

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**

**RISKY SEXUAL BEHAVIOR AND SEXUALLY TRANSMITTED INFECTIONS
AMONG STUDENTS IN THE MINISTRY OF HEALTH TRAINING
INSTITUTIONS IN THE TANO NORTH DISTRICT**

BY

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DECLARATION

I, hereby declare that this work is the result of my own research, carried out in the School of Public Health, University of Ghana, Legon under the supervision of Dr. Abubakar Manu. I also declare that, except for the references to other authors in any form that have been duly acknowledged, this dissertation has neither in whole nor in part been presented either in soft or hard copy anywhere for another degree.

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Date



DEDICATION

I dedicate this work to the Almighty God for His unfounded mercies and to my father, Mr. Emmanuel Amoah for giving me the biggest gift in life (education) and the entire Amoah family for their prayers and immense support.



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To my family, friends and acquaintances, thank you all for being there for me.

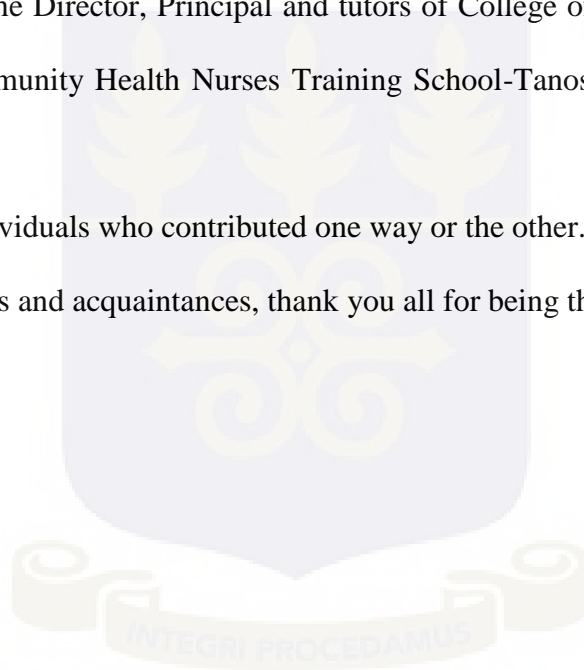


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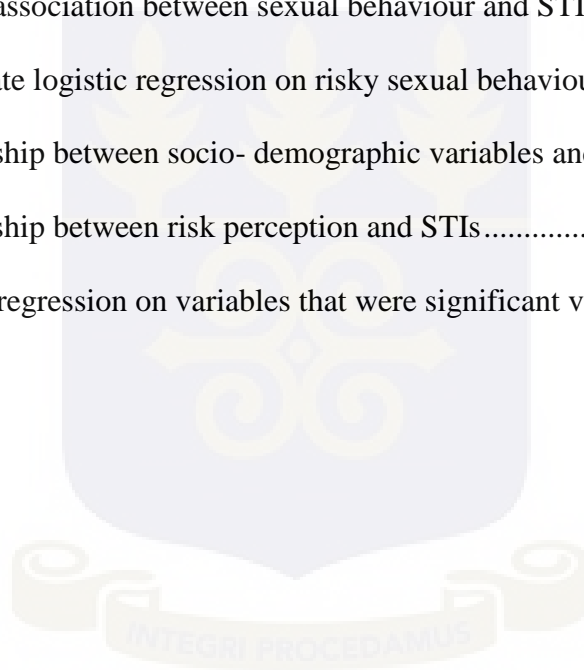
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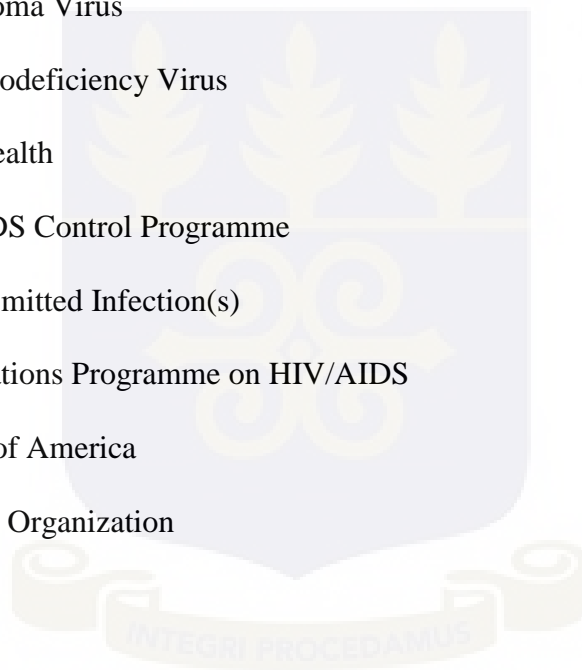
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LIST OF ACRONYMS

- AIDS- Acquired Immune Deficiency Syndrome
- CDC- Center for Disease Control
- DHS- Demographic and Health Survey
- GSS- Ghana Statistical Service
- GHS- ERC-Ghana Health Service Ethical Review Committee
- GDHS- Ghana Demographic and Health Survey
- HBM- Health Belief Model
- HPV- Human Papilloma Virus
- HIV- Human Immunodeficiency Virus
- MoH- Ministry of Health
- NACP- National AIDS Control Programme
- STIs- Sexually Transmitted Infection(s)
- UNAIDS- United Nations Programme on HIV/AIDS
- USA- United States of America
- WHO- World Health Organization



DEFINITION OF TERMS

RISKY SEXUAL BEHAVIOUR: Involvement in one of the following sexual behaviours

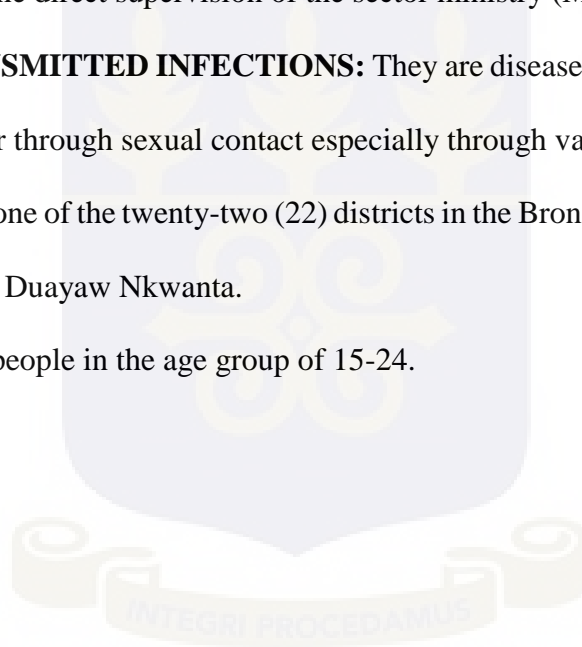
- Early sexual debut/initiation
- Having sex without using condoms
- Multiple sexual partners
- Having sex under the influence of alcohol/drugs

MoH INSTITUTIONS: Institutions/schools that are mandated to train health care professionals under the direct supervision of the sector ministry (Ministry of Health).

SEXUALLY TRANSMITTED INFECTIONS: They are diseases that are passed on from one person to another through sexual contact especially through vaginal, oral or anal sex.

TANO NORTH: Is one of the twenty-two (22) districts in the Brong Ahafo region of Ghana with its capital being Duayaw Nkwanta.

YOUTH: Refers to people in the age group of 15-24.



ABSTRACT

Background: The lives of the young ones are outshined by a variety of reproductive health phenomena such as unintended pregnancies, reproductive health issues and sexually transmitted infections including HIV. In Africa, particularly in Ghana, many young people engage in sexual behaviours raising their vulnerability to STIs. The main objective of this study was to investigate risky sexual behavior and sexually transmitted infections among students in MoH institutions in the Tano North district of Brong Ahafo region. The study specifically, determined the proportion of students who engage in risky sexual behaviour, knowledge level on STIs among the students, risk perception on STIs and finally determined the association between risky sexual behaviour and STIs.

Methodology: A cross-sectional quantitative study using structured questionnaire was conducted. A multi-stage proportional sampling was adopted. A sample of 424 students was randomly selected for the study. An interviewer-administered questionnaire was used to obtain data on demographics, sexual behaviours and STIs. The data were processed and analyzed using Stata (version 14.1) software. Frequencies, chi-square test and logistic regression were used for the final analyses.

Results: The study found that out of the total sample, 242 (56.9%) were sexually active with females forming the majority (60%). It also revealed that the minimum age of sexual debut for self and that of their sexual partners was 10 and 12 years respectively. Overall knowledge on STIs was very low and 78.1% perceive STIs not to be dangerous.

The multivariate analysis showed that there is a significant association between risky sexual behaviour and STIs.

Conclusion: The study revealed that students engage in risky sexual behaviour and this can be attributed to the low knowledge level and perception concerning STIs. However, the study affirmed a significant association between risky sexual behaviour and STIs.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Risky sexual behaviors are sexual acts that intensify the risk of acquiring sexually transmitted infections (STIs) and Human Immune Deficiency Virus (HIV). Both are touted to be a major cost proven from the public health perspective (Hittner, Owens, & Swickert, 2016).

Youths who are sexually active are at risk of contracting sexually transmitted infections (STIs), including HIV due to the behavioural and psychological factors that are associated with being young (Dekeke & Sandy, 2014).

Globally, young people are estimated to account for 1.8 billion of the entire population; most of these young people live in low to middle-income countries (Advocacy For Youth, 2014; Mehra & Agardh, 2016). Approximately half of all new STI cases occurring globally fall within the age category of 15-24 years (Cherie & Berhane, 2012). This is the period characterized by the lengthy transition from childhood to adulthood where the youth are confronted by several pressures which cause them to exhibit sexual risk behaviours. Sexual behaviours for example, casual unprotected sex, early sexual initiation and multiple sexual partners could result in serious consequences such as the contraction of sexually transmitted infections (STIs), including HIV/AIDS (Morhason-Bello et al., 2008, WHO; Ilesanmi, 2014).

Health problems such as STIs could be contracted from risky sexual behaviour during the transition from childhood to adulthood which can take a span of 15 years (Manu, Mba, Asare, Odoi-Agyarko, & Asante, 2015).

Young people all around the world are noted to be sexually active and despite their sexual activeness, it is rather unfortunate they are unable to handle the responsibility that comes with having sex. The sexual behaviour of young people in the age group 15-24 raises a major problem from the public health perspective because of their inability to equip themselves to deal with the magnitude of consequences from early and unprotected sexual activity.

Several reasons have been attributed to young people's vulnerability to STIs with risky sexual behaviour and lack of sex education, especially on measures that could be undertaken to prevent STIs (Eugenia et al., 2010). The vulnerability of the youth to STIs including HIV is further attributed to factors such as lack of knowledge, wide-spread misconceptions, and greater biological susceptibility (Sychareun, Thomsen, Chaleunvong, & Faxelid, 2013).

Risky sexual behaviours epitomize variety of behaviors including unprotected sex, early sexual initiation, premarital sex, multiple sexual partners, and others, which invariably result in contracting an STI (Adeboye, Yongsong, & James, 2016).

Age at first sexual intercourse is considered by the period in which young adults are most exposed to the risk of contracting an STI due to the fact that young people or first timers are less likely to practice safer sex. Literature have affirmed that the younger populace who start sex at an earlier age are potentially at a higher risk of contracting an STI or becoming

pregnant compared those who delay their sexual onset (Ghana Statistical Service et.al., 2015).

The younger generation particularly the youth are understood to be the future resource especially those in collegial or higher learning institutions, branded with a lot of potential to be assets to society and agents of change. The looming threat of STIs could jeopardize their future that is filled with ambition; and working hard to advance their academic goals and careers, which could have also encouraged a new generation to avoid the dangers of risky sexual behavior. Therefore, ignoring their reproductive and sexual needs can lead to high economic and social cost, both now and in the future since they represent an untapped resource that could be harnessed for its benefit (Tura, Alemseged, & Dejene, 2012).

Despite widespread efforts and awareness been initiated, STIs still pose a major health problem worldwide with limited success in reducing it (Lupfer & Anand, 2016). According to the World Health Organization (WHO) 2015, over a million new STI cases occur globally on daily basis. In the United States of America (USA) alone, 20 million new infections is acquired each year contributing to the total of 110 million STI cases in the country with more emphasis on young people who are particularly at risk (Lupfer & Anand, 2016).

In sub-Saharan Africa, the youth make up 20-30% of the entire population (Biney & Dodoo, 2016). Risky sexual behaviour for example early sexual debut and multiple sexual partnerships also prevails in this continent. These behaviours have even more severe consequences on the health of the younger generation considering the fact that HIV prevalence is also high (Biney & Dodoo, 2016; Bedassa, 2015; Madise, Zulu, & Ciera, 2017).

In less developed nations, the vast majority of the youth who are supposed to be the main driving force of economic growth have the inclination to be less mindful of their life choices on how to protect themselves from these infections thereby making them vulnerable to STIs and HIV epidemic, (Silverman, 2013; Walcott et al., 2008; Pamela et al 2002; Silverman, 2013; Upreti et al., 2009).

According to Berhan and Berhan (2015), the vast majority of the youth are about eight times the risk of unprotected sex compared to adults. Evidence from literature suggests that risky sexual behaviors adopted at a younger age may as well influence sexual behavior in later life, consequently increasing the collective risk of contracting and spreading an STI. Augmenting this statement, Manu et al., (2015), affirmed that most of the health implications associated with risky sexual behaviour could continue into adult life and further affirming that one of the main reasons related to these problems is inadequate and inaccurate knowledge related to sexual issues.

STIs can cause genital conditions that affect the quality of life, serious sickness and death through pregnancy and its associated complications, infertility, cancer and heightened HIV transmission. Although some of the bacterial infections for example gonorrhoea, trichomonas vaginalis and chlamydia are curable, four other viral infections like the human papilloma virus (HPV), Herpes simplex, hepatitis B and HIV have a chronic and lifelong impact on health (Gottlieb et al., 2014).

In Ghana, the early age of sexual initiation among the younger generation continue to raise serious issue that requires drastic measures to address swiftly. This prompted the national

HIV/AIDS preventive programme to set among its core objective to delay the age of sexual initiation and premarital sex as a way of decreasing the potential exposure to STIs (Ghana AIDS Commission, 2012).

According to Kyei & Donkor (2016), involving in risky sexual behaviours such as having sex at an earlier age, unprotected sexual intercourse, multiple sexual partners and having sex under the influence of alcohol and drugs; Ghanaian youth are exposed to serious adverse health consequences such as pregnancies that could lead to unsafe abortion and its consequences as well as placing themselves at risk of contracting STIs.

