research.

Respondent‟s Signature ---------------------------------- Date--------------------------

Research‟s Signature ----------------------------------- Date --------------------------

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APPENDIX 2

SAMPLED QUESTIONNAIRE

UNIVERSITY OF GHANA SCHOOL OF PUBLIC HEALTH

MENTAL AND SEXUAL HEALTH STUDY

Respondent"s ID: _______________ Date of Interview (dd/mm/yy)____/____/_____

SECTION A: DEMOGRAPHIC AND FAMILY CHARACTERISTICS

Please CIRCLE the number corresponding to the appropriate answer for each question

NO.	QUESTION	CODING CATEGORY		SKIP TO
A1	Sex of respondent	Male Female	1 2	
A2	Hall of residence	Legon Hall Akuafo Hall Mensah Sarbah Common wealth Hall Volta Hall Evandy Hostel James Yankey (TF) Limann Hall Alexander Kwapong	1 2 3 4 5 6 7 8 9	
A3	How old were you at your last birthday?	Age in completed years ☐☐		
A4	Which level are you in presently?	Level 100 Level 200 Level 300 Level 400	1 2 3 4	
A5	Your religious affiliation	None Christian Muslim Traditionalist	1 2 3 4	
A10	How often do you participant in religious services	Never Somewhat Often Very often	1 2 3 4	
A6	How often do you participate in religious activity?	Never Somewhat Often Very often	1 2 3 4	
A7	How is important to you?	Not important Somehow important Important Very important	1 2 3 4	

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A8	Whom do you live with?	Both parents 1 Mother 2 Father 3 Grandparents 4 Other family members 5 Others (specify__________) 6	
A9	How close are you to your parents or guardian?	Not close 1 Somewhat close 2 Very close 3	

SECTION B: KNOWELEDGE ON MENTAL HEALTH

NO.	QUESTION	CODING CATEGORY	SKIP TO
B1	Depression is a(n)?	Emotional disorder 1 Mood disorder and mental illness 2 Personality disorder 3 Psychotic disorder 4	
B2	What are the signs and symptoms of depression?	Loss of pleasure in activities 1 Thoughts of suicide 2 Body aches and fatigue 3 All of the above 4	
B3	Depression is one part of mental disorder. What is the other?	Happiness 1 Mania 2 Hoarding 3 Anxiety 4	
B4	What is postpartum depression?	Depression during pregnancy 1 Depression after childbirth 2 Depression due to breastfeeding 3 None of the above 4	
B5	Depression and anxiety disorders are the same.	True 1 False 2	
B6	What causes depression?	Environmental factors 1 Genetics 2 Biological factors 3 All of the above 4	
B7	What is the treatment for depression?	Antidepressants 1 Psychotherapy (talk therapy) 2 Self-care 3 All of the above 4	
B8	What are symptoms of depression in children and teen?	Increased energy and alertness 1 Increased hunger 2 Irritability, sadness and crying 3 All of the above 4	
B9	Depression in an overreaction to stress in life.	True 1 False 2	
B10	Is mental health treatable	Yes 1 No 2	

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SECTION C: MENTAL HEALTH ASSESSMENT

INSTRUCTION: The questionnaire consist of 21 points, each contains a number of statements. Please read the following carefully and select the one that best describes your health during the past 3 months, including today.

NO.	QUESTION	CODING CATEGORY	SKIP TO
C1	SADNESS		
	I do not feel sad	0	
	I feel sad	1	
	I am sad all the time and I cannot snap out of it	2	
	I am so sad and unhappy that I cannot stand it	3	
C2	PESSIMISM		
	I am not particularly discouraged about the future.	0	
	I feel discouraged about the future.	1	
	I feel I have nothing to look forward to.	2	
	I feel the future is hopeless and that things cannot improve.	3	
C3	PAST FAILURES		
	I do not feel like a failure.	0	
	I feel I have failed more than the average person.	1	
	As I look back on my life, all I can see is a lot of failures.	2	
	I feel I am a complete failure as a person.	3	
C4	LOSS OF PLEASURE		
	I get as much satisfaction out of things as I used to.	0	
	I don't enjoy things the way I used to.	1	
	I don't get real satisfaction out of anything anymore.	2	
	I am dissatisfied or bored with everything	3	
C5	GUILT		
	I don't feel particularly guilty	0	
	I feel guilty a good part of the time.	1	
	I feel quite guilty most of the time.	2	
	I feel guilty all of the time	3	
C6	SENSE OF PUNISHMENT		
	I don't feel I am being punished.	0	
	I feel I may be punished.	1	
	I expect to be punished.	2	
	I feel I am being punished	3	
C7	LOATHING		
	I don't feel disappointed in myself.	0	
	I am disappointed in myself.	1	
	I am disgusted with myself.	2	
	I hate myself.	3	
C8	SELF-INCRIMINATION		
	I don't feel I am any worse than anybody else.	0	
	I am critical of myself for my weaknesses or mistakes.	1	
	I blame myself all the time for my faults.	2	
	I blame myself for everything bad that happens	3	
C9	SUICIDAL THOUGHTS		
	I don't have any thoughts of killing myself.	0	
	I have thoughts of killing myself, but I would not carry them out.	1	
	I would like to kill myself.	2	
	I would kill myself if I had the chance.	3	

