

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



**FACTORS ASSOCIATED WITH SEXUALLY TRANSMITTED INFECTIONS IN
YOUNG WOMEN IN OLD NINGO SUBDISTRICT OF THE GREATER ACCRA
REGION, GHANA.**

BY

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**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA,
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AWARD OF MASTER OF PUBLIC HEALTH DEGREE**

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DECLARATION

I BENEDICTA KUMASSAH do hereby declare that, except for references made to other people's works which have been duly acknowledged, this work was done by me under supervision. I also declare that this work has not been submitted for the award of any degree in this university or elsewhere.

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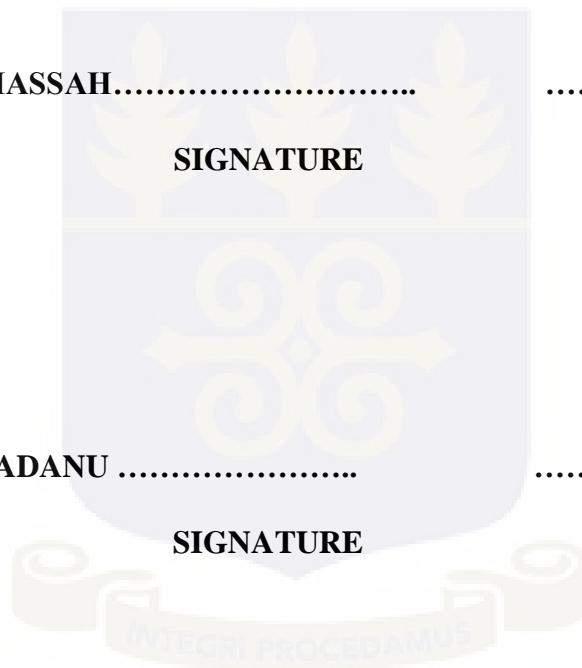
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(SUPERVISOR)

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DATE



DEDICATION

I dedicate this study to my household for their support throughout my schooling. An exceptional thanks go to my partner Justice Kumassah who always encourages me to go higher in my education. My loving mum and my brother Ishmael Garshong for their prayer and support.

This thesis is also dedicated to my church members for their prayers and kindness during my schooling period.



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In conclusion, I want to express my appreciation to my relative for showing me great support and encouraging me during my time of study and throughout my research. This achievement could not have been possible without my family.

LIST OF ACRONYMS

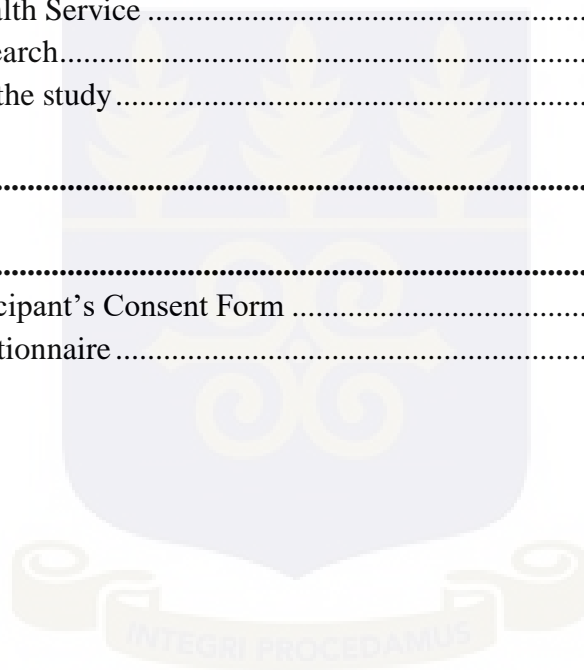
AIDS-	Acquired Immune Deficiency Syndrome
BV-	Bacterial Vaginosis
CI-	Confidence Interval
CT-	Chlamydia Trachomatis
GDHS-	Ghana Demographic Health Survey
HIV-	Human Immunodeficiency Virus
HPV-	Human Papilloma Virus
LAP-	Lower Abdominal Pain
LGV-	Lymphogranuloma Venereum
NG-	Neisseria Gonorrhoea
PID-	Pelvic Inflammatory Disease
RTI-	Reproductive Tract Infection
STI-	Sexually Transmitted Infections
STD-	Sexually Transmitted Diseases
TV-	Trichomonas Vaginalis
VD-	Vaginal Disease
WHO-	World Health Organization

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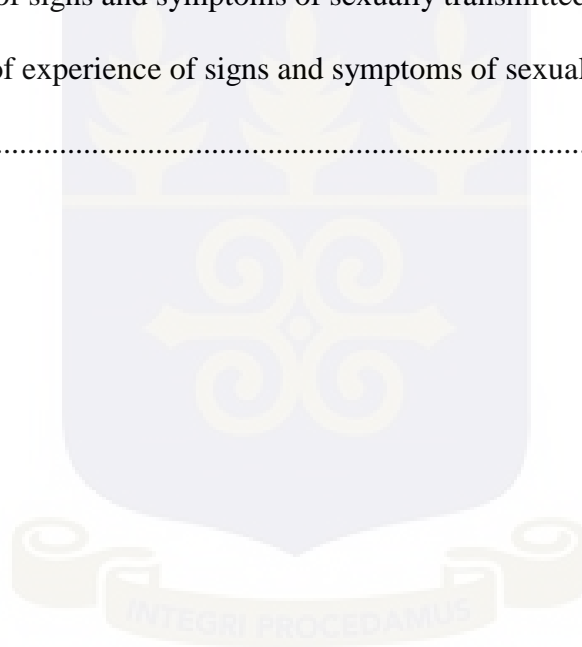
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DEFINITION OF TERMS

Sexually Transmitted Infections- These are infections that are acquired through sexual contact

Knowledge of STIs- This is what respondents know about infections that are transmitted through sexual contact.

Young Women- In this study, young women refers to women aged between 15 to 24 years old.



ABSTRACT

Background: Internationally, STIs is found to be a key public health problem an estimation of 499 million new curable sexually transmitted infections (STIs) are detected each year with seventy five percent to eighty five percent in developing countries. STIs continue to present major economic, social, and health problems in the developing world, causing considerable mortality, morbidity and stigma.

Objective: The objective of this study was to determine the factors associated with STIs transmission among young women in the Old Ningo sub-district of the Greater Accra Region.

Methods: A cross-sectional study design using quantitative study tools was employed in the study. Two hundred and thirty two participants were recruited for the study. Structured questionnaires were administered to collect data for the study. The data collected was analyzed using STATA version 14.

Results: The study found widespread awareness of sexually transmitted diseases of 87.1% among the young women. However, there was low knowledge which is 63.4% of respondents on the signs and symptoms of STI among the young women. There was high prevalence of 77.6% of respondents with symptoms of STI and vaginal discharge was the commonest symptom which is 51.7% reported by most young women. Alcohol intake and smoking were found as individual behavioral level factors that are significant predictors of presence of symptoms of sexually transmitted diseases among young women with (OR = 4.46, 95% C.I. [1.43-13.93], P = 0.010) and (OR = 10.96, 95% C.I. 1.12-107.69) respectively.

Conclusion: There is the need for widespread education of young women on sexually transmitted diseases as well as the presenting symptoms.

Keywords: Factors, Young women, Sexually Transmitted Diseases.



CHAPTER ONE

INTRODUCTION

1.1. Background

The diagnosis and management of sexually transmitted infections (STIs) are of public health importance, mainly in areas with high infections. Thus, surveillance of the prevalence of sexually transmitted infections (STIs) is recognized increasingly as the main importance in public health (Choudhry et al., 2010).

Young women are women between the ages of 15 to 24 and engage in risky sexual behavior such as having unprotected sex that could lead to STI (Mlisana et al., 2012)

Sexually transmitted infections may be symptomatic or asymptomatic. Asymptomatic infections are said to happen in almost fifty percent of women who are infected with STI (Mlisana et al., 2012). STIs can be managed syndromically, on the basis of signs and symptoms or etiologically (Mlisana et al., 2012). Due to inadequate equipment and laboratory facilities, trained laboratory staff, transport facilities and testing costs in developing countries, syndromic approach of managing STI is recommended by World Health Organization (WHO, 2011). While syndromic treatment is easily done and cheap with immediate treatment available, laboratory diagnosis is costly and timewasting (Mlisana et al., 2012)

Management of STI using syndromic approach depend on uniform management plans to cover all possible pathogens responsible for a variety of infections. These syndromes are defined by a mixture of self-reported symptoms and signs identified on physical assessment. The commonest syndromes among women include lower abdominal pain (LAP), vaginal discharge and genital ulcer disease (GUD)(Swamiappan, Chandran, & Prabhakar, 2016).

STIs that are not treated lead to significant adverse effects, including ectopic pregnancy, pelvic inflammatory disease, and tubal factor infertility. Similarly, sexually transmitted infection and HIV are interdependent. Like behaviours such as regular intercourse without protection with several partners, predispose people at high risk of both infections, and there is clear indication that some viral STIs and bacterial infection increase the probability of the spread of HIV. A number of observational studies have also shown strong association between STI and ulcerative and non-ulcerative HIV infection. There is biological proof, that the presence of an STI increases shedding of HIV, besides that STI treatment decreases HIV shedding (Sangani, Rutherford, & Ge, 2009).

The control of STI has the potential to contribute significantly to HIV prevention and reduction in disease burden of developing countries.

1.2 Problem statement

Globally, sexually transmitted infections (STIs) are a major challenge in public health and each year an estimated 499 million new curable sexually transmitted infections (STIs) are diagnosed with seventy five to eighty five percent in developing countries (Yirenya-tawiah et al., 2014).

Sexually transmitted infections (STIs) continue to present major social, economic and health problems in the developing world, leading to considerable mortality, morbidity and stigma (Choudhry et al., 2010).

In sub-Saharan Africa, studies have shown that STIs contribute to the poor reproductive health status of females since all sexually transmitted infections can cause major complications if not treated. (Adanu et al., 2008).