Statistics from the Ghana Demographic and Health Survey (2014), shows that 9% of young males and 11% of young females below age 15 have experienced sexual intercourse. Four weeks preceding the survey, 7% of young males and 14% of young females within age 15-19 were sexually active (Ghana Health Service (GHS), Ghana Statistical Service (GSS), and ICF Macro, 2014). The most shocking revelation is that, despite the sexual activeness of young people, condom use during first sexual intercourse was very low with 31.4% of young males and 25.9% of young females reporting the use of condoms during their first sexual experience (Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro, 2014).

In spite of the numerous health education and promotion activities towards awareness of STIs among Ghanaian youth, there still have not been any significant decline in HIV and STIs. In 2011, evidence from literature suggested that an estimated 1.9% youths in Ghana were living with HIV showing a rise in 1.1% from the preceding year, 2010 (GDHS, 2014; GSS et al., 2011).

In a study by Masa & Chowa (2014), the younger generation of Ghanaians age category 15–19 years recorded the second highest prevalence of STIs, with 22% reportedly having STI symptoms or STIs reflecting on the fact that just 19.9% of the youth between age 15-24 years have comprehensive knowledge on HIV/AIDS. This increase is attributed to a combination of factors such as low condom usage and being sexually active which intensifies the danger of attaining sexually transmitted infections (GSS et al., 2009).

Young collegial students age 15-24 are found to be affected by sexually transmitted infections including HIV/AIDS due to pre-marital sex and lack of comprehensive sex education (Ezeonyido, 2016).

This study therefore intends to examine the relationship between risky sexual behavior and STIs among students in health training institutions in the Tano North district of Brong Ahafo region.

1.2 Statement of the Problem

A lot of factors have been attributed to facilitate the transmission of STIs, with risky sexual behaviour being the most influential factor. Most sexually active individuals for example the youth have a greater chance of being infected with a sexually transmitted infection in their lifetime (Brouillette, 2013; Bean-Mayberry et al., 2010).

According to Dekeke & Sandy (2014), the youth have been viewed as the vulnerable group globally when it comes to the transmission of STIs. The higher exposure of the youth to STIs is linked to unsafe sexual practices such as non-condom use during sex, early sexual initiation and multiple sexual partners (Dekeke & Sandy, 2014). It is estimated that the

younger population under age 25 are estimated to account for more than 50% of all newly acquired HIV infections worldwide (UNAIDS, 2008)

In Ghana, young people make up the predominant age group with the younger generation beginning sexual activity as early as before age 15 (GSS, 2012). According to the GDHS (2014), 11% of young females and 9 % of young males had their first sexual intercourse before age 15 while 47% and 32% of both females and males had their first sexual intercourse by age 18 respectively (GDHS, 2014). Amongst sexually active young ladies and young men within the age category of 15 to 24 years, one out of every four females and one out of every seven males indicated having symptoms of STIs or having been infected with an STI (Ghana Statistical Service, 2009).

Sexual activity in Brong Ahafo region is high and starts in early teens. This is further enhanced especially among those in universities and other tertiary institutions who have sexual intercourse regularly due to lack of parental protection or freedom from parental supervision especially those in student hostels (*Adolescents' Views on Sexual and Reproductive Health in Ghana's Brong Ahafo Region*, 2015). According to '2016 Ghana HIV Sentinel Survey report' prevalence of HIV (2.7%) rates high in the region compared to the upper confidence limit (2.62%). Anecdotal evidence of chlamydia, syphilis, gonorrhoea and other STIs have been reported in the Tano North district particularly among students in the three institutions Tano North District.

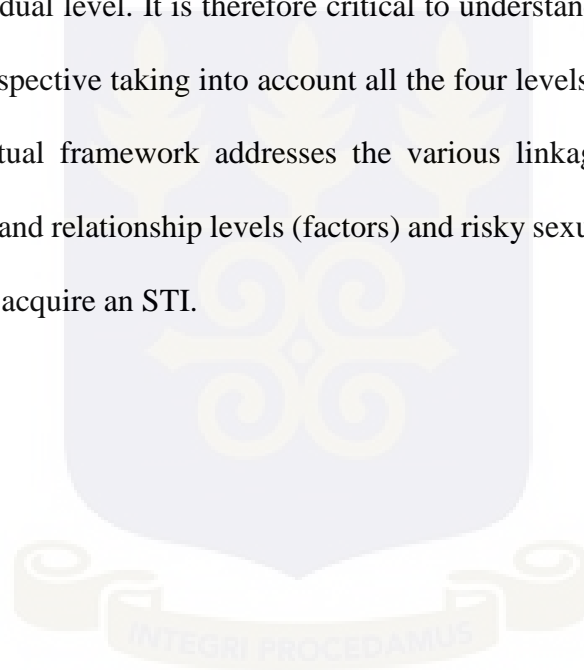
Studies have been done for example researchers, Walcott et al., (2011); Griffin et al., (2011) & Ingersoll et al., (2008), found an association between sexual behaviour and rates of infection with a particular STI such as HIV and gonorrhoea. However, in the Ghanaian

context, limited studies have been done among students, particularly those studying for healthcare qualification and even those that have been done profiled different types of STIs. To fill this gap of literature, this study therefore aims at examining the risky sexual behavior that could predispose health trainee students in the Tano North District of the Brong Ahafo region to sexually transmitted infections.

1.3 Conceptual framework: The social-ecological model.

The conceptual framework adapted for this study is Bronfenbrenner's (1977) ecological model that has been previously used to understand risky sexual behavioral and its factors among young people. The model portrays four levels that correspond to the study. The four factors of the model interact with each other; relationship, individual, societal and the community level. The first level, the individual talks about the inner features and various high risk behaviours that affects one's health. The next level which is relationships, encompasses an individual's closer relations such as relatives, intimate (sexual partners), and friends, which among susceptible young people can have an influence on a person's behaviour both positively and negatively. The next (third) level is the community, covering a person's social relations where he/she develop networks in various settings like schools (college and university), work and area of residence. Lastly are the broader societal factors that include social norms, religion and gender norms that strongly have direct impact on young people's sexual behaviours. The behaviours of an individual (youth) is influenced by these norms either positively by adopting a healthy lifestyle or negatively by engaging in behaviours that could constitute risk. The diversity of these factors shape young people's sexual behaviours (Mehra & Agardh, 2016).

The youth generally view sex related matters in different ways. Many factors have been identified to be a contributing to sexual risk behaviours which could expose the vulnerable youth into acquiring an STI including HIV; for example behaviours such as early sexual exposure, multiple sexual partners and engaging in sexual escapades under the influence of alcohol or drugs and non-condom use during sex. Factors such as upbringing and peer pressure play a significant role. It is obvious that there are modifying factors such as age, sex, personality and several others that determine perceptions of the youth regarding sex. Although many interventions have been made to tackle this problem, they have always been targeted at the individual level. It is therefore critical to understand risky sexual behaviors from the broader perspective taking into account all the four levels in the social-ecological model. This conceptual framework addresses the various linkages between individual, societal, community and relationship levels (factors) and risky sexual behaviours that could lead an individual to acquire an STI.



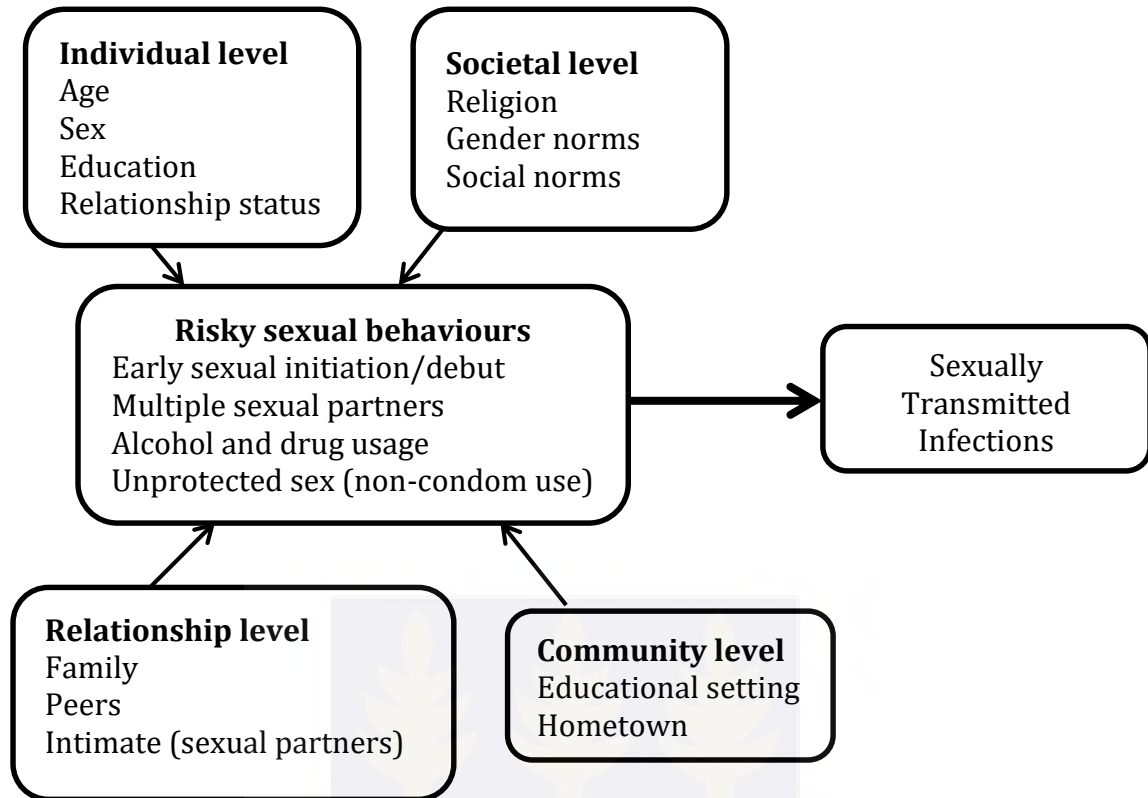


Figure 1: Conceptual framework-The socio-ecological model

Adaptation of the social-ecological model which involves the individual, societal, relationship and community by Bronfenbrenner 1977, (Mehra & Agardh, 2016).

1.4 Justification of the Study

Globally, the youth make up the population subset that is not well understood. Given the increased transmission of HIV and other STIs among the youth, engaging in risky sexual behavior increases their vulnerability. The transitional changes that occur during adolescence may perhaps drive them to involve in risky sexual behavior. Hence, studies should emphasize more on promoting good sexual behavior among those in this group since they represent the future. The outcome of this study therefore, will propose future measures for healthcare personnel to implement policies in order to limit the spread of STIs. It will also provide the contextual and behavioral interventions for preventing STIs. The findings

will form an important foundation for policy makers and implementers in using effective policies for behavior modification promotion among the students in the various institutions. Moreover, it will highlight the common themes in recognizing risk, willingness to reduce risk, acknowledgment of barriers to change and recognition and implementation of measures to curtail or reduce these barriers to facilitate change among the students. Findings of the study will likewise assist the health trainees in teaching the youth to avoid unsafe sexual behaviour. Finally, this will add to the contemporary body of knowledge for those interested in this research area.

1.5 Objectives of the Study

1.5.1 General Objective;

The main objective of this study is to investigate the relationship between risky sexual behavior and sexually transmitted infections among students in the MoH institutions in the Tano North district.

1.5.2 Specific objectives,

- To estimate the proportion of students who engage in risky sexual behavior
- To determine the level of knowledge on sexually transmitted infections among the students.
- To determine the STI risk perception among students in the three schools.
- To determine the association between risky sexual behavior and sexually transmitted infections.

1.6 Research Questions

- What is the proportion of students who engage in risky sexual behavior?
- What is the level knowledge on STIs among the students?
- How do the students perceive STIs risk?
- Is there any association between risky sexual behavior and sexually transmitted infections?



CHAPTER TWO

2.0 LITERATURE REVIEW.

In this section, literature is review according to the specific objectives of the study;

- Students engagement in risky sexual behavior
- Knowledge of sexually transmitted infections
- Sexually transmitted infections risk perceptions
- Association between risky sexual behavior and sexually transmitted infections.

2.1 Introduction

Young people in the age category of 15 to 24 years account for approximately half of all new HIV infections globally. Among students in institutions of higher education, a large number of the entire population fall within the age category of 20-24. However, they are reportedly at a greater risk of acquiring STIs including HIV due to sexual risk behaviours such as non-condom use during sex, multiple sexual partners and early sexual initiation (Asante, Doku, & Osafo, 2016).

2.2 Sexually transmitted infections

Sexually transmitted infections refers to a range of clinical manifestations or syndromes that are produced by pathogens and can be transmitted and acquired through an act of having sexual intercourse. According to WHO (2016), more than thirty different pathogens for example protozoa, viruses, bacteria, fungus and quite a lot of others cause STIs. STIs can likewise be transmitted through direct contact with body parts of tissues or body liquids of infected persons. Some sexually transmitted infections, for example, hepatitis B is transmitted by sharing and use of unsterilized needles.

The most widely recognized STIs are the bacterial infections which include chlamydia, syphilis and gonorrhoea (CDC, 2010). The irony is that, some STIs normally exist devoid of symptoms, especially in women. Different mechanisms for example screening and case-finding are critical for early recognition and management of these asymptomatic infections (Taderera, 2012).

According to Bereket & Gelibo (2013), STIs are generally unrecognized in time and if not treated, can have a long lasting effect on individuals. STIs, for example, HIV and HPV can be asymptomatic for a longer period of time; while the side effects and reactions of others, for instance, genital herpes might be slow, yet, transmissible. At this point, if no attention is paid to its examination and treatment, the disease can be transmitted through unprotected sex.

Syndromic case identifications remain vital in circumstances where laboratory and clinical examinations remain the least option. STI syndromes include genital ulcer/sores, abnormal genital discharge, discharges from the urethra and lower abdominal pains in women. With its enormity, possible problems and their relations to HIV/AIDS, sexually transmitted infections remain a global public health concern with its multiple consequences of morbidity and mortality especially among the youthful populations (Bereket & Gelibo, 2013).

2.3 Risky sexual behavior

Risky sexual behaviour is explained as the various behaviours that intensifies an individual's risk of contracting a sexually transmitted infection or unplanned pregnancy (Centre for Diseases Control, 2012). Adolescents are sometimes used in this study to infer to the youth and are qualified since they fall within the age category.