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C10	WEEPING I don't cry any more than usual. I cry more now than I used to. I cry all the time now. I used to be able to cry, but now I can't cry even though I want to	 0 1 2 3	
C11	IRRITABILITY I am no more irritated by things than I ever was. I am slightly more irritated now than usual. I am quite annoyed or irritated a good deal of the time. I feel irritated all the time.	 0 1 2 3	
C12	LOSS OF INTEREST I have not lost interest in other people. I am less interested in other people than I used to be. I have lost most of my interest in other people. I have lost all of my interest in other people.	 0 1 2 3	
C13	INDECISION I make decisions about as well as I ever could. I put off making decisions more than I used to. I have greater difficulty in making decisions more than I used to. I can't make decisions at all anymore.	 0 1 2 3	
C14	FEELING OF WORTHLESSNESS I don't feel that I look any worse than I used to. I am worried that I am looking old or unattractive. I feel there are permanent changes in my appearance that make me look unattractive I believe that I look ugly	 0 1 2 3	
C15	DIFFICULTY OF CONCERNTRATION I can work about as well as before. It takes an extra effort to get started at doing something. I have to push myself very hard to do anything. I can't do any work at all	 0 1 2 3	
C16	CHANGE OF SLEEP I can sleep as well as usual. I don't sleep as well as I used to. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep. I wake up several hours earlier than I used to and cannot get back to sleep.	 0 1 2 3	
C17	FATIGUE I don't get more tired than usual. I get tired more easily than I used to. I get tired from doing almost anything. I am too tired to do anything.	 0 1 2 3	
C18	CHANGES IN APPETITE My appetite is no worse than usual. My appetite is not as good as it used to be. My appetite is much worse now. I have no appetite at all anymore.	 0 1 2 3	

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C19	WEIGHT CHANGES I haven't lost much weight, if any, lately. I have lost more than five pounds. I have lost more than ten pounds. I have lost more than fifteen pounds	0 1 2 3	
C20	HEALTH I am no more worried about my health than usual. I am worried about physical problems like aches, pains, upset stomach, or constipation. I am very worried about physical problems and it's hard to think of much else. I am so worried about my physical problems that I cannot think of anything else	0 1 2 3	
C21	LOSS OF INTEREST IN SEX I have not noticed any recent change in my interest in sex. I am less interested in sex than I used to be. I have almost no interest in sex. I have lost interest in sex completely	0 1 2 3	

SECTION D: SEXUAL BEHAVIOURS OF STUDENTS

NO.	QUESTION	CODING CATEGORY	SKIP TO
D1	Have you ever been in a relationship with a male or female (boyfriend/girlfriend)	Yes 1 No 2	
D2	Do you currently have a sexual partner	Yes 1 No 2	
D3	Have you ever had sex?	Yes 1 No 2	
D4	Have you had sex within the last 12 months?	Yes 1 No 2	
D5	The first time you had sex, did you use a condom	Yes 1 No 2	
D6	Over the last 12 months, how many sexual partners have you had sex with?	☐☐	
D7	The last time you had sex did you use a condom	Yes 1 No 2	
D8	Within the last 12 months how many sexual partners (boyfriend/ girlfriend) have you had?	☐☐	
D9	Within the last 12 months how many casual sex partners have you had?	☐☐	
D10	In the past 12 months have you had sex with a commercial sex worker?	Yes 1 No 2	
D11	Have you had sex in the last 12 months whilst drunk?	Yes 1 No 2	
D12	Have you dated someone who is 10 or more years older than you?	Yes 1 No 2	
D13	Do you have sexual intercourse when depressed, stressed or anxious	Yes 1 No 2	

Thank you very much for your time