Also, in developing countries, manifestations of sexually transmitted infections and reproductive tract infections (RTIs), like genital sores and vaginal discharge and ulcers, are very often not reported to healthcare institutions due to several barriers such as illiteracy, low status in society, rigid social norms and unawareness. In addition, there is the inherent challenge of STIs being asymptomatic. The factors mentioned earlier have caused poor availability of data on sexually transmitted infections in symptomatic and asymptomatic, in females in developing countries (Ray et al., 2009)

A study in Ghana showed that only 35% of the women that had sexually transmitted infection clinical manifestations went for treatment or advice and only 59% of them sought care from medical personnel. STIs were found to be predominant diseases of young sexually active women as respondents with STI symptoms were significantly younger and had first intercourse at an earlier age than those without STI symptoms. This gives an idea of the reason why the effect of STIs is a major health problem in the sub-region (Adanu et al., 2008).

Data available from the health facilities in the Ningo-Prampram district shows that in 2012 and 2013 the district recorded 2178 and 2659 cases of HIV cases respectively. Urinary tract infections have been among the top ten diseases in the league of incidence of diseases in the district (www.ghanadistricts.com). Sexually Transmitted Infections have been known to be high among young women and increase the likelihood of HIV transmission. Yet no study has assessed the prevalence of STIs in the Old Ningo Sub-district and the factors associated with STIs transmission in the area. Thus, this study aims to assess STIs in young women and the factors associated with STIs transmission in the Old Ningo Sub-district of the Greater Accra region.

1.3. Research Questions

1. What is the prevalence of STIs among young women in the Old Ningo Sub-district?
2. What is the knowledge level of young women in the Old Ningo Sub-district regarding STIs?
3. What are the factors associated with STIs transmission among young women in the Old Ningo Sub-district?

1.4. Objectives

1.4.1. General Objective

To assess the factors associated with STIs transmission among young women of the Old Ningo Sub-district.

1.4.2. Specific Objectives

1. To determine the prevalence of STIs among young women in the Old Ningo Sub-district.
2. To examine the awareness of young women in the Old Ningo Sub-district regarding STIs.
3. To determine the knowledge of young women in the Old Ningo Sub-district on STIs.
4. To identify the factors associated with STIs transmission among young women in the Old Ningo Sub-district.

1.5. Justification

The assessment of factors associated with STIs transmission and observing of STI prevalence is vital for the design and implementation of STIs control interventions. It is equally useful for the assessment of STI treatment programs, and can also offer an unforeseen measure of change in sexual behaviour (Johnson et al., 2005).

Thus, the accomplishment of likely community-level STI interventions such as campaigns targeted at encouraging safer sexual behaviour and better STI treatment- seeking behaviour, enhanced STI treatment services (as well as improved attitudes of care providers, better case management and contact treatment), incorporation of STI case findings in family planning and antenatal care services, STI screening programmes, and mass treatment of the inhabitants of communities for STIs depends on an adequate assessment and identification of the factors associated with STIs transmission (Sangani et al., 2009).

In this regard, this study brought into focus the factors associated with STIs transmission in the Old Ningo Sub-district and prevalence data on STIs provided data on the prevalence of STIs among young women in the area of study. This will help in policy formulation and planning of community specific health educational services geared at controlling STIs.

1.6. Conceptual framework

The conceptual framework below illustrates the factors associated with STIs infection among young women of the Old Ningo Sub-district.

At the individual level, the knowledge of young women relative to STIs is expected to influence STIs acquisition and transmission. Also, behavioural characteristics such as smoking, drunkenness, and promiscuity can facilitate the acquisition and transmission of STIs. For instance, easy contact to alcohol vents is associated with more alcohol intake which increases sexual risk behaviours, such as unprotected sex and results in poor sexual health. Similarly, features of alcohol vents (e.g. song, faint illuminations, and unisex restrooms) and the linkage of prospective sex partners who normally frequent them may offer atmospheres with increased possibilities for unsafe sexual activity (Rosenberg et al., 2015).

At the community level, introduction to alcohol joints (places where liquor is sold and drunk, such as pubs, bars, and bottle shops) may influence unsafe sex. The availability of alcohol vents may promote or reflect community norms about behaviours, resulting in high risk for all the people in the community, whether they frequent the bars or they abstain.

Community-level bars accessibility is normally counted with the number of people in the community, but can take account of other events such as time of sale of alcohol and price. Availability of alcohol vents is associated with more people likely to have sexually transmitted infections (STIs) and young people may have different alcohol consumption behaviour than adults (Rosenberg et al., 2015).

Also, there are factors at the inter-personal level that are projected to contribute in STIs transmission. The inter-personal level factors relates to close relationship that will influence young women acquisition of STIs such as family members, friends, peers and people who influence their key decisions .For example a young woman who belongs to a peer group that engage in sexual promiscuity stands a significant chance of acquiring STIs. Also a relative or friend who has ever suffered from an STI will play a role in providing information on STIs to the benefit of the young woman. A young woman's family economic status and religious beliefs can greatly shape her way of life and influence her chances of contracting STIs.

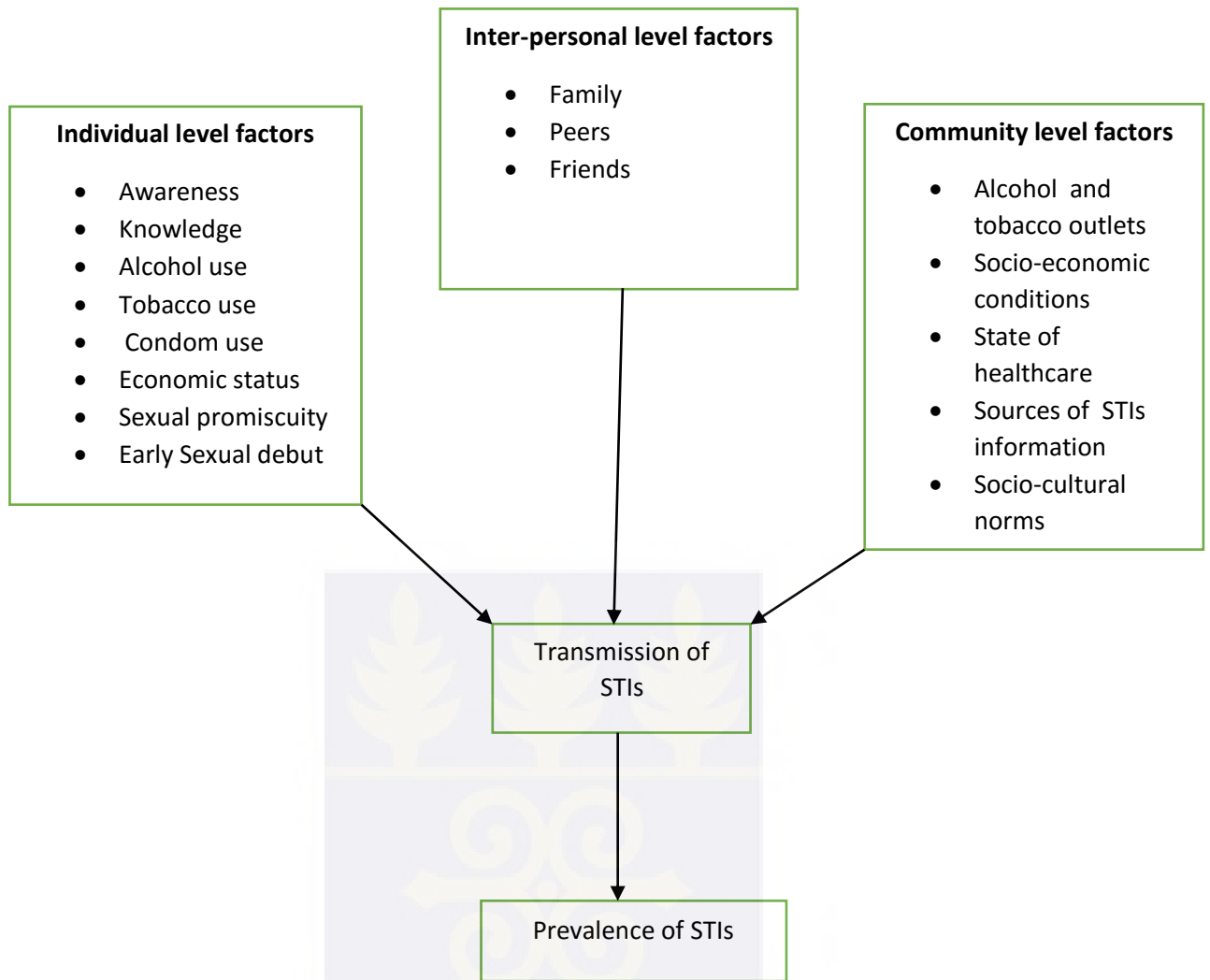


Fig 1.1: Conceptual framework of factors associated with STIs (Author's own construct).

CHAPTER TWO

LITERATURE REVIEW

2.1. Definition of Sexually Transmitted Infections

Sexually transmitted infections (STIs) are loosely defined constellation of infections and syndromes that are epidemiologically heterogeneous but all of which are almost always or at least often transmitted through sexual route. Sexually transmitted infections (STIs) continue to be a major public health problem with significant burden on the society especially in developing countries even after so many health care programs being organized by governmental and non-governmental organizations and awareness created among general public about STIs (Swamiappan et al., 2016). However, studies have shown that diagnoses of STIs, especially gonorrhea, chlamydia and syphilis have been found in many western countries particularly 16-19 years old teenagers (Blay, 2013).

According to the World Health Organization (WHO) STIs are infections that are spread primarily from person to person through unprotected sexual contact with an infected person and this sexual contact goes beyond vaginal intercourse and includes anal and oral sexual intercourse as well (WHO, 2011).

There are more than 30 different sexually transmissible bacteria, viruses and parasites (WHO, 2011) and some of these infections, particularly the human immune virus (HIV), Hepatitis B virus and syphilis, can be transmitted from mother to child during pregnancy and childbirth, and through blood products and tissue transfer.