In lieu of this study, risky sexual behavior is elucidated as behaviors that can predispose an individual into acquiring an STI. Such behaviors are further explained using four characteristics; having sexual intercourse without using a condom, having sex under the influence of alcohol/drugs, multiple sexual partners and early sexual initiation.

Kenyon and colleagues (2014), emphasized that, the incidence and prevalence of STIs is taunted to the subject of a wider range of factors, which include treatment effectiveness, prevalence of circumcision, biological interactions with other STIs, socio-economic and other upstream factors as well as sexual behavior.

Different constitutes of causal factors such as non-condom use, multiple sexual partners, having sex underneath the influence of alcohol and early sexual initiation, may combine to have effects on the increase rate of STI incidence; the difficulty, rate and extent of the variations in STI incidence poses a huge problem to any effort to classify world populations based on STI prevalence (Kenyon, Buyze, & Colebunders, 2014).

Literature have shown that multiple sexual partners, non-condom use and drug use have been classified as behavioral factors that are deemed risky for the transmission of STIs (Brouillette., 2013; Ingersoll et al., 2008; Turchik et al., 2010). Risky behaviours such as excessive alcohol consumption, non-condom use and the increasing number of sexual significant other's place majority of the youth especially collegial population at a higher danger of an STI infection compared to their complements who do not indulge in such activities (Adefuye, Abiona, Balogun, and Lukobo-Durrell, 2009; Lindley et al., 2008).

An Indonesian study by Rokhmah (2015), on the among adolescents in coastal areas found that the behaviour of adolescents and its potential to transmit HIV is made possible from sexual intercourse with their partners; the proportion of HIV cases mostly occurring among the youth accounted for (81.8%). This indication posits that the youth is a high-risk group and must be targeted for HIV/AIDS prevention programmes. However, programmes targeting sexual and reproductive health for the youth still remains inadequate (Rokhmah, 2015).

Another study that was done in Ghana to examine adolescents in urban poor areas in two towns in the Brong Ahafo region showed that 29% of the adolescents were involved in multiple sexual relations. More males (57.6%) than females (14.9%) reported having multiple sexual partners. It further revealed that adolescents in the two communities recorded high sexual activity. In spite of their personal and social life, condom use is lacking thereby increasing their likelihood of having an STI (Darteh & Nnorom, 2012).

2.3.1 Early sexual initiation or debut

Most studies have been conducted all around the world and has presented with different ages at sexual debut, for example in the U.S.A, Adefuye and colleagues undertook a study on among college students with a sample (n=390) found out that out of 87% of the total sample being sexually exposed, 27.1% had their exposure to first sex before the age of 14 or even younger. 57.8% initiated sex amid ages 15 and 18 years while 10.6% got introduced to sex at age 19 years or older (Adefuye, Abiona, Balogun, & Lukobo-Durrell, 2009). Similarly, the Youth risk behaviour surveillance-United States, found that 5.6% of learners got introduced to sexual intercourse before age 13. It further revealed that sexual initiating

prior to age 13 years was higher among males (8.3%) compared to (3.1%) female students (Kann et al., 2014).

Early onset of sexual intercourse or early sexual initiation has been established to be related to an increase in lifetime of sexual partners, increased risk of exposure to STIs, HIV/AIDS and unwanted pregnancies (Hindin & Fatusi, 2017). Supplementing the correlation between early sexual initiation and STIs. A study conducted by Bayissa and colleagues among Ambo university undergraduate students in Ethiopia, found that the occurrence of early sexual initiation was 20.4%. This is further affirmed by findings from a previous study conducted in Ghana that found early sexual initiation to be 25%. However, this revelation is lower than another study done among Gonder university students which was 56.1%, north-east Ethiopia 51% and among Haramaya university students, 39.6% (Bayissa, Mebrahtu, & Mekuanint (2016).

Augmenting the assertion that early sexual initiation is significantly associated with increased risk of being infected with an STI; young people aged 15–24 years who indulge in early sexual relations are known to have more lifetime sexual partners compared to their counterparts with a later sexual initiation. This observation was revealed in a similar findings from a study in rural Zimbabwe which revealed that women who initiated sex at earlier stages of life were more predisposed to HIV infection than their peers who initiated sex at later ages (Hallet, Lewis & Lopman 2007; Kembo, 2012).

In Ghana, sexual debut is relatively high especially among adolescents. Doku (2012), in his study among sexually experienced Ghanaian youth found that 41% of teenagers who were experienced sexually had sexual intercourse before age 15. Although previous Ghanaian

study among men age (20-24) years established that the mean age of sexual initiation was 19.6. The figure reduced significantly in spite of the age differences between the study subjects. The study further indicated that the age at sexual initiation increases with age signifying that adolescents are initiating sex at earlier age (Doku, 2012).

2.3.2 Multiple sexual partners

Multiple sexual partnerships conform to risky sexual behaviours due to their propensity to increase the transmission of STIs/HIV through sexual interactions (Berry & Hall 2009:97). The prospect of having multiple sexual partners(though not necessarily concurrent partners) indeed, many people realize the risk in it, and, could therefore face the dire consequence of an STI including HIV (Shelton, 2009). It is then imperative to recognize the magnitude in which the youths are indulging in multiple sexual partnerships. Sexually transmitted infections are frequently associated with sexually active youths. With multiple sexual partners; males are mostly expected to have multiple partners and practice early sexual initiation than females, and hence are at a greater risk of acquiring and transmitting STIs from one partner to another (Dekeke & Sandy, 2014). Different kind of psychosocial indicators are taunted to be associated with the identification of STIs or self-reporting of STIs especially among young people with multiple sexual partnerships being seen as one the main factors (Edelman, Visser, Mercer, Mccabe, & Cassell, 2015).

Further, a systematic review and results from meta-analysis of the relationship between bacterial vaginosis (an STI) and sexual activity found a significant association between sexual contact with new and multiple sexual partners in both sexes; reducing the number of sexual associates and practicing safer sex reduces the incident and recurrent infection (Kenyon, Colebunders, & Crucitti, 2013).

In Ghana, young females in the age category of 20-24, who have never married in their lifetime and the divorced are to some extent likely to have more sexual partners compared to the married. In the case of men, married or the never married are most likely to have several sexual partners. The case is no different when it comes to educational status as of men; with multiple sexual partners high among the illiterates 16% than those who have at least attained a secondary or higher education 15% (GDHS, 2014).

2.3.3 Non-condom use

The surge in premarital sexual activity and increase prevalence of STIs among the youth are crucial as they can be associated to risky sexual behaviours for example unprotected sex. Unsafe sex occurs when a vulnerable individual engages in sexual activity or have sex with at least one person or more who has an STI without the use of condom that could prevent infection. Unprotected sexual intercourse is connected to an increased potential of contracting an STI (Kost & Henshaw 2012).

Low condom usage among younger Ghanaian populace is consistent with the trend among young people in Sub-Saharan Africa (SSA) (Delva et al., 2010; Mthembu & Ndateba, 2012). This pattern, even with high knowledge level of condoms and HIV, proposes that additional factors may impact young people's judgments to use or not to use a condom during sexual intercourse (Masa & Chowa, 2014).

Conforming to these factors, a study conducted among undergraduate students in Jigjiga University in Ethiopia found the majority 42% (n=21) in males and 50% (n=4) females amongst the respondents did not utilize condom for the period of their last sexual act because they "never thought about it". Moreover, fear of telling their sexual partners to use condom

accounted for 16% (n=8) of males and 12.5% (n=1) of females. Being in a hurry to have sex also recorded 14% (n=7) males and 12.5% (n=1) females were also quoted as other reasons for not using condoms (Mavhandu-Mudzusi & Asgedom, 2016). Further, complexity of condom use for the inexperienced during the act, embarrassment to suggest condoms, the cost and difficulty to purchase are all some of the reasons that have been cited as reasons for non-condom usage among the youth (Kirby et al., 2010).

2.3.4 Alcohol, drug intake and sex

College students' use of alcohol and drugs has been connected to higher rates of risky sexual behaviour heightening their risk of acquiring an STI (Hittner et al., 2016). Furthermore, Hittner and colleagues 2016, after examining the association under two contexts of 'drunk or high' versus 'not drunk or not high'. After using two separate criteria for males (casual sex) and females (unprotected sex) found that for females, signifying a 135.3% increase in the 'drunk or high' situation. Regarding males, the chi-square values in the 'not drunk or high' and 'drunk or high' circumstances showed a 38.9% increase in the 'drunk or high' perspective which predicts and increase in casual and unprotected sex among the two gender groups.

Alcohol and drug usage modify judgment, eliminate shyness and thereby stimulate sexual behaviours that are risky for students. On the affirmative, a study conducted on among Victorian secondary school students found a statistically significant relationship for risky sex and alcohol. For the bivariate associations, the study affirmed that students who were reported taking alcohol in the previous two weeks preceding the study and habitual drinking in the previous year were more likely to experience sex in the previous year; drinking

compulsive drinking, had three or more sexual partners, habitual drinking (Agius, Taft, Hemphill, & Toumbourou, 2013).

A similar Ghanaian study by Asante, Meyer & Peterson (2014), analyzed substance usage and risky sexual behaviour established that both smoking, alcohol and marijuana use were linked to having multiple sexual partners. From the logistic regression analyses for that study and after controlling for demographics, marijuana and alcohol use were independently associated with one's sexual initiation. It further revealed that deprived youth who utilize alcohol were about six-times more likely to have had sex as compared to those who did not use alcohol (OR = 5.6, 95% CI = 1.3– 24.3). On the use of marijuana, users (OR = 10.9, 95% CI = 3.1– 38.1) compared to non-users. It was further revealed that marijuana use was related to multiple sexual partnerships (OR = 16.6, 95% CI = 4.5–60.6). It also revealed that other drugs such as tobacco smoking, drinking, tawa and marijuana was also found to be associated with early sexual initiation, high number of sexual partners and the same time independently linked with non-condom use. It also found out that substance abuse appears to aid as a potential risk factor for sexual related risk behaviors among street youth (Asante, Meyer-weitz, & Petersen, 2014).

2.4 Knowledge of Sexually Transmitted Infections

Knowledge and attitudes of the youth regarding STIs including HIV/AIDS and its prevention remains an integral aspect of the lives of the youth regarding their decision making in practicing safer sex.

A study conducted in the Asian province of Bhutan to examine five characteristics of knowledge on STIs in communities; symptoms, prevention, clinical disease, transmission

and complications. It revealed the average score for knowledge to be 61.6%; 91% on prevention, 70% on transmission and 60% on signs and symptoms. However, poor knowledge scores of 40% and 47% were recorded on clinical disease as well as complications respectively. The study further showed a statistically significant association between the levels of education and knowledge on STIs. It disclosed that study participants whose educational level was high were more knowledgeable on STI compared to those with lower educational status (Norbu, Mukhia, & Tshokey, 2013).

Norbu and colleagues (2013), in their study found out that although an increase in education level was directly proportional to the level of knowledge on STI, however, the same study revealed that there was no decline in risky sexual behaviours.

Knowledge regarding HIV and other STIs has been deficient among Ghanaian youths, with scarce and inadequate literature in this area. Report from the GDHS (2008) indicated that 98% of females and 99% of males were aware of HIV in Ghana. Nonetheless, this has not deciphered into inclusive knowledge and safer sexual behaviour as only 25% young women and 33% of young men aged 15 - 24 years had ample knowledge of STIs and for that matter HIV. This can have serious health repercussions for HIV/AIDS prevention activities (Oppong Asante , 2013).

According to the GDHS 2014, sexually transmitted infections including (HIV/AIDS) associated knowledge amongst Ghanaian youths in the age group 15-24 assesses the level to which the younger populace are involved in behaviours that might expose them to the risk of contracting HIV. The survey further revealed that 20% of young females and 27% of young males have a broader knowledge of AIDS. Among young females age 15-24,

knowledge was high for those aged 20-24 (22%), women who never married (22%); among young women in urban areas (23%) and those with a secondary or higher education (32%). Likewise, all-inclusive knowledge of AIDS is highest for men age 23-24 (32%), never-married young men who have ever had sexual intercourse (30%), men in urban areas (32%), and men with a secondary or higher education (43%) (GDHS, 2014).

2.5 Risk perception of STIs

According to a CDC 2011 report there are three practices that facilitate the main sources of death and sickness among the youth; violence and injuries, alcohol and drug usage and risky sexual behaviours. By engaging in risky sexual behaviour, young people don't consider the contrary health consequences but instead look out for the related quick outcomes by flirting with their partners and associates (Currie et al., 2012).

Sychareun and colleagues 2013, explored the causes related to the risk perception of getting STIs and took into account high level of knowledge about STIs, being male and having had signs of STIs in last 6 months. The researchers after controlling for confounding variables, in multivariate logistic regression analysis on factors associated with perceived personal high risk of getting STI was significantly related to gender; being male, high level knowledge about STIs and having had symptoms of STIs in last six months. The researchers further found that supposed risk of getting an HIV alone was significantly associated with gender; being male, having in-depth knowledge about STIs, and knowledge about HIV. Findings supported the need to target youths for STIs/HIV prevention programs by tackling wrong perception of risk and increasing awareness on STIs/HIV since socio-demographic characteristics, knowledge of STIs/HIV and the level of disclosure were the main determining factor of risk perceptions of STIs (Sychareun et al., 2013).

A study conducted in the Rwandan province of Gikongoro revealed that a greater majority comprising 85% of the participants knew somebody who had died of AIDS; yet, about 68.9% revealed that, they are at no risk of contracting an HIV infection and a meager 3.2% indicated that they are at a high risk of HIV infection which is very alarming considering its negative implications (Ntaganira, Hass, Hosner, Brown, & Mock, 2012). The notion of sex and the inclination that the youth see themselves as not at danger of STIs including HIV raises a major issue that needs to be addresses swiftly.

In Ghana, most frequent sexually transmitted infections have the tendency to be higher among young women than among men (Genna, Feske & Angiolieri, 2011; Onokerhoraye & Maticka-Tyndale, 2012). Considering the impact of sexually transmitted infections on HIV infections, the youth, especially young women are at increasing risk of contracting an STI including HIV (Pollack, Boyer & Weinstein, 2013; Rietmeijer, 2013).

2.6 Risky sexual behavior related sexually transmitted infections.

Several studies have established the link between young people's risky sexual behavior and substance use that place them at a high risk of acquiring sexually transmitted infections. This is proven in a longitudinal study conducted among female adolescents that found that a high volume of alcohol intake predicted an affirmative test for trichomonas vaginalis (a sexually transmitted disease), multiple sexual partners, inconsistency of condom use, high sexual responsiveness seeking, engaging in anal sex and having sex while high on alcohol or drugs (Dubravko, Lepušić & Radović-Radovčić, 2013).

A variety of behaviours for example the use of drugs has been found to be linked to high-risk sexual behaviour and STI. On the affirmative, cross-sectional study conducted in the Netherlands found that recreational drug use without alcohol and erectile dysfunction drugs was related to several determinants for both males and females; staying out of home, group sex and use of toys. The revelations further posited that gender was univariately associated with using recreational drugs, more specifically among women especially those who participated in group sex (OR=5.89, CI 1.55 to 22.46). The interaction between group sex and drug use also was found to be significant (Spauwen, Niekamp, Hoebe, & Dukers-Muijrers, 2015).

Another study conducted by Eugenia and colleagues (2010), among university students in Brazil found that the number of sexual partners is one of the utmost significant factor related with the contraction of STIs and HIV/AIDS. However, it is at times difficult to quantify an underlying relationship between illegal drug use, sexual behavior of teenagers and young adults as a whole for the reason that sexual activity is also connected to other social, cultural, and behavioral factors. Nonetheless, the results further indicated that almost one-third of students had used drugs and 18% of students were still consuming illegal drugs. Circumstances surrounding a student's decision to try something that is deemed unacceptable may lead to a broader deviation from societal norms, thus also leading to behaviors that enable STI and HIV transmission. The study further revealed that students who involved in anal sex less likely used a condom during vaginal sex than students who did not.

Adefuye and colleagues (2009), reviewed the linkage between alcohol intake and risky sexual behavior and found that drug and alcohol use alter student's judgment, take away

shyness (inhibitions) and produced high risk sexual behaviors. The data analysis further posited that, women with not less than one intake of alcohol in the most recent 30 days were two times as likely not to utilize condoms than their counterparts who are not under the influence of alcohol. The study further found that marijuana use was related to less condom use during sex. Age was also another variable that was found to be linked to multiple sexual partners among women, as proven by the relationship between multiple sexual partners were more among youthful students in age groups less than 30 in both sexes. All proved to have had sexual intercourse with multiple partners (Adefuye et al., 2009).

A similar study by Doku (2012), investigated the linkage between risky sexual behaviors and substance use amongst Ghanaian youths found that smoking of substances such as “tawa”, tobacco, marijuana use and other drugs usage were all related to early sexual debut and number of sexual partners. The study further revealed that substance use for the stated drugs and drunkenness was independently related to the number of sexual partners and that if adolescent drinks or smokes, he or she had 8-16 times the chance of having a sexual partner or multiple sexual partners compared to those who don't smoke or drink. Also, people who use tawa were the most likely to have a sexual partner (OR=5.7, 95% CI=2.5-12.8) or multiple partners sexually (OR=10.4, 95% CI=4.4-24.6) as compared to others who reported non-usage of tawa. Moreover, the totality of substance use studied was linked with having one or multiple sexual partners. Age at initial sexual intercourse was related positively to the number of sexual partners. 50% of those who ever had sexual intercourse used condoms as contraceptives, on the other hand 31% did not use any contraceptives at all during their most latest sexual intercourse (Doku, 2012).

CHAPTER THREE

3.0 METHODOLOGY

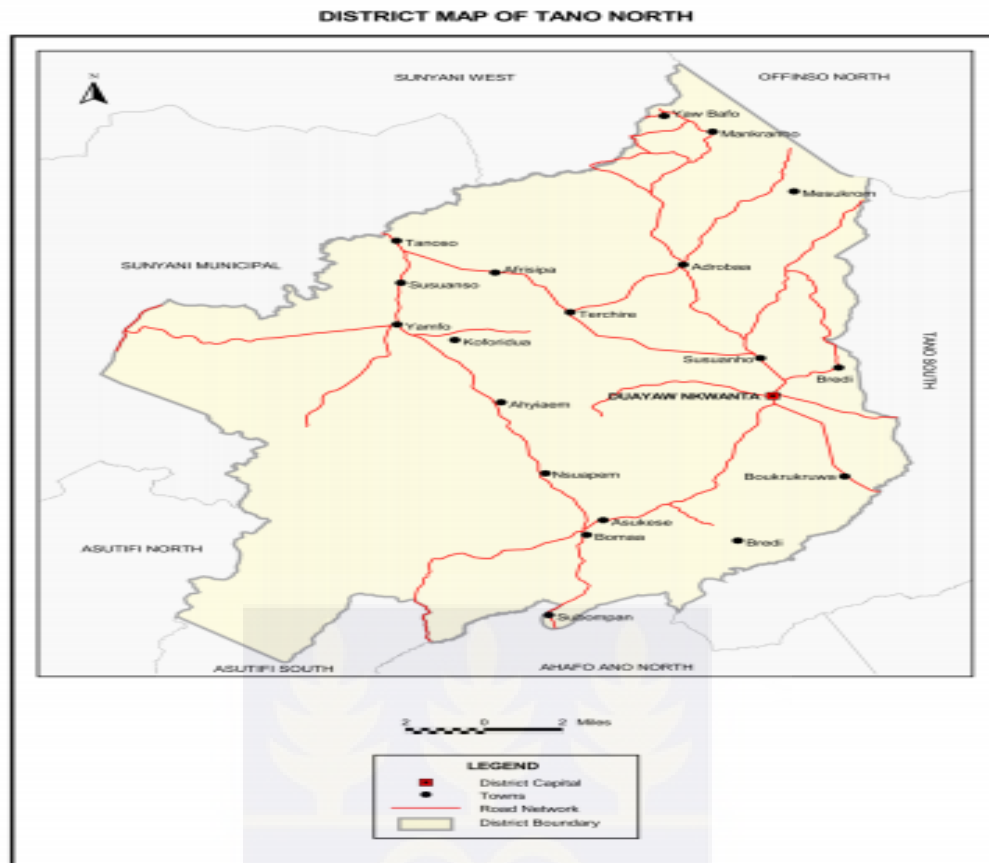
This chapter provides the various methods employed for this study further describing the study design, study area, sampling method, study procedures, data collection tools and instrument, data analysis as well as ethical considerations.

3.1 Study Design

This study adopted a cross-sectional design involving a quantitative approach to investigate risky sexual behaviors and sexually transmitted infections among students in the MoH institutions in the Tano North District. The study was conducted in June 2016.

3.2 Study area:

The study was undertaken the Tano North District of the Brong Ahafo region. The District is one out of the twenty-two (22) in the Brong Ahafo Region of Ghana with a population of 79,973 comprising 40,380 males and 39,593 females making up 50.5% and 49.5% respectively. The district also has a population growth rate of 2.4% (Ghana Statistical Service, 2010). It was carved out of the then Tano District in 2004 with its Administrative capital being Duayaw Nkwanta. It is bounded in the North and East by the Offinso Municipal and South–Western by Asutifi, Tano South to the East border and Ahafo-Ano North District to the south of the Ashanti Region. The district hosts three Ministry of Health training institutions which include Physiotherapy and Orthotics Training at Duayaw Nkwanta, Community Health Nurses Training School at Tanoso and College of Health at Yamfo.



Source: Ghana Statistical Service, GIS

Figure 2: Map of Tano North District

3.3 Study Population.

The study involved students studying for healthcare qualification in the three Ministry of Health training institutions in the Tano North District of the Brong Ahafo Region. All students were resident on the various campuses.

3.3.1 Inclusion criteria

The following are the inclusion criteria that will be adopted for the study;

Being a student in any the three MoH training institutions in the Tano North District who are unmarried all qualified for the study.

3.3.2 Exclusion criteria

The following categories of people were excluded from the study;

- Married students in the three institutions
- A student who refused to give their voluntary consent to partake in the study.

3.4 Study Variables

3.4.1 Dependent variable

The main (dependent) variable for this study was sexually transmitted infections.

3.4.2 Independent variables

The independent variables for the study included the following;

- Demographic or background characteristics of the study participants; age, sex, religion, relationship status, family structure and year of study.
- Risky sexual behaviors such as;
- Early sexual initiation or debut
- Multiple sexual partners
- Non-condom use during sexual intercourse
- Having sexual intercourse under the influence of drugs such as alcohol.

3.4.3 Description of variables

The 27 questions on knowledge were originally coded 1-True, 2-False and 3-Don't Know. This was later dichotomized to 1-Correct and 2-Incorrect; every question had one answer and that all answers that fall in category (3-Don't Know) were still classified incorrect. Calculations were done on a new composite variable that was later created by summing up

all the correct answers for the knowledge score. Students who scored between 70-89% were considered having good knowledge, 50-69% with basic knowledge and less than 49% were classified as poor knowledge. This was adapted in a similar study on the assessment of knowledge on STIs and sexual risk behaviours by (Norbu et al., 2013). For the dependent variable, 10 questions were dichotomized as 1-Yes and 2-No. Those who didn't report on any of the signs were left out. All persons who reported Yes for any of the STI signs were classified as having an STI. All yes answers were summarized and to obtain one composite variable called STIs. Students who had signs for only abdominal pains were not included since abdominal pain alone cannot be taken as a sign of an STI.

3.5 Sample size estimation

The sample size was calculated using Cochran's formula as follows: $N = \frac{z^2 p(1-p)}{d^2}$

Based on the following parameters, estimated prevalence of risky sexual behaviour which is unknown is placed at 50% (0.5). Furthermore, a 95% confidence level (z) and a margin of error (d) of 5% were assumed.

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

- N=required sample size
- Z =Constant (standard for the accepted error=1.96)
- d = margin of error = 95% out of 100% = 5% or 0.05 is assumed.
- p = estimated prevalence is unknown however, a conservative estimate of 0.5 was used
- 1-p= 1- prevalence

$$N = \frac{(1.96)^2 * 0.5 (1-0.5)}{(0.05)^2} \quad N = \frac{3.8416 (0.25)}{(0.0025)} \quad N = \frac{0.9604}{0.0025}$$

$$N = 384.16.$$

3.6 Sample size adjustment

Therefore, sample size is 384.16 and will then be rounded up to approximately 385 respondents. To cater for non-response and data entry errors, the sample size will however be increased by 10%.

= $(0.1 \times 385 = 38.5)$ which will be rounded down to 36. The final sample size therefore, = $385 + 36 = 421$ which will be rounded down to exactly 420.

3.7 Sampling procedure

For the purpose of this study, one district (Tano North) was randomly selected out of the 22 districts in the Brong Ahafo region. A multistage cluster sampling technique, with probability proportion to size was adopted for the sampling process. The determination of required sample size was based on the number of students in each institution. Three schools were initially proposed for the study; College of Health-Yamfo, Physiotherapy and Orthotics Training School-Duayaw Nkwanta and Community Health Nurses Training School-Tanoso but due to the academic closure in one of the institution (Physiotherapy and Orthotics Training), the study was limited to the remaining two schools. First, the sample size for each of the two schools was calculated as follows:

Total population of the two schools = 1,056

- Community Health Nurses Training School-Tanoso

= 510 students

$$510/1056 \times 420 = 203$$

- College of Health Yamfo

= 546 students

$$546/1056 \times 420 = 217$$

- Therefore, the total sample for the two schools =203+217=420

The next stage of the procedure involved the systematic selection of students from each year group in the two schools. Respective interval was calculated for each of the two schools and the 2nd number was selected. In each class, students were numbered 1 and 2 and each student who had the second number was chosen for the study. In instances where a selected student did not meet the eligibility criteria or declined to partake in the study, we moved on to the next eligible person with the number two.

3.8 Training of research assistants

Two days training session was conducted for research assistants to ensure thorough understanding of the research topic. This further ensured that they are effectively equipped in all aspects for the study including the field work. The various aspects of the study that they were trained on included;

- The study topic, its objective and sensitivity
- The sampling procedure, technique and all the necessary processes adopted for the study
- The need to obtain informed consent and ensure confidentiality at all times throughout the study.

3.9 Pretesting

Questionnaire for the study was pre-tested with 20 students in the Health Assistants Clinical and the Nursing Training School at Sunyani Municipal, a nearby municipality which bears similar features with the study area before administering the actual questionnaire. The conducted pilot study gave advance warning regarding weaknesses in the study. These

included; where research protocols were not followed, where proposed methods or instruments are inappropriate or too complicated. Flaws identified during the pre-test were then rectified before the final administration of questionnaire to the required total sample size was conducted.

3.10 Data collection technique and procedure

An interviewer-administered structured questionnaire (Appendix II) was employed to obtain quantitative data from the students. Questionnaire was structured to solicit information on (A) socio-demographic characteristics, (B) risky sexual behaviour for example, having sex under the influence of alcohol or drugs, having sex without condom, early sexual debut and multiple sexual partners and other confounding variables. The questionnaire further collected information on (C) knowledge on sexually transmitted infections and (D) risk perceptions of STIs. In order to know the STI status of the students, structured syndromic questionnaire (E) was used to assess the student's STI status. Knowledge on STIs was measured using the Sexually Transmitted Diseases Knowledge Questionnaire (STD-KQ) developed by Jaworski & Carey (2007). This is a 27-item true or false questionnaire that assesses knowledge on various aspects of STIs and STDs (Weaver, 2015). Moreover, syndromic questionnaire were developed by the researcher based on the guidelines from the National Aids Control Programme (NACP)-Ghana. They include a series of questions that are used to assess the STI signs and status among people and for that matter among students. The rest of the structured questions were extracted from previous related studies conducted in Ghana and other developing countries while some of the questions were also developed from literature by the researcher. The language used for questionnaire design and administration was solely questionnaire was solely in English.

The self-administered questionnaires were distributed to selected students by research assistants of whom students were then required to answer. Completed questionnaires were then retrieved by research assistants.

3.11 Data processing

Data were cross checked for completeness and inner consistencies at the end of the self-administered questionnaire. Data entry sheet was then designed with appropriate variable definition to minimize error during the data entry. The final data were done and double entered to detect any discrepancies for necessary correction and accuracy. The data was first entered into Epi-info before extracted to Microsoft excel 2016. The final data was then exported into Stata Version 14 for the final analysis.

3.12 Data analysis

The data were analyzed using Stata version 14. The descriptive statistics were presented in percentages and frequencies using tables. The categorical variables were then analyzed using proportions and percentages and then chi square test to compare proportions. Bivariate analysis using the chi-square test was then employed to find out if there is any significant association between sexually transmitted infections and risky sexual behavior. In determining the strength of association all significant variables were then put into the simple and multiple logistic regression models. With odds ratio and 95% confidence interval, adjusted and unadjusted ratios were all calculated for using the logistic regression models to test the strength of association. To determine all statistical significance, p-value <0.05 was used in all the analysis for this study.