Some of the most common STDs result from bacterial (chlamydia, gonorrhea, and syphilis) and viral (HIV/AIDS, herpes, hepatitis B, human papillomavirus or HPV) exposure. In addition to bacterial and viral culprits, protozoa and fungi also cause STDs, including those that cause trichomonas vaginitis and jock itch, respectively (Shim, 2011).

In the developed world, viral diseases have become increasingly common and important, whereas bacterial STIs are more common in developing countries, but even this is changing with the increasing recognition of viral diseases(Adler, Cowan, Mitchell, & Richens, 2004).

The WHO (2004), notes that most STIs are asymptomatic and about 70% of women with gonococcal and chlamydia infections experience no symptoms at all and therefore STIs can thus be passed on unawares during unprotected sexual intercourse.

The three most common presenting symptoms of an STI are urethral discharge, genital ulceration, and vaginal discharge with or without vulval irritation (Adler et al., 2004).These differences in findings regarding the symptomatic and asymptomatic nature of sexually transmitted infections points to the diverse nature of STIs .Regardless of the presence or absence of symptoms all STIs can lead to major complications if left untreated (Adanu et. al., 2008).

Sexually transmitted infections (STIs) according to some health care clinics are interchangeable with STDs; however, others believe that STIs are the precursor to STDs because they are caused by the same pathogens but are at a stage where no symptoms are present in the host. In addition, STI is used as a more current term and may be less embarrassing to a patient upon diagnosis compared to using the term disease(Weaver, 2015). Also DeRose, (2012) notes that sexually transmitted infections (STI) and sexually transmitted diseases (STD) have been used interchangeably. Nonetheless the difference lies in the fact that the latter develops into a systematic condition versus just a symptom. In this dissertation, the term STIs will be used in order not to instill fear and embarrass study respondents which may influence their responses to the study instruments.

2.2. Complications and Consequences of STIs

Adler, (2004) observed that the complications of untreated infections are far reaching, and include cancer, reproductive problems, and pregnancy related problems. Untreated STIs can cause acute illness, death and long-term disability as well as severe psychological and medical problems. Reproductive ill health (death and disability related to pregnancy and childbirth, STIs, HIV, AIDS, and reproductive cancers) has been calculated to account for 5-15% of the global burden of disease(Adler et al., 2004). Data on the monetary costs of the complications of STIs are sparse, particularly for the developing world. Meanwhile, data from America give estimates of total direct and indirect costs attributable to STIs to be \$9.9 m annually, rising to \$16.6 m if HIV and AIDS are included (Adler et al., 2004). In the United Kingdom only limited data are available but sexually transmitted infections are regarded a major public health problem and are one of the most common causes of illness, and even death (Samkange-zeeb, 2013).

Sexually transmitted infections presents enormous health, social, and economic consequences, particularly in the developing world and it is estimated that for women aged 15-44 years, STIs (excluding HIV) were the second most common cause of healthy life lost after maternal morbidity (Samkange-zeeb, 2013). Other studies have estimated that 5% of the total discounted healthy life years lost in sub-Saharan Africa are caused by STIs, excluding HIV, and that HIV alone accounts for 10% of healthy life years lost(Adler et al., 2004).

Few economic data exist in the developing world in relation to the consequences of STIs, which are considerable and personally devastating. Many women become infertile without even realizing that they have suffered from pelvic inflammatory disease. Estimates of the burden of infections for women in urban Africa have shown that chlamydial infection causes an average of 4.8 lost days of productive life and syphilis leads to 8.2 days per capita per

year. Estimates suggest that with the high prevalence of syphilis in pregnant women, for example 8%, up to 10% of all pregnancies (beyond 12 weeks) would have an adverse outcome (Adler et al., 2004).

2.3. Types of Sexually Transmitted Infections and Clinical Manifestations

The classification of STIs seems to be based on the classes of causative organism and the widely recognized causative organisms are bacteria, protozoa, fungi, virus and parasites. There are, however, over 30 bacterial, viral and parasitic pathogens that have been identified to be transmitted sexually (WHO, 2012).

The most common types of STIs are the bacterial infections: Chancroid, chlamydia, syphilis, gonorrhoea, Mycoplasma Genitalium (which is associated with Pelvic Inflammatory diseases and bacterial vaginosis) causes non-gonococcal urethritis in men) and Lymphogranuloma Venereum (LGV), the viral infections: human papillomavirus (HPV) which is viral and has about seventy variants, Hepatitis B, HIV, Genital Herpes, Cytomegalovirus, Mononucleosis, and molluscum contagiosum. Trichomoniasis is a protozoal disease and Candidiasis (yeast infection) is a fungal infection (Samkange-zeeb, 2013). On the basis of types, STIs are further seen as including those that can be cured like syphilis, chlamydia and gonorrhoea as well as incurable but modifiable ones like herpes simplex, human papilloma virus (HPV), HIV and hepatitis B infections (Amu & Adegun, 2015).

Syphilis and HIV could lead to death, HPV, Hepatitis B, and HIV could lead to malignancy, and gonorrhoea and chlamydia affect fertility. Gonorrhoea, chlamydia and syphilis are curable by managing it with antibiotics, while HIV can be managed but cannot be cured. The immune system clear most infection like Hepatitis B and HPV within few months. Hepatitis B that is chronic are often not well managed and persistent HPV can lead to cervical as well as other forms of cancer. Additionally, genital warts can be caused by HPV

infection, and can be managed using cryotherapy or topical creams, however genital warts can also vanish on their own (Samkange-zeeb, 2013).

Sexually transmitted infection often seen in women are chancroid, gonorrhea, genital warts, and trichomoniasis but gonorrhea, syphilis and chlamydia are very common to males with Urethritis (both gonococcal and non-gonococcal) also very common among sexually active teenage males (Polin and Ditmar, 2011). Table 2.1 illustrates a summary of common STIs and their clinical manifestations.



Table 2.1: Examples of common STIs and their clinical manifestations

Infection	Clinical symptoms	Long-term sequelae
Syphilis	Genital ulceration, latent infection also possible	Severe neurological and psychiatric conditions e.g. dementia
Chlamydia	Asymptomatic infection common among both men and women; women may experience abdominal pain or burning sensation when urinating	In women pelvic inflammatory disease/infertility/ectopic pregnancy; in men epididymitis
Gonorrhoea	Among men urethritis/discharge, among women mostly asymptomatic, but some may experience pain or burning sensation when urinating	In women pelvic inflammatory disease/infertility/ectopic pregnancy
HIV	Asymptomatic over long periods of time; early signs can include fatigue, fever, night sweats	If untreated full-blown AIDS
HPV	Generally asymptomatic and clears on its own	Genital warts, penile cancer, cervical cancer
Hepatitis B	Partly asymptomatic or unspecific symptoms such as fever, abdominal pain	Acute liver failure, liver cancer
Genital herpes	Recurrent genital blister-like sores	Pregnancy complications, neonatal herpes
Trichomoniasis	Often asymptomatic, occasionally genital discharge	Pregnancy complications

Summarized from Samkange-zeeb, (2013).

2.4. Prevalence of STIs

The prevalence of STIs is uncertain because of the lack of effective control and notification systems in many countries. However, the estimated prevalence and incidence per million of

the population differs regionally, for instance between sub-Saharan Africa and Western Europe it is eightfold and fourfold, respectively (Adler et al., 2004). Figure 2.1 shows a global distribution of estimated new cases of STIs.

In spite of vivid declines in sexually transmitted infection rates since World War II, sexually transmitted infection continue to be a significant health issue even in developed countries such as the United States and other developing countries (Shim, 2011). Nearly nineteen million new cases of STIs are detected yearly in the United States, and more than sixty five million Americans live with incurable STIs such as human papillomavirus (HPV) and herpes. It is estimated that young people specifically are predispose to STI and that those between the ages of fifteen and twenty four account for about one-half of the new STIs detected yearly, although this age group form part of only one-quarter of the sexually active population with prevalence rates for some subgroups (e.g., African American female adolescents) reaching epidemic proportions(F. Samkange-zeeb, 2013).

Sub Saharan Africa is reported to have an STI incidence of 240/1000 which is the highest in the world. It is further estimated that 8.3, 21.1 and 59.7 million new cases of Chlamydia trachomatis (CT), Neisseria gonorrhoea (NG) and Trichomonas vaginalis (TV) infections respectively take place in sub Saharan Africa annually (Kakaire, Byamugisha, & Tumwesigye, 2015).

In a study conducted in Ghana by Adanu et al., (2008) to determine the prevalence of symptoms of STI among women in Accra, a total of three thousand one hundred and eighty three women were recruited questionnaire were used as a quantitative study tool to interview the respondents at home by a trained research assistant between March and September in the year 2003. The study reported an 18.5% prevalence of STI symptoms among the respondents. Also a systematic review and meta-analysis of prevalence studies from 1995-

2015 showed that of the 30 studies, the reported national prevalence rates of Hepatitis B in Ghana ranged from 3.5 to 22.1 % (Ofori-asenso & Agyeman, 2016).

Kakaire et al., (2015) in their study showed that precise national data on the prevalence of individual STIs does not exist in Uganda but epidemiological studies indicates that sexually transmitted infections are a public health concern. The prevalence of Chlamydia trachomatis (CT), Neisseria gonorrhoea (NG) and Trichomonas vaginalis (TV) among adolescents has been reported to be 4.5%, 9% and 8% respectively. Whereas among a cohort of women involved in unsafe sexual behavior the prevalence of CT, NG and TV were 9%, 13% and 17% respectively and overall prevalence of STIs was eleven point one percent (95% CI 7.8–14.4).

A cross-sectional study of prevalence of Chlamydia trachomatis as a sexually transmitted infection among 1144 women in Germany revealed that prevalence was highest among eighteen to twenty four old women (9 %; 95 % CI: 5.8–13) (Lallemand et al., 2016).

Every one in eight young women 15 to 24 years old who are sexually active self-reported STI symptoms and STI in Ghana Demographic Health Survey (GDHS) in 2003. These proportions signify the highest prevalence noted among the whole age groups surveyed (Ohene & Akoto, 2008).