3.13 Ethical Considerations

The following ethical issues were considered to ensure the rights and dignity of the participants are protected.

- Ethical approval was sought from the Ghana Health Service Ethical Review Committee.

With ID GHS-ERC: 24/02/17

- Introductory letters from the department of Population Family and Reproductive Health (University of Ghana) were sent to the heads of the two institutions.
- Permission was further sought from institutional heads where data collection took place prior to the study.
- Informed consent was obtained from participants.
- Due to the collective nature of data analyses, confidentiality, privacy and anonymity was assured although the results of the total sample will be published in the course of the research. This means that no reference was given to the name of participants in the research report. Moreover, no other person will had access to the data involved in the study.
- Participants were informed about the discomfort and risks about this study due to the highly sensitivity nature of this study.
- The interviews were voluntary and no one was coerced for refusing to participate on this project. All participants received a token of appreciation for partaking in the study.
- All electronic data involved in the study were stored a computer and backed on an external hard drive with password protected. The hard copies of data are stored and locked in a safe place with limited access to the principal investigator alone.
- The questions of the interview were vetted devoid of offensiveness or inappropriateness to the participant.

3.14 Quality Control

In ensuring data reliability, the following quality control measures were adopted;

- Three male research assistants were trained for two days prior to pre-testing and final administration of the questionnaire. The questionnaire covered the various specific objectives under study.
- The training ensured thorough understanding the research of the topic, objectives and the sensitivity of the topic and need for confidentiality.
- The training also helped confirm they were effectively equipped to administer the questionnaires.
- Meetings were then held daily after data collection to identify challenges and resolutions which were offered by the team.

3.15 Dissemination of findings

The study findings will be disseminated and copies will be made to the following groups;

- School of Public Health library, University of Ghana
- Main library, University of Ghana
- Libraries of the two institutions where the study was conducted. Further, a live dissemination and research brief will be provided for the two institutions.
- Publication of a scientific paper in a reputable journal

CHAPTER FOUR

4.0 RESULTS

4.1 Background characteristics

Within the month of June, a total of 460 questionnaires were distributed to eligible collegial students from two MoH institutions in the Tano North District out of the initial three institutions planned. This became necessary due to the fact that one of the three schools (Physiotherapy and Orthotics Training School-Duayaw Nkwanta) was on academic break during the period we undertook the study, hence, limiting the study to the two remaining institutions; College of Health-Yamfo and Community Health Nurses Training School-Tanoso.

Out of the 460 questionnaires, 425 (though initial plan was to obtain data on 420 participants) complete data were obtained from the students giving a response rate of 92.4%. Therefore, the analysis for this chapter (chapter-four) is solely based on 425 students in the two schools who fulfilled the criteria and also had complete information with regards to the study.

4.2 Participant demographic characteristics

Results on participants' demographic characteristics were estimated using proportions and chi-square test. The participants for this study comprised of 181 (42.59%) males and 244 (57.41%) females. With regards to family structure, the nuclear family accounted for about 69.8%, being the majority. More females (59.26%) than males (40.74%) live with both parents as in the nuclear family. About 98% of respondents were single, with females (57.1%) being the majority compared to single males. Religiously, Christianity (91.3%) and Islam (8.5%) were the dominant religions among the respondents. Respondents were mainly

youth representing 365(85.9%) of the 425 study participants. These and other socio-demographic characteristics are presented in Table 4.1.

Table 4.1: Demographic characteristics of the respondents

Variable	Male (%)	Female (%)	Total (%)	P-value
Age groups				0.011
15-19	15(8.3)	43(17.6)	58(13.7)	
20-24	143(79.0)	164(67.2)	307(72.2)	
25+	23(12.7)	37(15.2)	60(14.1)	
Relationship status				0.304
Single	180(99.5)	240(98.4)	420(98.9)	
Cohabiting	1(0.5)	4(1.6)	5(1.1)	
Family				0.074
Single parent	25(13.8)	40(16.4)	65(15.3)	
Nuclear family	121(66.9)	176(72.1)	297(69.9)	
Extended family	35(19.3)	28(11.5)	63(14.8)	
Religion				0.042
Christianity	159(87.9)	229(93.9)	388(91.3)	
Islam	21(11.6)	15(6.1)	36(8.5)	
African traditional	1(0.5)	0(0.00)	1(0.2)	
Year of study				0.300
First year	96(53.0)	117(47.9)	213(50.1)	
Second year	85(47.0)	127(52.1)	212(49.9)	

4.3 Proportion of students who engage in risky sexual behavior

Data on MOH students' engagement in risky sexual behaviours were analyzed by gender using chi-square test. Table 4.2 illustrates the various risky sexual behaviours exhibited by the students on the two campuses with main focus on the four variables that were used under risky sexual behaviours and other sexual behaviours. For the ever had sex and unprotected sex in the last 12 months, 242(56.9%) and 198(46.6%) responses were recorded respectively. Female respondents recorded the highest proportion in both cases. Regarding condom use, 83(19.5%) of the students reported the use of condom during last sexual intercourse as against 160(39.9%) who did not use at all. For consistency of condom use,

151(63.18%) reported using condom sometimes, 58(24.27%) never used condom and 30(12.55%) reported condom use always. About 114(54.29%) indicated that condoms diminish sexual sensation and as such do not use condom. Regarding alcohol and other drug use during sex, 34(43.03%) reported using alcohol during sexual intercourse, majority of which were male students with 26(66.67%). With (casual) sexual relations with non-regular partners, 87 (20.5%) students have ever had sex with someone other than their regular partners and out this number, males formed the majority (65.5%). Other responses indicate 18(4.24%) ever had sex for financial reasons with 13(5.3%) females and 5(2.8%) males. These and other sexual risk behaviours are depicted in Table 4.2 and 4.3.

Table4.2: Proportion of students who engage in risky sexual behaviour

Variable	Male (%)	Female (%)	Total (%)	p-value
Ever had sexual intercourse	109(45.0)	133(60.0)	242(56.9)	0.240
Unprotected sex in lifetime	94(47.5)	104(52.5)	198(46.6)	0.057
Sexual intercourse while drunk in last 12 months	17(58.6)	12(41.4)	29(6.8)	0.007
Unprotected sex in last 12 months	60(52.2)	55(47.8)	115(27.1)	0.015
Sex with unknown well/just met person	37(75.5)	12(24.5)	49(11.5)	0.001
Casual sexual relations with someone other than steady boy/girl friend	57(65.5)	30(34.5)	87(20.5)	0.001
Condom use with non-regular partner	21(65.6)	11(34.4)	32(38.1)	0.003
Use of condom during last sexual intercourse	36(43.4)	47(56.6)	83(33.1)	0.101
Mean age at first sex	18.45±2.93	19.65±2.75	19.10±2.89	
Mean age of first sexual partner	18.22±3.49	23.62±4.67	21.12±4.95	
Minimum and Maximum age at first sex	10, 26	12, 28	10, 28	
Minimum and maximum age of partners at first sex	12, 32	12, 46	12, 46	

Table 4.3: Proportion of students who engage in risky sexual behaviour cont.

Variable	Male (%)	Female (%)	Total (%)	p-value
Reason for sex				0.170
Financial	5(55.56)	13(81.25)	18(72.00)	
Favor	4(44.44)	3(18.75)	7(28.00)	
Substance used during sexual intercourse in last 3months				0.000
Injection drug	1(2.56)	8(20.00)	9(11.39)	
Oral/renal drug	12(30.77)	23(57.50)	35(44.30)	
Cigarette	0(0.00)	1(2.50)	1(1.27)	
Alcohol	26(66.67)	8(20.00)	34(43.04)	
Consistency of condom use				0.241
Always	10(9.52)	20(14.93)	30(12.55)	
Sometimes	65(61.90)	86(64.18)	151(63.18)	
Never	30(28.57)	28(20.90)	58(24.27)	
Reason for non-condom use				0.110
Condom not available	26(26.53)	29(25.89)	55(26.19)	
Diminish sexual sensation	53(54.08)	61(54.46)	114(54.29)	
Can't negotiate with partner	14(14.29)	16(14.29)	30(14.29)	
Problem of disposing	4(4.08)	0(0.00)	4(1.90)	
Unaware of condom	1(1.02)	6(5.36)	7(3.33)	
Experience from first sex				0.006
Own will	94(85.45)	94(70.68)	188(77.37)	
Coerced or forced	16(14.55)	39(29.32)	55(22.63)	

4.4 Students level of knowledge on sexually transmitted infections among the students.

Students understanding of sexually transmitted infections were tested using a number of questions around diseases and their symptoms that are acquired through sexual intercourse.

The results were analyzed comparing male and female students, using chi-square and Fisher's exact test of association. Overall, students scored low on majority of the indicators tested and the knowledge level regarding male students was fairly higher than their female counterparts. Out of the 425 student enrolled in the study, 137(32.2%) correctly identified genital herpes. Students had good knowledge on the cure for gonorrhoea, recording

357(84.0%). From the 27 areas of STIs symptoms and modes of transmission examined on students, they [students] scored above 50% (basic) in 5 disease areas; HIV transmission, cure for chlamydia, cause of STDs and transmission of gonorrhoea. As shown in Table 4.4, respondents had the least knowledge on vaccine for hepatitis B, 18(9.9%).



Table 4.4: Students level of knowledge on sexually transmitted infections/diseases

Variable	Frequency	Percentages(%)
Genital herpes is caused by same virus as HIV	137	32.2
Frequent urinary infection can cause chlamydia	59	13.9
There is a cure for gonorrhea	357	84.0
Easier to get HIV if a person has an STD	214	50.3
HPV is caused by same virus as HIV	77	42.5
Anal sex increases a person's risk of Hep B	61	33.7
Soon after HIV infection a person develops open sores on his/her genitals	85	46.9
There is a cure for chlamydia	102	56.3
A woman can look at her body and tell if she had gonorrhea	48	26.5
A man can look at his body and tell if he has gonorrhea	69	38.1
The same virus causes all STDs	138	76.2
Human Papilloma Virus(HPV) can cause genital warts	72	39.8
Using natural lambskin condom can protect a person from getting HIV	42	23.2
A man must have vaginal sex to get genital warts	30	16.6
STDs lead to health problems that are more serious in men than women	55	30.9
A bad smelling odor from the vagina shows a woman has chlamydia	27	14.9
Testing positive for HIV, the test can tell how sick the person will become	75	41.4
There is a vaccine available for the treatment of gonorrhea	83	45.9
A woman can tell by the way her body feels if she has an STI	45	21.9
Open sores from genital herpes aid transmission to another partner	34	18.8
There is a vaccine that prevents chlamydia	74	40.9
A man can tell from the way his body feels if he has hepatitis B	78	43.1
First gonorrhea of experience offers immunity from getting it again	112	61.9
HPV can cause HIV	72	39.8
Washing of genitals after sex protects men from genital warts	82	45.3
There is a vaccine that protects against hepatitis B	18	9.9

Table 4.5: Summary of level of knowledge on STIs

Variable	Frequency	Percentage
Good knowledge	16	3.8
Basic knowledge	76	17.9
Poor knowledge	333	78.3

4.5 STI risk perception among students

The perception of tertiary students from MOH institution to STIs is presented in Table 4.6. It indicates that majority of students, 320(75.3%) perceive STIs to be highly prevalent in society. Both male and female groups had high perception of STIs in the population, 140(77.4%) and 180(73.8%) respectively. It was also observed that up to 420 (98.8%) of students studied perceive the youth to be the most vulnerable group in terms of STIs with both genders indicating similarly high levels of perception. Majority of the youth perceive, highly, 335(78.8%) to be unsafe from STIs if they indulge in unprotected sex with more females, 199(81.6) disagreeing they can have unprotected sex without contracting STIs. Up to 302 (71.1%) of the students respondents indicate worry of STIs infection after ever indulging in unsafe sex with approximately the same proportions of both sexes expressing the same sentiments. It was however mixed feeling regarding reasons why one would want to abstain from sex. Slightly high numbers of students would abstain from sex for reasons on religious beliefs, fear of HIV/AIDS, STIs or pregnancy or interest in protecting future and education representing 109(25.7%), 93(21.9%) and 125(29.4%) respectively. Majority of the students, about 320(75.3%) think abstinence leads to future marital problems. It was however recorded that majority of the respondents, 332(78.1%) perceive STIs not be dangerous and curable with both sexes significantly showing different opinions on the matter, 154(85.1%) males and 178(72.9%) females (Table 4.6).

Table 4.6: Students perception about the risk of STIs

Variable	Risk-perception score			p-value
	Male (%)	Female (%)	Total	
Perception of STIs in society				0.157
Low	30(16.57)	36(14.75)	66(15.53)	
Unsure	11(6.08)	28(11.48)	39(9.18)	
High	140(77.35)	180(73.77)	320(75.29)	
Group most vulnerable to STIs				0.928
Children	1(0.55)	2(0.82)	3(0.71)	
Youth	179(98.90)	241(98.77)	420(98.82)	
Elderly	1(0.55)	1(0.41)	2(0.47)	
People like me are rationally safe from STIs even with unprotected sex				0.109
Agree	45(24.86)	45(18.44)	90(21.18)	
Disagree	136(74.14)	199(81.56)	335(78.82)	
Worried after unsafe sex that it may lead to STIs				0.464
Agree	132(72.93)	170(69.67)	302(71.06)	
Disagree	49(27.07)	74(30.33)	123(28.94)	
Sex without condom is not too risky for STI infections				0.821
Agree	50(27.62)	65(26.64)	115(27.05)	
Disagree	131(72.38)	179(73.36)	310(72.94)	
Perceived reason for abstinence (most)				0.014
Religious	58(32.04)	51(20.90)	109(25.65)	
Parental reasons or care	11(6.08)	26(10.66)	37(8.71)	
Fear of HIV/AIDS, STIs & pregnancy	35(19.34)	58(23.77)	93(21.88)	
Want to protect future & education	58(32.04)	67(27.46)	125(29.41)	
Wait till marriage	19(10.50)	42(17.21)	61(14.35)	
Abstinence leads to sexual problems in marriage				0.696
Agree	43(23.76)	62(25.41)	105(24.71)	
Disagree	138(76.24)	182(74.59)	320(75.29)	
STIs are not dangerous and are curable				0.003
Agree	154(85.05)	178(72.95)	332(78.12)	
Disagree	27(14.92)	66(27.05)	93(21.88)	

4.6 The association between risky sexual behavior and sexually transmitted infections.

4.6.1 STIs among studied participants

The study results showed in Table 4.7 indicate low proportions students been infected with STIs over the period of assessment. Urethral discharge, a male genital infection, was 23.2% prevalent among male students interviewed whilst vaginal discharge (female genital)

infection was 44.3% prevalent among the study participants. Only lower abdominal pain recorded slightly above 50% of the respondents. Genital warts and genital ulcers were the least prevalent sexually transmitted infection among students studied with 6.4% and 6.8% respectively. The other STIs are shown in Table 4.7.