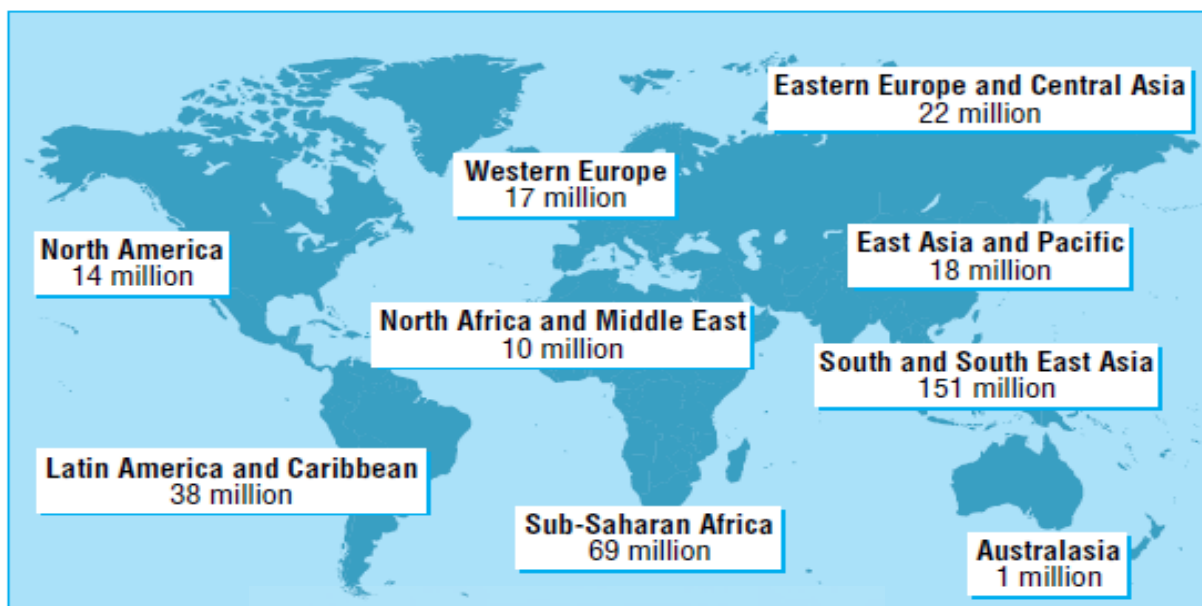


Fig 2.1: Estimated new cases of curable STIs.

Data source: World Health Organization, 2004.

2.5. Factors associated with STIs

Adolescents, particularly females, are mainly susceptible to STI because of cognitive, biological and socio-cultural factors. It has been reported that adolescents are the highest age group with STIs. In a research to determine factors associated with a record of sexually transmitted infections in young women fifteen to twenty four years who are Ghanaians, Ohene and Akoto (2008) did a cross-sectional data analysis of 1,280 of sexually active females from the Ghana Demographic Health Survey, 2003. They used t-test and chi square to compare, those with a history or symptoms of STI and those without such a history on individual, demographic and partner level variables. Logistic regression was used to identify variables associated with STI. Results showed that STI group covered 12% of the study population. Compared to those without STI history, the Sexually Transmitted Infection group was less likely to identify place to get condoms (37% vs 23%, $p=.001$) but more likely to wear a condom at their last sexual intercourse (27% vs 17%, $p=.003$). Females in the Sexually Transmitted Infection group were less likely to talk over family planning

with their sexual partners but more likely to have more sexual partners in the previous 12 months. When Logistic regression was done, it showed that factors associated with STI among sexually experienced young Ghanaian female included not being aware of where condoms are sold and not talking over family planning with partner. So, it was established that most of sexually active young Ghanaian female are not aware where to get condoms. Inability to identify where to get condoms was thus recognized as a risk factor for STI for these young women. Use of condom in previous sexual intercourse, having at least two partners and knowing where to get female condoms in the past year were not reported to be associated with STI. They added that in spite of being sexually experienced, most of the adolescents do not use condoms regularly or use them sometimes. Out of three young females only one use condom in their last sex. Therefore, the likelihood of a young female getting STI is high. For STI among young Ghanaians to be efficiently curtailed and prevented, they suggested that it is essential to recognize and talk about the factors associated with STI.

Behavioural factors play a key role at the individual level in terms of STIs transmission in young women. Common behavioural contributors comprises of tobacco use, alcohol intake, knowledge and awareness of STIs, economic status, educational level and sexual behaviour such as multiple sexual partners and nonuse of condom during sexual activity (CDC 2011b, WHO 2013b). Improving health-related behaviours of young women is essential in many public health events aiming at combating STIs in young people (WHO 2011b).

Numerous researches have shown some association between STIs and adolescents. Factors related to the individual consist of early age at introduction of sexual intercourse, drug and alcohol use prior to sex, having numerous sexual partners and condom readily available and use. Diclemente et al. (2002) reported that young females who drank alcohol at the time of sexual intercourse were two times more likely to have had sexually transmitted infection

likened to their counterparts who had never got the infection. Young ladies in Jamaica had an odds ratio of four for an STI if they had sexual partners more than two. Failing to use a barrier method is also a risk factor for STI.

In a research among Cameroonian youth, Suigoli et al., (2001) found that people who never used condoms are more susceptible to herpes simplex virus – type 2 (HSV-2). Use of a barrier method at previous intercourse was found to prevent STD. Family and friends level associated to STIs found that having a partner who is older and decreased communication in the family were associated with STI acquisition.

2.6. Knowledge and awareness of STIs

STI knowledge and their problems are essential for better management and prevention, as persons who lack knowledge on the symptoms may not be able to recognize the need to seek treatment and so may not seek help (Amu & Adegun, 2015).

Although knowledge and awareness have been reported to have a limited effect on changing attitudes and behaviour, they are important components of sex education which help promote informed, healthy choices (Samkange-zeeb, Spallek, & Zeeb, 2011).

A review of 15 studies to assess knowledge and awareness of STIs among young people revealed that those aged thirteen to twenty years showed knowledge and awareness that differed among the subjects depending on gender (Samkange-zeeb et al., 2011). In general, the studies reported low levels of awareness and knowledge of STIs with the exception of HIV/AIDS and recommended that attention be paid to infections such as gonorrhoea, chlamydia and syphilis.

Majority of paper reviewed on awareness and knowledge of STIs in young people in developed countries comes from the United States and the overall perception is that young

people lack information on STIs other than HIV/AIDS. Outcomes of a survey done among sexually experienced eighteen year old females in the United States shows that the youths receive basic information on STIs such as gonorrhoea, chlamydia and syphilis only after they have been infected. Moreover surveys on STI awareness and knowledge in adolescents in a lot of developed countries such as Australia, Canada and the United Kingdom have concentrated on chlamydia and HPV. Overall, low percentage of young people (range 5-66%) were able to recognize the two infections or identified that they were sexually transmitted (Samkange-zeeb, 2013).

Current studies on the awareness and knowledge of chlamydia and HPV among adolescents in two German cities, Bonn and Berlin, also found low levels of knowledge: in Bonn, 15% of respondents are aware of chlamydia (Lengen et al. 2010), and in Berlin, less than a third were aware of the fact that HPV can be sexually transmitted (Blödt et al. 2012). In different research also done in Berlin however, relatively higher levels of HPV awareness were observed, with more than fifty percent of adolescent respondents properly reporting that HPV infection can lead to premalignant lesions and cancer of the penis and cervix (Stöcker et al. 2012). The explanations for this disparity are not clear.

2.7 Chapter summary

This chapter looked at studies done by other researchers on the subject matter and the approaches used in their study. With regards to the literature reviewed in this study, it is apparent that much of the studies focused on transmission of sexually transmitted disease in general without age differentiation. This study however sought to look at young women to establish the factors influencing sexually transmitted infection. Unlike other studies reviewed, this study adopts a community-wide approach in sampling respondents of the study instead of the facility base approach which is most likely to capture only women

reporting with symptoms to the exclusion of those in the larger community. This study is thus unique in the fact that it looks at a specified age group of women in a community setting.



CHAPTER THREE

METHODS

3.1. Study Design

The study was a cross-sectional design using quantitative method and study tools to assess the factors associated with sexually transmitted infections among young women of the Old Ningo Sub-district. The quantitative data was derived from structured questionnaires, which were interviewer-administered with the assistance of two trained research assistants.

3.2. Study Area

The study was done in Ahwiam located in the Old Ningo Sub-district of the Ningo Prampram district in the greater Accra region of Ghana. On the 24th of February 2016, report from myjoyonline shows that some females of Ahwiam Basic School in the Ningo Prampram district of the Greater Accra region are trading their womanhood for fish due to hunger this informed the selection of the area. The district map of Ningo Prampram district is shown in figure 3.1. Below. The Old Ningo Sub-district is part of the Ningo Prampram District which is one of the 16 districts constituting the greater Accra region. The district was created from the erstwhile Dangbe West District in 2012 with the promulgation of Legislative Instrument (LI) 2132. There are 6 sub districts namely; Prampram, Old Ningo, Dawhenya, Afienya, Nyigbenya, Lekpongonor and Dawa. Key characteristics of the district are described below:

DISTRICT MAP OF NINGO PRAMPRAM

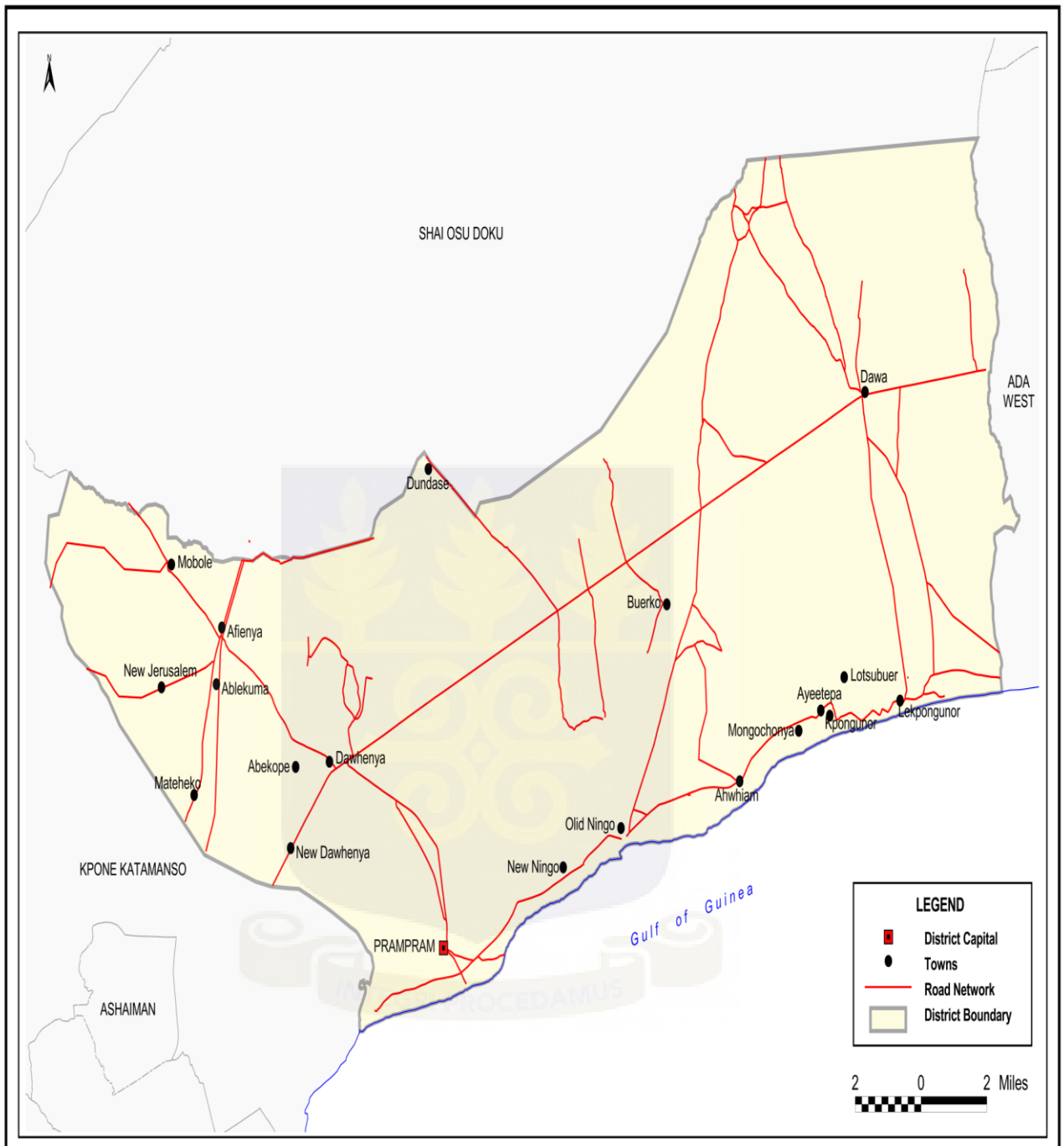


Fig 3.1: Map of Ningo Prampram district (Source: GSS GIS)

3.2.1. Area of Coverage

The District Assembly covers an area of 622.2 km². It is bounded in the North by the Shai Osudoku District Assembly, the South by the Gulf of Guinea, and East by the Dangbe East District Assembly and the west by Kpone-Katamanso District Assembly.

3.2.2. Population/Structure

The present population of the District is estimated at 8,286. Out of this, 47.6% are males and 52.4% are females. About 62% of the population of the district falls within the economically active age group (i.e. 15-64 years). The Old Ningo sub district has an estimated total population of 18423 while the Ahwiam community which is the study location has a total population of 3,429 and 531 households. The population of young people between 15-24 is 722 out of this, 433 are females and 289 are males.

3.2.3. Social and Cultural Structure

The people of Ningo-Prampram district are predominantly Ga-Adangmes. The oral traditions of the Ga-Adangmes hold that the communities, which now constitute the Ga-Dangme, once lived in an area they claim was called SAME in modern day Nigeria, having migrated from southern Sudan and Egypt. From Nigeria, the Gas moved by sea to their present location, and the Dangmes traveled by land through Togo crossing the River Volta at various points to a place called Lowlowvor, where they lived for quite some time until they broke up into the composite tribes, namely, Shai, Osudoku (who remains inland), Ningo, Ada (who moved to the coast) and were later joined by Prampram (Gbugbla). The indigenous people of the district are organized into two traditional areas, namely, Prampram Traditional Area with paramountcy at Prampram and Ningo Traditional Area with the Seat

at Ningo. Other ethnic groups in the district include Ewe, Hausa, Asante, Fantes and among others. (Source: Ningo—Prampram District Assembly)

3.2.4. Social infrastructure/amenities

The district has 107 government schools, which include of 32 Junior High School, 42 primary, 2 Senior High Schools and 31 pre-schools. There are also about 93 private schools. Prampram Senior High School and Ningo Senior High School are the only public second cycle institutions in the district.

The district has fourteen health facilities comprising of 8 Public facilities and 6 Private facilities. The Old Ningo sub district is one of the two sub districts to have a health center with the remaining one located in Prampram. The rest are 6 CHPS Compounds located at Afienya, Dawhenya, New-Ningo, Nyigbenya, Lekpongunor and Dawa, 1 Private Hospital located at New- Ningo, 3 Private Clinics located at Afienya and Dawhenya, Prampram, 1 Private Medical Centre located at Dawhenya, and 1 Private Maternity Home located at Afienya.

3.2.5. Economy

The Ningo-Prampram district is largely rural. The majority of rural populace reflects in the occupational dispersion with agriculture as the main occupation. About 90 percent of the total land area is arable land and about 25% is mainly savannah grassland suitable for livestock farming. The major crops grown in the district are cassava, maize, mango, banana, vegetables (tomato, okro, pepper) and rice. The district border on the Gulf of Guinea with a coastline stretching over 37 kilometers gives the district vast fishing potential. This potential is currently under great exploitation by many households in the district.

Though the main occupation in the district is agriculture, the most important areas in terms of revenue to the district Assembly and remunerations to workers is the housing development sector. The district assembly financial reports indicate that the maximum contribution to internally generated revenue comes from building permit applications and fines. This is followed closely by business operating permits.

3.2.6. Political Administration and Structure

Ningo-Prampram District Assembly is headed by the District Chief Executive and assisted administratively by the District Co-coordinating Director. The Assembly through the Local Government Act 1993 and Act 462 (section 10 sub sections 1,2,3,4 and 5), carries out the legislative, deliberative and executive functions of government.

There are currently thirty-two (32) Assembly members including the District Chief Executive and the Member of Parliament for the constituency. The remaining thirty (30) members are made up of ten (10) appointed and twenty (20) elected members. There are only six (6) women out of the thirty (30) Assembly members, representing 20.0%. The district is divided into three Area Councils under which are the twenty (20) electoral areas. There are 13 departments performing various functions in the district.

3.3 Study Variables

3.3.1 Dependent variables

The dependent variable of the study was symptoms of sexually transmitted infections

3.3.2 Independent Variables

The independent variables of the study included:

Socio-demographic characteristics: age, marital status, monthly income level, educational level and religion.

Individual level factors (Knowledge and awareness, alcohol use, tobacco use, condom use, early sexual debut, economic status).

Community level factors (Alcohol and tobacco outlets, Socio-economic conditions, State of healthcare, Sources of STIs information, Socio-cultural norms).

Interpersonal level factors (Family, Peers and friends)

3.4 Sampling Method

The convenient sampling method was employed in selecting respondents of the study. There were 531 households in Ahwiam and the study population is 433. Each household was visited with the assistance of two research assistants and any young woman met in the household was approached and the aim of the study explained to her to obtain her consent. Questionnaires were then administered to young women willing to take part in the study to collect data. This was done until the total sample size of 232 determined for the study was obtained.

3.5 Sampling size

A sample size of 232 was derived using Fisher's sample size formula shown below:

$$n = Z^2P(1-P)/(d)^2$$

Where,

n = sample size required.

Z = confidence level (95% level of confidence - 1.96).

P = Reported national prevalence of STIs (18.5%). Derived from literature (Adanu et al., 2008).

d = Margin of error (5% =0.05).

Substituting,

$$n = (1.96)^2 (0.185 \times 0.815) / (0.05)^2 = 232.$$

3.6. Study Population

The study population were young women (15-24) of the Ahwiam community in the Old Ningo sub district at the period the study was done.

3.7. Inclusion criteria

Young women between the ages of fifteen and twenty four years who live in the Ahwiam community and were willing to participate in the study were included.

3.8. Exclusion criteria

Young girls aged 15-24 years who live in the Ahwiam community but were not prepared to partake in the study were excluded. Also young females who are between the ages of fifteen and twenty four years who were present at the time of the study in the vicinity but do not live in the Ahwiam community were excluded.

3.9. Data collection tools/techniques

A structured questionnaire comprising of close ended questions was administered to study respondents to collect data on the study variables. Items on the questionnaire were read and explained to individual respondents who chose the options as they deemed fit. The

questionnaire were interviewer administered with the help of two competent research helpers I trained.

3.10. Data processing

Data collected were checked to ensure that each questionnaire was appropriately and completely filled. Each questionnaire was cleaned, coded and entered in Microsoft Excel. The data was validated and imported to STATA (statistical analysis software) Version 14.

3.11 Data Analysis

Data was analyzed using STATA version 14. Prevalence of STI was determined using frequencies. Pearson's Chi-square test was performed to determine the factors significantly associated with the presence of STI. Logistics regression was done to determine the factors influencing STI. Statistical significance was considered at 95% confidence interval and p-values less than 0.05 ($p < 0.05$). The results were presented in tables, graphs and charts.

3.12. Data Quality

The following measures were taken to ensure quality control of the study:

1. Questionnaires for the study was brief, elaborate and easy to understand.
2. Two research assistants were recruited, trained and supervised to administer questionnaire effectively and also monitored appropriately throughout the data collection process until the end of the study.
3. Pre-test of the questionnaire was done at the Prampram sub district which has similar characteristics with the study area to check for consistency of variables and identification and correction of errors.