Table 4.7: Sexually transmitted infections status among students

Variable	Male (%)	Female (%)	Yes/Total (%)
Urethral discharge	42(23.2)	-	42(23.2)
Vaginal discharge	-	108(44.3)	108(44.3)
Scrotal swelling	21(11.6)	-	21(11.6)
Lower abdominal pain	-	127(52.1)	127(52.1)
Genital ulcer	19(10.5)	10(4.1)	29(6.8)
Genital warts	15(8.3)	12(4.9)	27(6.4)
Genital rashes	30(16.6)	59(24.2)	89(20.9)
Genital sores/blisters	32(17.7)	30(12.3)	62(14.6)
Problem with urination	51(28.2)	47(19.3)	98(23.1)
Itching around genital area	53(29.3)	99(40.6)	152(35.8)

4.6.2 Association between STIs and sexual behaviour among students

Results from the test of associations indicate that 59.1% of students who ever had sexual intercourse contracted some form of sexually transmitted disease against 31.2% of those who never had sex. Among those who ever had unprotected sex, 62.2% of them had STIs compared to 33.9% of those who were never involved in unprotected sex. STIs among students starting sexual intercourse at younger age 15-19 years recorded 62.2% cases. This was significantly higher than 53.3% and 34.7% among age groups 20-24 years and 25+ respectively. Respondents whose first sexual partners' age was within 15-19 years and 20-24 years old recorded higher cases of STIs, 57.6% and 58.7% respectively, compared to

relatively older partners of 25+ old, 34.7%. For students with recent history of unprotected sex, a higher number (66.9%) contracted STIs compared to 44.4% of those that did not have sex in the last 12 months. However, among those that had unprotected sex in the last 12 months, 65.3% of them got infected with STIs as against a proportion of 45.7% cases among students that did not have unprotected sex in the same period. For students that always condom during sexual intercourse, either with non-regular partners all the time during sex or during the last 12 months, all recorded lower cases of STIs compared to non-users of condom. Results from the chi-square indicate a statistically significant association between STIs and most of the variables for risky sexual behaviour among students (Table 4.8).



Table 4.8: Bivariate association between sexual behaviour and STIs

Variable	STIs		P-value
	Yes (%)	No (%)	
Ever had sexual intercourse			<0.001
Yes	143(59.1)	99(40.9)	
No	57(31.2)	126(68.8)	
Ever had unprotected sex			<0.001
Yes	123(62.1)	75(37.9)	
No	77(33.9)	150(66.1)	
Age at first sex			0.397
15-19	74(62.2)	45(37.8)	
20-24	57(53.3)	50(46.7)	
25+	3(60.0)	2(40.0)	
Age of first sex partner			0.989
15-19	61(57.6)	45(42.4)	
20-24	37(58.7)	26(41.3)	
25+	36(58.1)	26(41.9)	
Sexual intercourse while drunk in last 12 months			0.001
Ever	24(82.8)	5(17.2)	
Never	176(44.4)	220(55.6)	
Unprotected sex in last 12 months			0.001
Ever	77(66.9)	38(33.1)	
Never	123(39.7)	187(60.3)	
Casual(sexual)relationship with non-regular partners			0.004
Yes	32(65.3)	17(34.7)	
No	165(45.7)	196(54.3)	
Condom use with non-regular partner			0.001
Yes	17(53.1)	15(46.9)	
No	38(73.1)	14(26.9)	
Consistency of condom use	10(33.3)		0.001
Always	98(64.9)	20(66.7)	
Sometimes	33(56.9)	53(35.1)	
Never		25(43.1)	
Use of condom during last sexual intercourse			0.001
Yes	42(50.6)	41(49.4)	
No	104(61.9)	64(38.1)	

4.7 Simple and multiple logistic regressions

Results from the simple logistic regression show that the unadjusted odds of STIs among students that ever had sexual intercourse was 3.19 times compared to those that never had sex (95% CI= 2.13-4.78). Similar results were recorded for respondents who had unprotected sex which showed higher odds of STIs compared to those who did not have

unprotected sex (unadj. OR=3.19, 95% CI 2.15- 4.75). There were a higher odds of STIs among students that had sex at age 15-19 and 20-24 compared to those that had first sex at age 25+ (unadj. OR=3.10, 95% CI 1.93-4.97 and unadj. OR=2.15, 1.33-3.47 respectively). There were 5.99 times the odds of STIs among students that had sex while drunk in the last 12 months compared to those who never did (95% CI 2.24-16.05). Students that had sex with non-regular partners were more susceptible to STIs than those who did not (Unadj. OR=2.24, 95% CI 1.19-4.17). Students who used condoms with non-regular partners were at lower odds of being infected with STIs compared to otherwise (unadj. OR=0.42 CI 0.17-1.05). Comparing respondents who always used condoms during sexual intercourse, non-users of condom were found to be more susceptible to STIs as shown in Table 4.9.

The multiple logistic regression model showed high risks of STIs among respondents who did not use condoms with non-regular partners compared to those who always used condoms (adj OR 3.49, 95% CI 1.11-10.99). There was also a higher odds of STIs among students who had sex while drunk (adj OR 3.59, 95% CI 1.21- 10.64) (Table 4.9).

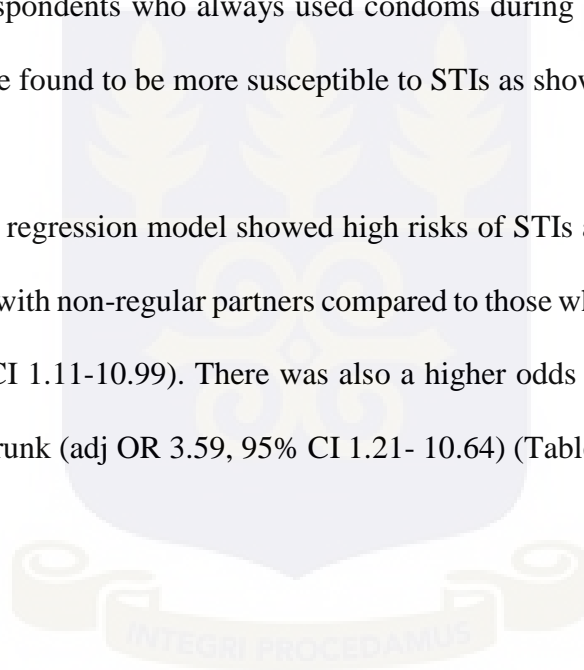


Table 4.9: Multivariate logistic regression on risky sexual behaviour and STIs

Variable	Crude OR (95% CI)	Adj. OR(95% CI)
Ever had sexual intercourse		
Yes	3.19(2.13, 4.78)***	4.65(0.77, 27.86)
No	Reference	Reference
Ever had unprotected sex		
Yes	3.19(2.15, 4.75)***	0.96(0.38, 2.38)
No	Reference	
Age at first sex		
15-19	3.10(1.93, 4.97)***	0.51(0.15, 1.78)
20-24	2.15(1.33, 3.47)***	0.31(0.09, 1.02)
25+	Reference	
Age of first sex partner		
15-19	2.05(1.29, 3.24)**	0.63(0.28, 1.37)
20-24	2.15(1.23, 3.76)**	1.07(0.50, 2.26)
25+	Reference	
Sexual intercourse while drunk in last 12 months		
Ever	5.99(2.24,16.05)***	3.59(1.21, 10.64)*
Never	Reference	
Unprotected sex in last 12 months		
Ever	3.08(1.96, 4.83)***	1.41(0.78, 2.58)
Never	Reference	
Casual(sexual)relationship with non-regular partners		
Yes	2.24(1.19, 4.17)**	0.87(0.29, 2.56)
No	Reference	
Condom use with non-regular partner		
Yes	0.42(0.17, 1.05)	0.37(0.21, 1.09)*
No	Reference	
Consistency of condom use		
Always	Reference	
Sometimes	3.69(1.61, 8.48)**	3.49(1.11, 10.99)*
Never	2.64(1.05, 6.62)*	2.57(0.70, 9.43)
Use of condom during last sexual intercourse		
Yes	0.63(0.37, 1.07)	1.01(0.49, 2.02)
No	Reference	

Note * =p-value<0.05, **=p-value<0.01, ***= p-value<0.001

4.8 Other statistical tests

Other statistical tests were run for the (composite) outcome variable (STIs) against other independent variables to test if there is any significant association. STIs were run against the socio demographic characteristics, knowledge level, and risk perception. Of all the variables tested, knowledge level and risk perception did not show any statistical significant association. However, on the demographic characteristics, two indicators; gender ($p < 0.045$) and age categorizations ($p < 0.001$) showed a significant association.

The chi-square test was also run to know if there is any significant association between the socio demographic variables and STI status among the students. Relationship status, family and year of study did not show any significant association. However, other variables, gender and age groups of the students showed a significant association with a p-value of (0.045) and (0.001) respectively. The other results are depicted in Table 4.10.

Results from the statistical test on risk perception and STIs revealed that out of all the indicators used for risk perception, none of them showed any statistical association. This is demonstrated in Table 4.11.

The graphical representation depicts the relationship between knowledge level of students and STIs. Out of the students who had poor knowledge on STIs, 48% reported having STIs; among those with basic knowledge, 42% reported STIs in them while among those with good knowledge, 50% STIs signs were reported (Figure 3).

The two significant demographic variables were further put into the logistic regression model to test for the unadjusted and adjusted odds ratio with a (95% CI). The results revealed

higher odds of STIs among female respondents than males (unadj. OR=1.48, 95% CI 1.01-2.19). Also, older respondents recorded higher odds of STIs compared to younger age groups as shown in Table 4.12. The odds of STIs among females and among older students (25+) remained higher when age was adjusted for gender and vice versa (Table 4.12).

Table 4.10: Relationship between socio- demographic variables and STIs

Variable	STIs		Total (%)	P-value
	Yes (%)	No (%)		
Gender				0.045
Male	75 (37.5)	106(47.1)	181(42.6)	
Female	125(62.5)	119(52.9)	244(57.4)	
Relationship status				0.560
Single	197(98.5)	223(99.1)	420(98.8)	
Co-habiting	3(1.5)	2(0.9)	5(1.2)	
Age groups				0.001
15-19	24(12)	34(15.1)	58(13.6)	
20-24	134(67)	173(73.9)	307(72.2)	
25+	42(21)	18(8)	60(14.1)	
Family				0.103
Single parent	38(19)	27(12)	65(15.3)	
Nuclear family	131(65.5)	166(73.8)	297(69.9)	
Extended family	31(15.5)	32(14.2)	63(14.8)	
Year of study				0.109
First year	92(46)	121(53.8)	213(50.1)	
Second year	108(54)	104(46.2)	212(49.9)	

Table 4.11: Relationship between risk perception and STIs

	STIs		Total (%)	p-value
	Yes (%)	No (%)		
Perception of STIs prevalence in society				0.091
Low	39(19.5)	27(12)	66(15.5)	
Unsure	16(8)	23(10.2)	39(9.2)	
High	145(72.5)	175(77.8)	320(75.3)	
People like me are rationally safe from STIs even with unprotected sex				0.114
Agree	49(24.5)	41(18.2)	90(21.2)	
Disagree	151(75.5)	184(81.8)	335(78.8)	
Sex without condom is not too risky for STI infections				0.643
Agree	52(26)	63(28)	115(27.1)	
Disagree	148(74)	162(72)	310(72.9)	
Perceived reason for abstinence (most)				0.517
Religious	53(26.5)	56(24.9)	109(25.6)	
Parental reasons or care	21(10.5)	16(7.1)	37(8.7)	
Fear of HIV/AIDS, STIs & Pregnancy	46(23)	47(20.9)	93(21.9)	
Want to protect future & education	52(26)	73(32.4)	125(29.4)	
Wait till marriage	28(14)	33(14.7)	61(14.3)	
Abstinence leads to sexual problems in marriage				0.053
Agree	58(29)	47(20.9)	105(24.7)	
Disagree	142(71)	178(79.1)	320(75.29)	
STIs are not dangerous and are curable				0.053
Agree	148(74)	184(81.8)	332(78.1)	
Disagree	52(26)	41(18.2)	93(21.9)	

Figure 3: Relationship between knowledge level and STIs among students



Table 4.12: Logistic regression on variables that were significant variables and STIs

Variable	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Gender		
Male	1.00	1.00
Female	1.48(1.01, 2.19)*	1.49(>1.00, 2.22)*
Age		
15-19	1.00	1.00
20-24	1.09(0.62, 1.94)	1.19(0.67, 2.12)
25+	3.31(1.55, 7.07)**	3.51(1.63, 7.56)

Note: * =p-value<0.05, **=p-value<0.01, ***= p-value<0.001

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This study investigated the relationship between risky sexual behaviour and sexually transmitted infections among students in the MoH training institutions. Specifically, the study estimated the proportion of students who engage in risky sexual behaviour and determined the level of knowledge on STIs among the students. The study further determined the STI risk perception among students and the concluding objective determined the association between risky sexual behaviour and sexually transmitted infections among students.

5.2 Discussion of findings

The study participants consisted 181 (42.59%) males and 244 (57.41%) females. With regards to age distribution, 58(13.7%) comprised adolescents 15-19 years, 307(72.2%) young adults between ages 20-24 and 60(14.1%) of the students beyond age 25. The age structure and distribution is similar to a cross-sectional study conducted in south-eastern Ethiopia on “*risks of STIs/HIV infections among Madawalabu University students*” which had similar age distribution (Mengistu, Melku, Bedada, & Eticha, 2013). In all, 45% of males and 60% of females in our sample were sexually active or ever had sex.

5.3 Risky sexual behaviours

Risky sexual behaviour is adopted by the youth during their sexual life without adequate knowledge on how to protect themselves from the adversative consequences (Ningpuanyeh, Sathiya & Susuman, 2016). First of the specific objectives is to determine the proportion of students who engage in risky sexual behaviour. In this context, the study adopted four key

indicators as a measure for risky sexual behaviours; early sexual initiation, multiple sexual partners, sex without condoms and sex under the influence of alcohol/drugs.