Data collected on each respondent was cross checked after each day's field work to ensure that the questionnaire were completely and appropriately filled and all information accurately collected

3.12.1. Training of Research Assistants

Prior to the start of field work, a day training session for the two research assistants was organized by the researcher with the prime aim of equipping them with the required skills needed to assist in the study. The training helped to clearly spell out their tasks, including a discussion of the purpose of the study, ethical issues and administration of questionnaires.

3.12.2. Pre-test/Pilot study

The questionnaire of the study was pre-tested in the Prampram sub district to enable the identification and correction of errors and streamlining of the questionnaire before the study. Concerns raised during the pretesting would aid in standardizing and finalizing the questionnaire for the study.

3.13. Ethical Consideration

An approval was sought from the Ethical Review Committee of the Ghana Health Service (GHS), Research and Development Division, Accra.

3.13.1. Access and approval of study area

The district health directorate as well as the leadership of the community were contacted and notified of the intention to conduct the study. Subsequently, an introductory letter was obtained from the Head of Department, Population, Family, and Reproductive Health, School of Public Health, College of Health Sciences, University of Ghana and sent to them.

A copy of the approval letter from the Ghana Health Service Ethical Review Committee will also be sent to the authorities and approval was given.

3.13.2. Study subjects

The study subject included young women of the Ahwiam community who were present at the time of the study.

3.13.3. Privacy and confidentiality

The questionnaires for data collection were coded and names of respondents were not required in completing the questionnaire. The interview was conducted in private with individual respondents so as to guarantee their privacy. Participants' names were not also mentioned in the report of the study and information gathered on participants was kept strictly confidential between the researcher and the study participants.

3.13.4. Compensation

There was no compensation for participating in the study and study participants were duly informed before they chose to take part in the study. However, the researcher provided refreshment or snacks after administering questionnaires.

3.13.5. Risk and Benefits

Study respondents were told they would lose between five (5) to ten (10) minutes of their time in answering the questionnaires. They were also told that some questions were sensitive as they border on sexual activities and they were not obliged to answer any question they found discomforting. Apart from these, there was no risk or cost associated in participating in the study. There were no direct benefits associated with taking part in the study. However,

it was expected that the results of the study will contribute towards policy decisions making in order to improve reproductive health services in the community

3.13.6. Voluntary withdrawal

Participants were at liberty to withdraw from the study at any point in time and this will not create any problem between the researcher and the respondent. Data collected on any participant who withdraws from the study at any stage were deleted. Participants also could choose not to answer any individual question or all the questions.

3.13.7. Consenting process

Each respondent in the study was approached individually and the objectives of the study were explained to them before they gave their consent to participate in the study. In addition, respondents were made to sign a written consent form after a detailed explanation to them before they participate in the study. In the case of minors, consent were obtained from the parents.

3.13.8. Data storage and usage

The data collected was stored with passwords on electronic media and in safely locked boxes and used strictly for the purpose of research. (Anonymity was ensured in this study since participants were not identified by their names).

3.13.9. Declaration of conflict of interest

The researcher as the principal investigator declares no conflict of interest in this study.

3.13.10. Funding of the study

This study was in partial fulfilment of requirements towards the award of a Master of Public Health (MPH) degree at the School of Public Health, College of Health Sciences, University of Ghana, Legon. Hence, there was no funding from any source and all estimated cost of the study were borne solely by the researcher



CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings of the study. The results are presented under four broad sections in line with the objectives of the study. Section one presents socio-demographic findings, section two presents knowledge of respondents on sexually transmitted diseases, section three presents findings on prevalence of sexually transmitted diseases while section four presents findings on factors associated with sexually transmitted diseases.

4.1 Demographic characteristics

A total of 232 eligible young women were interviewed representing a 100% response rate. Of this total, 42 (18.1%) were 15 years old while the least reported age was 24 with 7 (3.0%). The mean age was 18.2 years (Standard deviation = 2.7 years). More than half of the respondents were students (74.6%), 38 (16.4%) were artisans and only 2 (0.8%) were civil servants. Nineteen (8.2%) were without any form of occupation or profession. In terms of education, most of the study participants had attained primary level education 93 (40.1%) while 89 (38.4%) had Junior High School (JHS) level education. Only 5 (2.2%) had tertiary education and 24 (10.0%) had no formal education at the time of the study. Almost all 227 (97.8%) were Christians and only 3 (1.3%) professed the Islamic religious faith as shown in table 4.1 below:

Table 4.1: Socio-demographic characteristics of respondents

Socio-demographic variable	Frequency	Percentage (%)
Age		
15	42	18.1
16	35	15.1
17	38	16.4
18	33	14.2
19	14	6.0
20	18	7.8
21	9	3.9
22	19	8.2
23	17	7.3
24	7	3.0
Educational Level		
Tertiary	5	2.2
SHS	21	9.1
JHS	89	38.4
Primary	93	40.1
None	24	10.2
Occupation		
Student	173	74.6
Artisan	38	16.4
Civil servant	2	0.9
None	19	8.1
Religion		
Christianity	227	97.9
Islam	3	1.3
ATR	1	0.4
Others	1	0.4
Age at first sex		
15-18	142	61.2
19-21	21	9.1
22-24	4	1.7
Don't Know	65	28.0

4.2 Knowledge of sexually transmitted diseases

In order to examine the knowledge of respondents relative to sexually transmitted diseases, they were asked questions ranging from awareness to signs and symptoms of STIs.

4.2.1 Awareness of sexually transmitted disease

Respondents were asked to indicate Yes or No if they have ever heard of sexually transmitted diseases. Those who indicated ‘Yes’ were classified as being aware of sexually transmitted diseases while those who responded ‘No’ were deemed unaware of sexually transmitted diseases. The study found widespread awareness of sexually transmitted disease among study participants. Out of the 232 young women who participated in this study, 202 (87.1%) were aware of sexually transmitted diseases while 26 (11.2%) were not. As illustrated in figure 4.1, only 4 (1.7%) respondents did not respond as to whether they have ever heard of sexually transmitted disease or not.

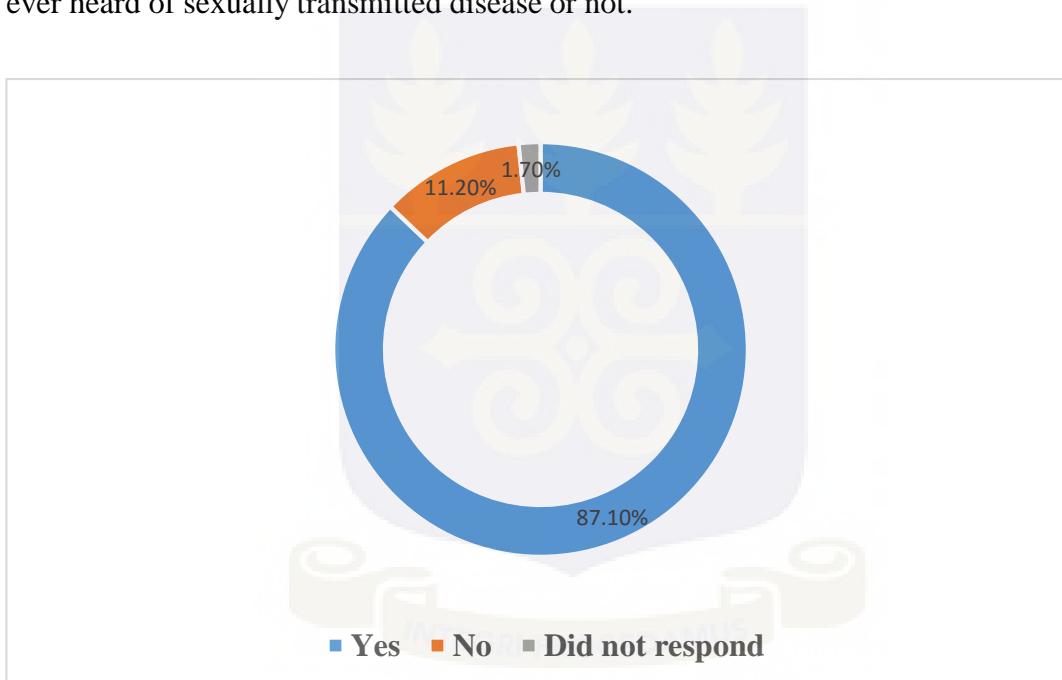


Fig. 4.1: Respondents' awareness of sexually transmitted diseases

4.2.1.1: Background characteristics and awareness of Sexually Transmitted Diseases

A chi-square test was done to determine any association between background characteristics of respondents and awareness of sexually transmitted diseases. The results showed that educational level and religion of study participants were significantly associated with awareness of sexually transmitted diseases as indicated in table 4.2. Some participants did not respond to the question on awareness of STIs.

Table 4.2: Background characteristics and awareness of Sexually Transmitted Diseases

Variable	Awareness of STDs		df	χ^2	P-Value
	Yes-n(%)	No-n(%)			
Age			9	7.31	0.605
15	34 (82.9)	7 (17.1)			
16	32 (94.1)	2 (5.9)			
17	32 (86.5)	5 (13.5)			
18	30 (93.8)	2 (6.2)			
19	11 (78.6)	3 (21.4)			
20	16 (88.9)	2 (11.1)			
21	9 (100.0)	0 (0.0)			
22	18 (94.7)	1 (5.3)			
23	14 (82.4)	3 (17.6)			
24	6 (85.7)	1 (14.3)			
Educational level			4	19.86	0.001
Tertiary	5 (100.0)	0 (0.0)			
SHS	20 (95.2)	1 (4.8)			
JHS	84 (96.6)	3 (3.4)			
Primary	77 (84.6)	14 (15.4)			
None	16 (66.7)	8 (33.3)			
Occupation			2	0.12	0.941
Student	156 (90.2)	17 (9.8)			
Artisan	32 (94.1)	2 (5.9)			
Civil servant	2 (100.0)	0 (0.0)			
None	12 (63.2)	7 (36.8)			
Religion			3	15.90	0.001
Christianity	200 (89.3)	24 (10.7)			
Islam	0 (0.0)	2 (100.0)			
ATR	1 (100.0)	0 (0.0)			
Others	1 (100.0)	0 (0.0)			
Age at first sex			2	0.43	0.805
15-18	137 (89.0)	17 (11.0)			
19-21	53 (93.0)	4 (7.0)			
22-24	12 (70.6)	5 (29.4)			

4.2.2: Source of information on sexually transmitted diseases

For respondents who reported awareness of sexually transmitted diseases, the source of information was assessed. Of the 202 young women who were aware of sexually transmitted diseases at the time of this study, more than half 117 (57.9%) identified friends as their source of information and awareness of sexually transmitted disease. The television was the second (18.3%) identified source of information on sexually transmitted diseases for young

women in the study area while 23 (11.4%) had their information on sexually transmitted diseases through the radio as shown in figure 4.2.