5.3.1 Early sexual initiation

This study affirmed that out of the total sample, 242 (56.9%) were sexually active with 60% of females being the majority. This findings confirm similar findings reported in other Ghanaian studies by (Boamah-kaali et al., 2016; Awusabo-asare, Abane, & Kumi-Kyereme, 2004). However, the findings differ from a similar cross-sectional study among university students in Ethiopia by 2012 which found out that only (28%; 95% CI 25.5-30.5) students reported to have had sexual intercourse (Dingeta, Ojira, & Assefa, 2012). The contradiction may be attributed to the difference in sample size.

This study, out of the total participants, showed that average age of first sexual intercourse to be 19.10 ± 2.89 for both sexes and average age for their first sexual partners being 21.12 ± 4.9 . This corresponds to a recent study conducted in Nigeria that revealed that students have sex at an early age of 19 and below (Okonta, Ubaka, & Araukwe, 2013).

Age of sexual debut in this study revealed the average age among females to be higher than males. This results is consistent to similar findings in a study on '*the correlates of sexual debut and its associated STI/HIV risk factors among sexually active Malawian youths*' which affirmed that young females aged 15 to 19 were more likely to report early sexual debut (Ningpuanyeh & Sathiya Susuman, 2016). However, this contradicts with findings from studies elsewhere that showed the average age to be higher among males compared to females (Madise, Zulu, & Ciera, 2017; Eysenck, Araújo, Teva & Bermúdez, 2014; Kalina, 2012). This observation that more females are having sex prior to the legal age of 18 raises

a lot of concern due to their inability to make informed decisions concerning their sexual health which could have serious repercussions on their sexual health (Tobergte & Curtis, 2013).

5.3.2 Multiple sexual partners

Multiple sexual partnerships are viewed as an indicative factor for risky sexual behaviour because they have the propensity to increase the likelihood of STIs through sexual interactions. The findings in this study revealed 49(11.95%) response of student's engagement in multiple sexual partnerships. This revelation is slightly lower compared to a cross-sectional study conducted on students in north-west Ethiopia that found out that over 40% of the participants reported multiple sexual partners (Shiferaw et al., 2011). This study further revealed an interesting variations with regards to gender on multiple sexual partnerships; higher number of males 67.4% compared to females. It is imperative to know the extent to which the youth are engaging in multiple sexual relations as they are mostly vulnerable to behaviours which are deemed risky and thereby increasing their likelihood of contracting an STI (Eaton et al., 2010).

5.3.3 Non-condom use during sex

In totality, the proportion of students who reported non-condom use during sexual intercourse was low for both males and females (27.1%) and out of this, majority of (52.2%) were males. This is similar to a study conducted among youth heads of households on sexual risk behaviours in Rwanda (Ntaganira et al., 2012). It is however lower compared to a survey on factors influencing sexual risk behaviours among secondary school students and other studies by (Dekeke, 2014; Derese, Seme, & Misganaw, 2014). This study further found that out of the total number of people who reported having sex with non-regular partners, 38.1%

reported using condoms with significant variations existing between gender; 65% males and 34.4% females. The increasing rates of sexually transmitted infections including HIV among the youth are critical as they are correlated to a number of risky sexual behaviours such unprotected sexual intercourse.

5.3.4 Alcohol, drugs and sex.

A variety of factors have been attributed to the diagnosis of STIs. A dose response between multiple sexual partners and higher intake of alcohol and marijuana use have been always reported among the youth (Cavazos-Rehg et al., 2011; Edelman et al., 2015). From this study, 6.8% of the respondents reported having sex while drunk. This figure increased more than twice in the last three months prior to the survey with 14.4% of the respondents having sexual intercourse under the influence of alcohol. This differs from a study conducted on *“HIV sexual risk behaviours and perception of risk among college students”* (Adefuye et al., 2009). This study further revealed gender variation with males reporting a higher rate of 56.8% with regards to sex under alcohol in the past twelve months. Several studies have shown alcohol to be an indicator for risky sexual behaviours due to the fact that alcohol decreases inhibitions and thereby alter rational reasoning (Dereese et al., 2014; Spauwen, Niekamp, Hoebe, & Dukers-Muijers, 2015).

5.3.5 Other sexual behaviours

With regards to other sexual behaviours, coerced sex was cited as the main experience of first sex with a sizable proportion of the respondents reporting on. Coerced sex has been associated with wider range of sexual and reproductive health outcomes and its implications. Moreover, 6.8% although insignificant, reported having sex for cash or gift with 4.2% citing financial reason for that. There is therefore the need to include information regarding

coercive sex and transactional in sex education in order to avoid them. This revelation of transactional and coercive sex is evidenced in a similar Ghanaian studies by (Selina F. Esantsi, Asare, & Tapsoba, 2015; Approach, 2015; Biney & Dodoo, 2016).

For consistency and reasons for condom use, a sizable proportion of the respondents used condom sometimes 35.53% with 26.6% revealing that condoms diminish sexual sensation as the main reason for not using condoms. Other reasons for example unavailability of condoms were consistent to study conducted by (Fiaveh, 2015; Katikiro & Njau, 2012; Norbu, Mukhia, & Tshokey, 2013).

5.4 Level of knowledge on STIs among students

In relation to the second objective of this study, it was found among the student population who participated in the study that, there is strikingly insufficient knowledge on basic facts, signs and symptoms of STIs. This is consistent in a similar studies among university students by (Zübeyde, 2014; Gelibo, 2013; Eugenia et al., 2010). Some studies have shown that students level of gonorrhoea tend to be higher than chlamydia (Nsuami, Sanders, & Taylor, 2010). This study confirmed this trend with gonorrhoea recording relatively higher among other STIs. Males were more knowledgeable in gonorrhoea (85.1%) contradicting the gender difference in studies by (Nsuami et al., 2010; Nelas, Ferreira, Fernandes, Duarte, & Chaves, 2014; Opong Asante K, 2013). It is alarming that out of the 27 areas of STIs symptoms and modes of transmission examined on students, they [students] scored above 50% in just 5 thematic disease areas; HIV transmission, cure for chlamydia, cause of STDs and transmission of gonorrhoea.

5.5 Risk perception of students on STIs

Risk perception is defined as one of the key individual predictors for engaging in sexual risk behaviours. Several reasons account for risk perception with regards to STIs even with adequate knowledge (Chanakira, O’Cathain, Goyder, & Freeman, 2014). In as much as students gave reasons for abstinence, it was however recorded that majority of the respondents, 78.1% perceive STIs not be dangerous and curable with both sexes significantly showing different opinions on the matter, 85.1% males and 72.9% females.

5.6 Association between risky sexual behaviour and STIs

With the main objective of this study to investigate the relationship between risky sexual behaviour and STIs, the independent variables; demographic or background characteristics and sexual behaviours were all analyzed using the chi-square as against sexually transmitted infections which is the dependent variable. Results from the chi-square indicate a statistically significant association between STIs and most of the variables of risky sexual behaviour among students at the bivariate level; early sexual debut, non-condom use during sex, multiple sexual partners and having sex under the influence of alcohol. Results from the other confounding variables were also controlled for and further calculated for their adjusted odds ratios.

The study findings revealed that age of the respondents, age at sexual debut and their partners, sex without condoms, sex under the influence of alcohol/drugs and multiple sexual partners (sexual relations with non-regular partners) were all statistically significant with a $p\text{-value} < 0.05$. This findings is consistent with a similar Ugandan study by (Rutaremw, Agaba, Nansubuga, & Nankinga, 2015), on “*association between risky sexual behaviour and STIs/HIV among young persons aged 15-24*”; with the exception of sex under the

influence of alcohol and non-condom use during last sex, all other variables for risky sexual behaviours and demographics showed a statistically significant association.

From the simple logistic regression model and after the unadjusted odds ratio, STIs among students that ever had sexual intercourse was 3.19 times compared to those that never had sex (95% CI= 2.13-4.78). Moreover, there were 5.99 times the odds of STIs among students that had sex while drunk in the last 12 months compared to those who never did (95% CI 2.24-16.05). Therefore, there is the need to intensify sex education in the schools so as to promote abstinence and moreover, practice safer sex.

From the multiple logistic regression model and after adjusting for the odds ratios, results showed the odds of 3.59 times higher STIs among those who had sex while drunk and a odds of 3.49 times higher STIs among respondents who irregularly used condoms with non-regular partners compared to those whose used them. The intake of alcohol should be discouraged among the students, equally, regularity of condom use during sex should be encouraged among those who cannot abstain.

5.7 Other statistical tests

5.7.1 Association between STI risk perception and STIs

Reporting or having STIs signs and symptoms emphasize young people's STIs and HIV/AIDS risk perception. However, this study found no association between STIs reporting and the indicators used for perceived risk of getting STIs. This revelation is not in agreement with a similar study conducted among sexually experienced adolescents in Lao PDR on "*risk perception of STIs/HIV and sexual risk behaviours*" that found a positive association (Sychareun et al., 2013; DiClemente et al., 2008).

In this study, knowledge level among the students did not show any significant association of having an STI. Results from the graphical presentation indicates that students with poor knowledge on STIs reported a higher STIs but the figure reduced among those with basic knowledge. However, the most surprising aspect is that those considered to be of good knowledge with regards to STIs reported higher STIs. Although students are knowledgeable in STIs, yet they do not practice measures that could reduce STIs among them. This is contrary to a study conducted on the “*psychological and socio-demographic variables associated with sexual risk behavior for sexually transmitted infections/HIV*” which showed that having good knowledge on STIs contributes to the reduction of sexual risk behaviors and STIs (Eysenck et al., 2014; Bermúdez et al., 2012; Fernández, 2012; Ramiro, Teva, Bermúdez, & Buena-Casal, 2013).

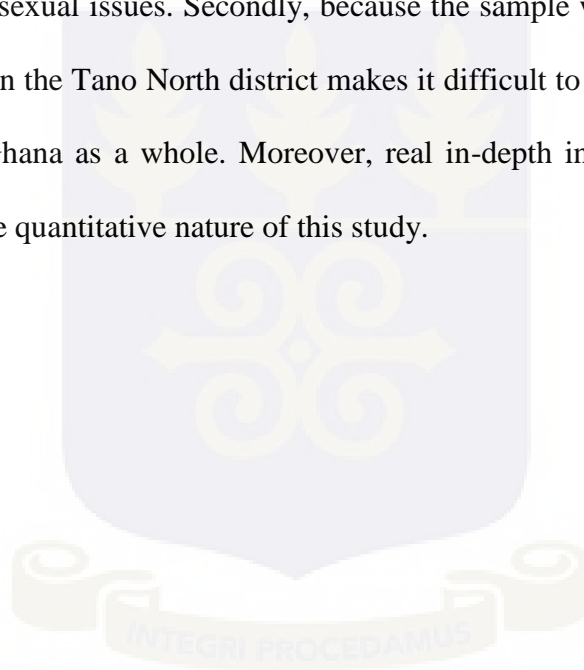
Of the socio-demographic variables that were tested, gender (p-value 0.045) and age groupings (p-value 0.001) were the only ones that showed statistically significant association between STIs. This is consistent with a studies conducted in Brazil on “*sexual behaviour and sexually transmitted infections*” which found a statistically significant association between age and sexually transmitted diseases (Mondal, Hossain, Islam, & Mian, 2008).

The significant variables for socio-demographics were further entered into the logistic regression model. Results from this study revealed higher odds of STIs among female respondents than males (unadj. OR=1.48, 95% CI 1.01-2.19). This is inconsistent with a study somewhere in the diaspora that revealed higher odds of STI among males than females (Kang et al., 2014). The difference is that the study made reference to only one particular STI (gonorrhoea). Also, results from this study revealed that older respondents have a higher

odds of STIs compared to younger age groups which contradicts a similar study that found higher risks and odds of having an STI in younger age groups compared to the older group (Oguaka et al., 2016; Robyn et. al 2014)).

5.8 Study limitations

There were a number of limitations and challenges with regards to this study. Amongst them, the most important were the sensitive nature of questions asked. Questions on one's sexuality could raise a lot of discomfort that might have caused respondents not to provide honest responses on sexual issues. Secondly, because the sample was taken from students in MoH institutions in the Tano North district makes it difficult to generalize the results to all students in the Ghana as a whole. Moreover, real in-depth information could not be ascertained due to the quantitative nature of this study.



CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study sought to investigate risky sexual behaviour and sexually transmitted infections among students in MoH institutions in the Tano North district.

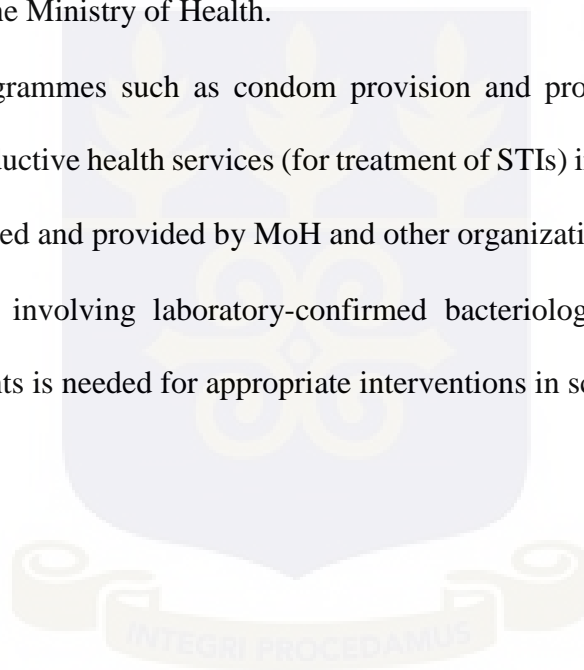
Based on the findings of the study, the following conclusions are made:

- It was generally found that students engage in risky sexual behaviours and these behaviours increase their potential of acquiring sexually transmitted infections.
- Concerning the proportion of students who engage in risky sexual behaviours, findings showed that a sizeable proportion students engage in risky sexual behaviours and have a higher odds of contracting an STI compared to students who don't and have never had sex.
- Further findings revealed that students lack basic knowledge with reference to the signs, symptoms and transmissions of STIs. Despite the alarming rate of STIs in the society, students' knowledge level was apparently low which raises a serious issue and brings about a wide gap that needs critical attention.
- The study moreover, indicated that students perceive STIs to be curable and therefore not dangerous which can have serious health implications. Risk perception is one of the main indicators for engaging in risky behaviours especially among the younger generation.
- Finally, findings of the study showed that engaging in risky sexual behaviours; sex without condoms, sex under the influence of alcohol, multiple sexual partnerships and early sexual initiation increases one odds of contracting a sexually transmitted infection. Moreover, the study revealed that risky sexual behavior is significantly associated with STIs.