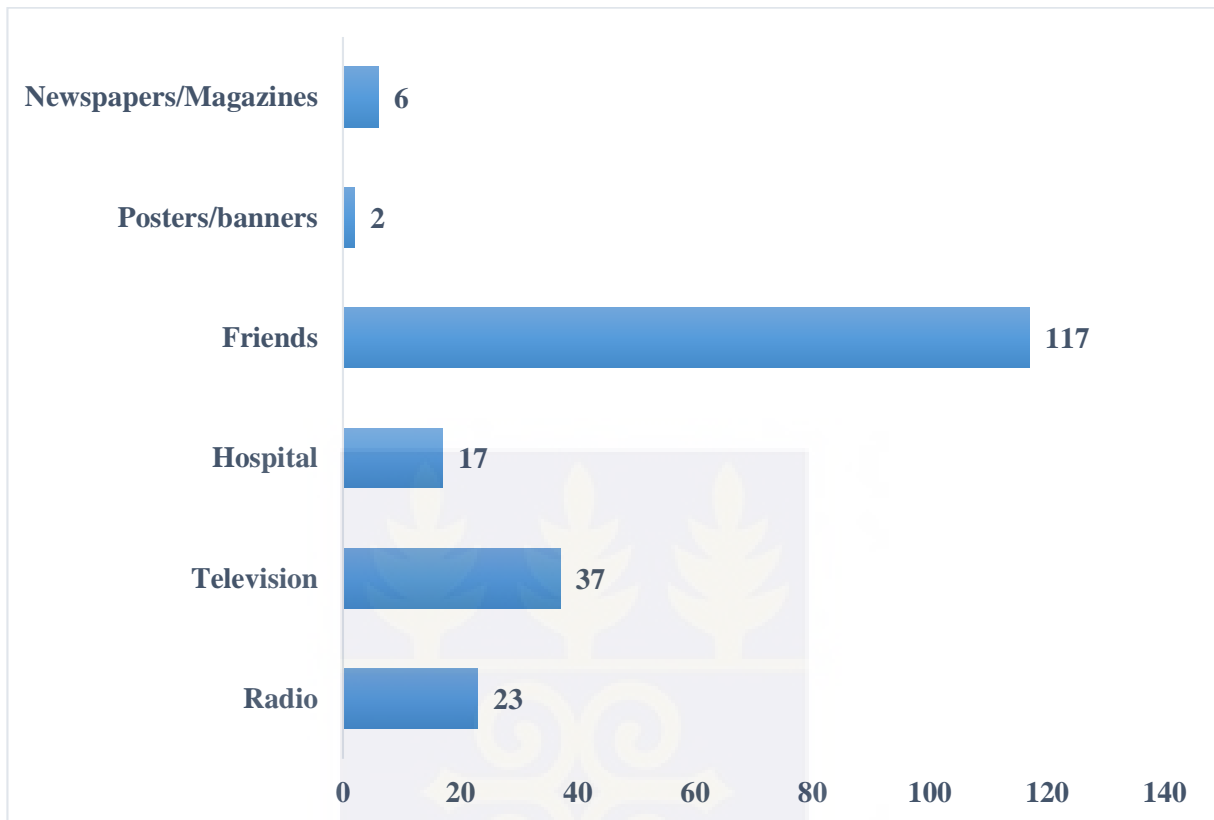


Fig. 4.2: Respondents' sources of information on sexually transmitted diseases

4.2.3: Knowledge of signs and symptoms

The knowledge level of young women in this study was assessed in terms of their ability to recognize signs and symptoms of sexually transmitted diseases. Participants who identified three signs and symptoms were regarded as having high knowledge level, those who identified two signs and symptoms were described as having moderate knowledge while those who identified one were classified as having low knowledge of sexually transmitted diseases. Participants who could not identify any sign and symptom were regarded as having no knowledge of sexually transmitted diseases. Table 4.3 shows participants' responses on signs and symptoms of sexually transmitted diseases

The study found that 147 (63.4%) of respondents had low knowledge of sexually transmitted diseases and 19 (8.2%) had no knowledge of sexually transmitted diseases. Only 13 (5.6%) of the young women who participated in this study had high knowledge of sexually transmitted diseases. Figure 4.3 shows participants' level of knowledge regarding sexually transmitted diseases.

Table 4.3: Identification of signs and symptoms by respondents

Sign and Symptom	Frequency	Percentage (%)
Vaginal discharges only	104	44.8
Genital ulcers only	8	3.5
Lower abdominal pains only	35	15.1
Vaginal discharges and Genital ulcers	23	9.9
Vaginal discharges and lower abdominal pains	30	12.9
Vaginal discharges, Genital ulcers and lower abdominal pains	13	5.6
None	26	11.2

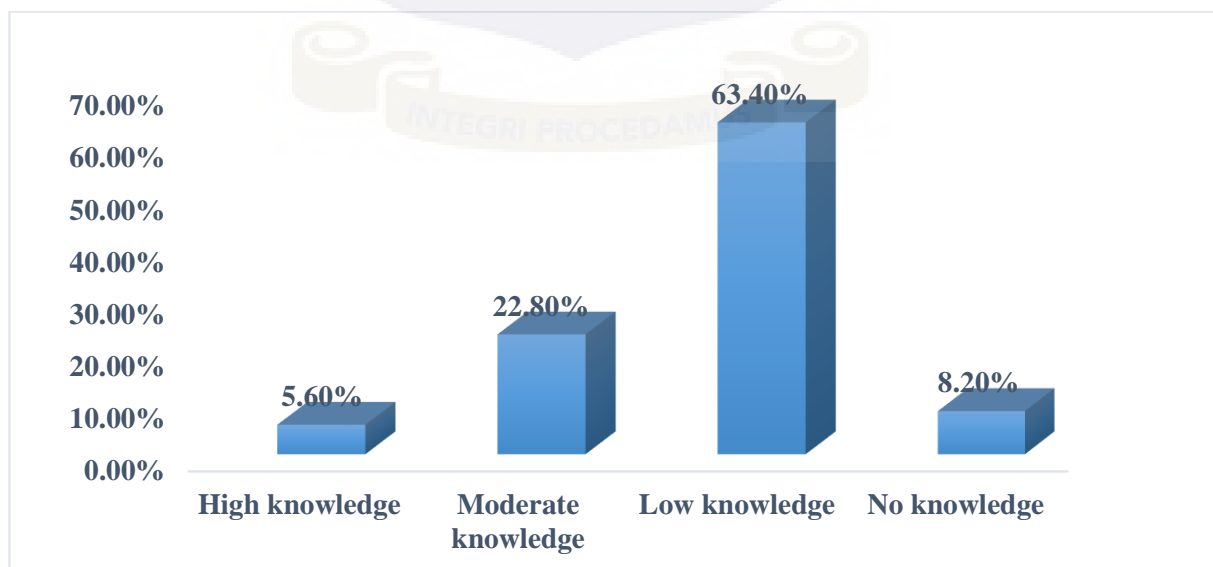


Fig. 4.3: Knowledge of respondents on signs and symptoms of sexually transmitted diseases.

4.3: Prevalence of signs and symptoms of sexually transmitted diseases

To determine the prevalence of sexually transmitted diseases among young women in the study area, study participants were asked to report whether they have experienced vaginal discharge, genital ulcer and lower abdominal pains in the last one year which are regarded in this study as indicative of sexually transmitted diseases. It emerged that majority 180 (77.6%) of them had experienced symptoms of sexually transmitted diseases in the last one year while 58 (22.4%) did not as shown in figure 4.4.