6.2 Recommendations

Based on the results and evidence from this study, the findings highlight the need to;

- Intensify programmes by stakeholders such as the Ministries of Health and Education as well as Non-Governmental Organizations that could educate and create awareness on the knowledge and risk of sexually transmitted infections among students and the entire younger population in the entire district.
- Strengthen policies that could reduce the high percentage of risky sexual behaviour among students in the various institutions by institutional heads and policy makers such as the Ministry of Health.
- Intervention programmes such as condom provision and promotion, abstinence and sexual and reproductive health services (for treatment of STIs) in the various institutions should be enhanced and provided by MoH and other organizations such as the N.G.Os.
- Further research involving laboratory-confirmed bacteriological diagnosis of STIs among the students is needed for appropriate interventions in schools.



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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

RESEARCH TITLE: RISKY SEXUAL BEHAVIOUR AND SEXUALLY TRANSMITTED INFECTIONS AMONG STUDENTS IN MINISTRY OF HEALTH TRAINING INSTITUTIONS IN TANO NORTH DISTRICT OF BRONG AHAFO REGION.

Principal Investigator:

BERNARD OPOKU AMOAH, Y.H.C, BOX 23, YAMFO, TANO NORTH-B/A.

Contact: Mobile- 0244695520/0207192317; [email-bopokuamoah@gmail.com](mailto:bopokuamoah@gmail.com)

General Information about the study:

This is a research study being undertaken by Bernard Opoku Amoah, a graduate student of the School of Public Health, University of Ghana, in order to gain more insight into risky sexual behaviour and sexually transmitted infections. A range of factors have been attributed to enhance the transmission of STIs with risky sexual behavior being the most influential factor.

The main objective of this study is to examine risky sexual behavior and sexually transmitted infections among students. It further seeks to determine the proportion of students who engage in risky sexual behaviour, students' knowledge on sexually transmitted infections, how students perceive STI risk and to also determine if there is an association between risky sexual behavior and sexually transmitted infections.

Findings will enable us gain more insight into sexual behaviours that could predispose students into acquiring sexually transmitted infections. It will further address the gap in literature with regards to risky sexual behaviour and sexually transmitted infections.

Procedures:

Students studying for healthcare qualification in the two MoH Training Institutions in the Tano North District will be randomly selected for the study.

Structured questionnaire will be administered to students to answer based on your eligibility and willingness to participate in the study. Questions will be asked on your background, sexuality and risky sexual behaviours, knowledge on sexually transmitted infections, risk perceptions of sexually transmitted infections and syndromic questions on your sexually transmitted infections status. The questionnaire will take about 30 minutes to complete.

Risk and Discomfort:

This study doesn't subject participants to syndromic tests or any other medical procedure. It is therefore not anticipated that there will be any physical distress for the participants. However, some of the questions involved in the study may pose discomfort, especially questions on sexuality (number of sexual partners, age at first sexual intercourse, reasons for not using condoms during sex etc.) To minimize such risks, during informed consent participants will be told they have the option not to answer a particular question if they do not wish to. Subjects are also reminded that responses will be confidential and not linked to their names.

Possible benefits:

There are no direct benefits to the study participants. However, the knowledge gained from this study will form an important foundation for policy makers and implementers in using effective policies for behavior modification promotion among the students in the various institutions. Moreover, information you will provide will contribute to the overall knowledge on risky sexual behaviour and sexually transmitted infections among students.

Voluntary Participation and Right to Refuse:

Your participation in this study is voluntary. You can choose not to answer any individual question or all the questions during the interview. You are also at liberty at any point in time to withdraw or opt out of the study. However, I will encourage you to participate in the study since your opinions are important in helping us to investigate risky sexual behavior and sexually transmitted infections.

Anonymity and confidentiality:

You are assured that whatever information that you provide on the questionnaire will be handled with absolute confidentiality. Anonymity is further assured since data analysis will be done at the aggregate level. Your name as well as other personal identification information will not be published in any report. Although some staff of the research team may sometimes review the research records, no other unauthorized individual(s) will have access to your information

Compensation:

There is no compensation for participating in this study.

Contact for Additional Information;

If you have any questions later, you can contact:

Bernard Opoku Amoah: Tel: 0244695520, e-mail: bopokuamoah@gmail.com

Your right as a participant:

If you have any questions about your right as a research participant, you can contact the Administrator of the Ghana Health Service Ethical Review Committee at the following address:

Hannah Frimpong

GHS-ERC Administrator

Office: +233 302 681109

Mobile: **233 (0) 243235225 or 0507041223**

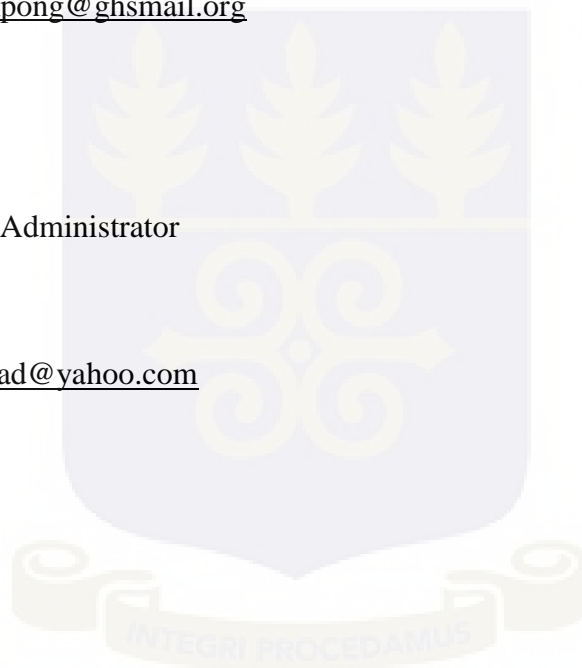
Email: Hannah.Frimpong@ghsmail.org

Nana Abena Kwaa

Assistant GHS-ERC Administrator

Mobile: 0244712919

Email: nanatuesdaykad@yahoo.com



VOLUNTARY CONSENT

I declare that the above document describing the purpose, procedures as well as risks and benefits of the research titled (Risky Sexual Behaviour and Sexually Transmitted Infections among students in Ministry of Health training institutions in Tano North District of Brong Ahafo Region) has been thoroughly explained to me in English language. I have been given the opportunity to ask any questions about the research answered to my satisfaction. I hereby voluntarily agree to participate as a subject in this study.

.....
Signature of Participant _____ Date

Interviewer's statement:

I Bernard Opoku Amoah, certify that the nature and purpose, the potential benefits and possible risks associated with participating in the study have been explained to the above individual in the English language. The participant has freely agreed to participate in the study.

.....
Signature of person who obtained consent _____ Date

APPENDIX II: QUESTIONNAIRE ON RISKY SEXUAL BEHAVIOUR AND SEXUALLY TRANSMITTED INFECTIONS AMONG STUDENTS IN MINISTRY OF HEALTH TRAINING INSTITUTIONS IN TANO NORTH DISTRICT.

<p>SECTION A: DEMOGRAPHIC AND BACKGROUND INFORMATION</p> <p>Please circle the number corresponding to the appropriate answer for each question and write in the boxes provided.</p>		
A1	Age (at last birthday)	<input type="text"/>
A2	Sex	1 Male 2 Female
A3	Religion	1 Christianity 2 Islam 3 African Traditional 4 Others.....(please specify)
A4	Relationship status	1 Married 2 Single 3 Divorced 4 Separated 5 Co - habiting
A5	Family structure	1 Single Parent Family

		2 Nuclear Family
		3 Large Family
A6	Year of study	1 100 2 200
B: Sexual Behaviours; please write or circle the appropriate answer that correspond to your choice of answer.		
B1	Have you ever had sexual intercourse in your lifetime?	1 Yes 2 No
B2	Sexual Partners in a lifetime	<input type="text"/> N/A
B3	Unprotected sexual intercourse in a lifetime	1 Yes 2 No 3 N/A
B4	Age of the first sexual partner	<input type="text"/> N/A
B5	Age of first sexual intercourse	<input type="text"/> N/A
B6	Have you ever had sex with someone other than a steady boyfriend /girlfriend?	1 Yes 2 No 3 N/A
B7	In the last 12 months, have you had sexual Intercourse?	1 No 2 Occasional

		3 Often 4 Usually 5 N/A
B8	In the last 12 months, have you had sexual Intercourse while drunk?	1 Ever Had 2 Never Had
B9	In the last 12 months, have you had unprotected sexual intercourse?	1 Ever Had 2 Never Had
B10	Have you ever had sex with someone you didn't know very well or just met?	1 Yes 2 No 3 N/A
B11	Have you used any of these substances in the last three months during sexual intercourse?	1 Injection drug use 2 Oral/Renal drug use 3 Cigarette Smoking 4 Alcohol Drinking 5 N/A
B12	Have you ever had sex for cash or gift?	1 Yes 2 No 3 N/A
B13	If Yes,	1 Financial 2 Favor 3 Other, (please specify)..... 4 N/A
B14	Do you have a (casual) sexual relationship with non-regular partners?	1 Yes 2 No

		3	N/A
B15	Did you use condom with non – regular partners	1	Yes
		2	No
		3	N/A
B16	How often do you use condom anytime you have sex?	1	Always
		2	Sometimes
		3	Never
		4	N/A
B17	Reasons for not using condoms	1	Condom not available
		2	Diminish sexual sensation
		3	Cannot negotiate with partner
		4	Problem of disposing
		5	Not aware of condom
		6	N/A
B18	How would you describe the first time you had sex?	1	Own will
		2	Coerced or forced
		3	N/A
B19	Did you use a condom the last time you had sexual intercourse?	1	Yes
		2	No
		3	N/A
Knowledge of Sexually Transmitted Infections			
SECTION C: Please read each of the statements and then circle the number that corresponds to your answer.			
			True False Don't Know

C1	Genital herpes is caused by the same virus as HIV	1. T 2. F 3. DK
C2	Frequent urinary infections can cause chlamydia	1. T 2. F 3. DK
C3	There is a cure for gonorrhea	1. T 2. F 3. DK
C4	It is easier to get HIV if a person has another STIs/STDs	1. T 2. F 3. DK
C5	Human papillomavirus (HPV) is caused by the same virus that causes HIV	1. T 2. F 3. DK
C6	Having anal sex increases a person's risk of getting Hepatitis B	1. T 2. F 3. DK
C7	Soon after infection with HIV a person develops open sores on his or her genitals (penis or vagina)	1. T 2. F 3. DK
C8	There is a cure of chlamydia	1. T 2. F 3. DK
C9	A woman can look at her body and tell if she has gonorrhea	1. T 2. F 3. DK
C10	A man can look at his body and tell if he has gonorrhea	1. T 2. F 3. DK
C11	The same virus causes all of the Sexually transmitted infections and STDs	1. T 2. F 3. DK
C12	Human papillomavirus (HPV) can cause genital warts.	1. T 2. F 3. DK

C13	Using a natural skin (lambskin) condom can protect a person from getting HIV	1. T 2. F 3. DK
C14	Human papillomavirus (HPV) can lead to cancer in women	1. T 2. F 3. DK
C15	A man must have vaginal sex to get genital warts	1. T 2. F 3. DK
C16	Sexually transmitted diseases can lead to health problem that are usually more serious for men than women	1. T 2. F 3. DK
C17	A woman can tell that she has Chlamydia if she has a bad smelling odor from her vaginal	1. T 2. F 3. DK
C18	If a person tests positive for HIV the test can tell how sick the person will become	1. T 2. F 3. DK
C19	There is a vaccine available to prevent a person from getting gonorrhea	1. T 2. F 3. DK
C20	A woman can tell by the way her body feels if she has a sexually transmitted infection or disease	1. T 2. F 3. DK
C21	A person who has genital herpes must have open sores to give the infection to his or her sexual partner	1. T 2. F 3. DK
C22	There is a vaccine that prevents a person from getting chlamydia	1. T 2. F 3. DK

C23	A man can tell by the way his body feels if he has Hepatitis B	1. T 2. F 3. DK
C24	If a person had gonorrhoea in the past, he or she is immune (protected) from getting it again	1. T 2. F 3. DK
C25	Human papillomavirus (HPV) can cause HIV	1. T 2. F 3. DK
C26	A can protect himself from getting genital warts by washing his genitals after sex	1. T 2. F 3. DK
C27	There is a vaccine that can protect a person from getting Hepatitis B	1. T 2. F 3. DK
	Risk perception of STIs; please read each of the statements and then circle the number that corresponds to your answer.	
D1	How do you perceive the prevalence STIs in the society?	1 Very low 2 Low 3 High 4 Very high 5 Don't know
D2	Which people do you think stand any chance of getting STIs and HIV/AIDS?	1 Children 2 Youth 3 Elderly
D3	People like me are rationally safe from STIs even if I have sex without a condom.	1 Agree 2 Disagree
D4	Compared to my age, I think I am at less risk of getting infected with an STI from unprotected sex	1 Agree 2 Disagree

D5	If I had unsafe sex, I would be worried afterwards that I might be infected with an STI or HIV	1 Agree 2 Disagree
D6	Even if you have sex without a condom, your chances of getting an STI or HIV are not that high	1 Agree 2 Disagree
D7	Which of the following perceived reasons or factors promote your adoption of abstinence?	1 Religious reasons 2 Parental reasons or care 3 Fear of HIV/AIDS, STI's, pregnancy & other diseases 4 Want to protect my future, want to finish my education 5 I want to wait till marriage
D8	A person who maintains virginity until marriage will encounter problems in marriage during sexual intercourse.	1 Agree 2 Disagree
D9	Sexually transmitted diseases are not dangerous because they can be cured	1 Agree 2 Disagree
<p>Section E: syndromic questionnaire (please circle the appropriate number that corresponds to your choice of answer if you have had any of these in the past 12 months).</p>		N/A=Not Applicable
E1	Male urethral discharge	Yes No N/A
E2	Vaginal discharge	Yes No

		N/A
E3	Scrotal swelling	Yes No N/A
E4	Lower abdominal pain	Yes No N/A
E5	Genital ulcers	Yes No
E6	Genital warts	Yes No
E7	Genital rashes	Yes No
E8	Genital sores/blisters	Yes No
E9	Problems with urination	Yes No
E10	Itching around genital area	Yes No
E11	Others.....	Please specify.....