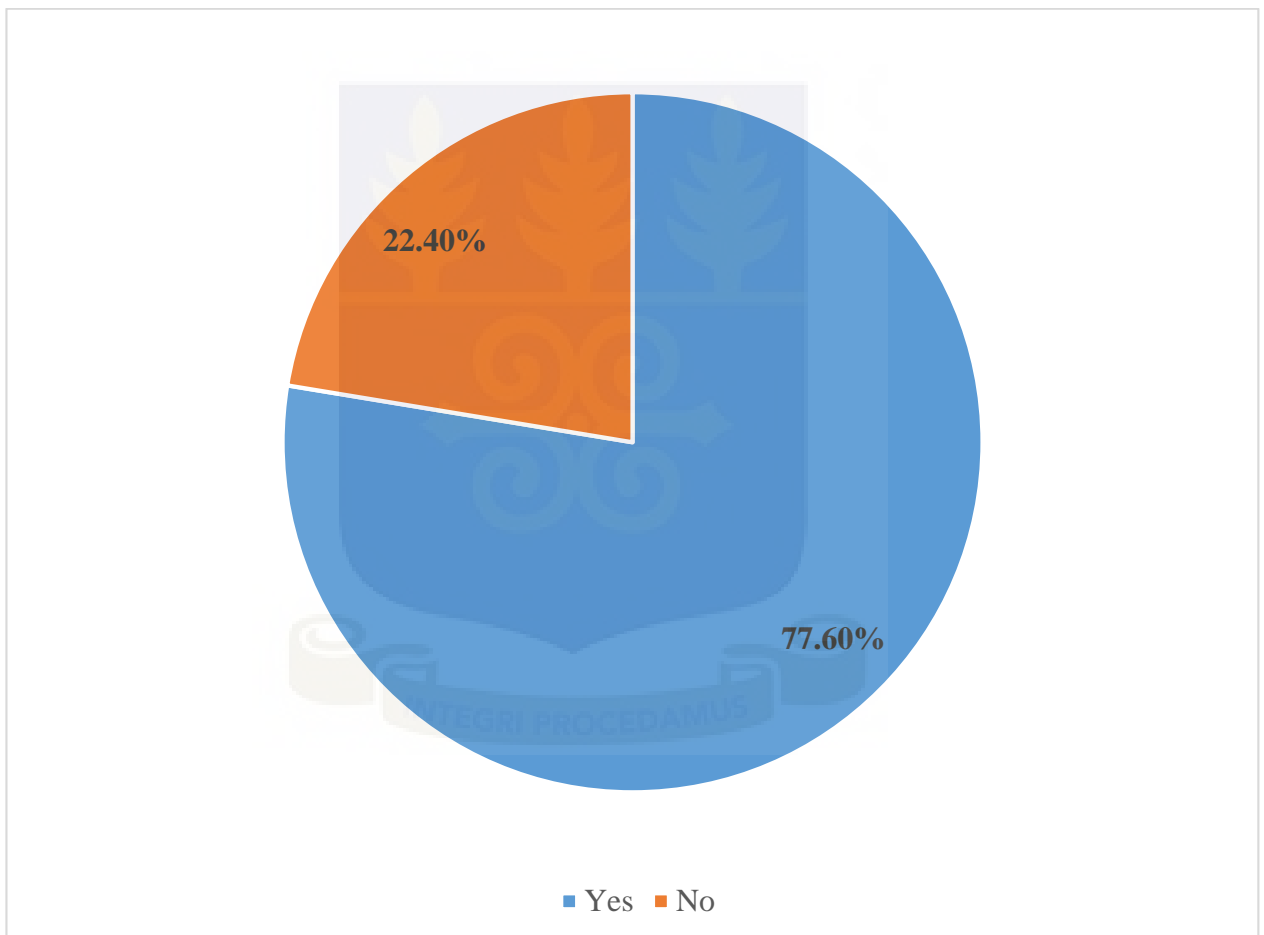


Fig. 4.4: Prevalence of signs and symptoms of sexually transmitted infections

4.3.1 Types of signs and symptoms of sexually transmitted infections experienced

As illustrated in table 4.4 below, majority had experienced vaginal discharge in the last one year compared to genital ulcers and lower abdominal pains. Some respondents had experienced more than one of the three signs and symptoms of sexually transmitted infections used in this study.

Table 4.4: Distribution of signs and symptoms of sexually transmitted infections experienced in the last one year.

Variable	Frequency	Percentage (%)
Vaginal discharge	93	51.7
Genital ulcer	10	5.6
Lower abdominal pains	36	20
Vaginal discharge + Genital ulcers	12	6.7
Vaginal discharge + Lower abdominal pains	20	11.1
Genital ulcers + Lower abdominal pains	1	0.5
Vaginal discharge + Genital ulcers + Lower abdominal pains	8	4.4

4.3.2: Frequency of occurrence of signs and symptoms of sexually transmitted infections

In terms of frequency of occurrence of sexually transmitted diseases, majority of respondents reported vaginal discharge as the most frequently experienced sexually transmitted diseases. While 18 respondents reported experiencing vaginal discharge 1 time in the last one year, as many as 60 respondents experienced vaginal discharge 4 times in the last one year. Lower abdominal pains was the second sexually transmitted diseases signs and symptoms experienced by study participants. As many as 51 respondents reported haven

experienced lower abdominal pains 5 times in the last one year. Genital ulcers was the least frequently experienced sign and symptom reported by respondents as shown in figure 4.5.

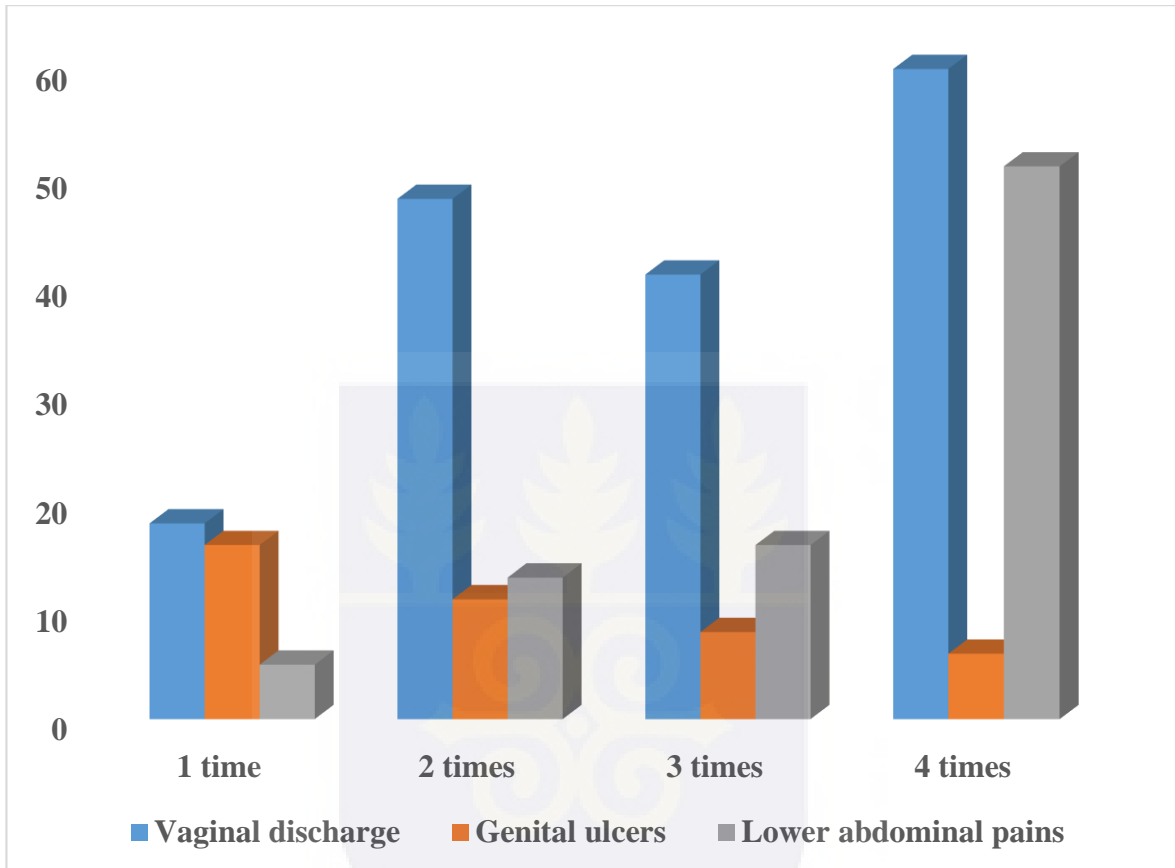


Fig. 4.5: Frequency of experience of signs and symptoms of sexually transmitted infections.

4.3.3: Socio-demographic predictors of presence of signs and symptoms of sexually transmitted infections

Logistic regression analysis was done to identify socio-demographic characteristic of respondents associated with existence of signs and symptoms of sexually transmitted infections. As shown in table 4.5, socio-demographic characteristics of study participants were not statistically associated with having signs and symptoms of sexually transmitted infections.

Table 4.5: Socio-demographic factors associated with sexually transmitted infections.

Variable	Univariate OR(95% CI)	P-value	Multivariate OR(95% CI)	P-value
Age				
15	1.00		1.00	
16	1.69 (0.61-4.67)	0.313	1.32 (0.25-7.00)	0.741
17	2.67 (0.90-7.87)	0.076	3.90 (0.57-26.75)	0.166
18	2.80 (0.89-8.82)	0.079	1.69 (0.32-9.00)	0.540
19	1.83 (0.44-7.65)	0.406	0.97 (0.15-6.21)	0.978
20	1.00 (0.31-3.22)	1.00	0.73 (1.13-4.07)	0.721
21	1.75 (0.32-9.55)	0.518	1.03 (0.12-9.13)	0.979
22	4.25 (0.86-21.0)	0.076	4.36 (0.32-59.86)	0.271
23	1.63 (0.46-5.91)	0.467	2.00 (0.24-16.46)	0.518
24	1.25 (0.21-7.27)	0.804	0.87 (0.08-9.11)	0.911
Educational level				
Tertiary	1.00		1.00	
SHS	6.33 (0.63-63.64)	0.117	3.17 (0.13-75.50)	0.476
JHS	2.63 (0.41-16.93)	0.309	0.88 (0.05-15.77)	0.928
Primary	1.81 (0.29-11.50)	0.528	0.64 (0.03-13.24)	0.771
None	2.53 (0.33-19.53)	0.372	1.46 (0.06-35.16)	0.814
Occupation				
Student	1.00		1.00	
Artisan	1.33 (0.55-3.25)	0.529	0.61 (1.31-2.86)	0.532
Civil servant	-		-	
None	-		-	
Religion				
Christianity	1.00		1.00	
Islam	0.56 (0.50-3.36)	0.644	0.13 (0.00-4.95)	0.276
ATR	-		-	
Others	-		-	
Age at first sex				
15-18	1.00		1.00	
19-21	1.54 (0.42-5.59)	0.511	3.18 (0.35-28.75)	0.303
22-24	0.26(0.35-1.90)	0.183	0.16 (0.00-4.68)	0.284

4.4: Factors associated with presence of signs and symptoms of sexually transmitted infections

The study sought to examine factors emanating from the individual level and societal level that were associated with sexually transmitted diseases. As shown in table 4.6 below, young women who drink alcohol were more likely to have STDs compared to those who do not drink both in bivariate analyses (OR = 4.46, 95% C.I. [1.43-13.93], P = 0.010), and this was still significant in multivariate analysis (AOR = 11.03, 95% C.I. [1.12-108.66], p = 0.040). Similarly, young women who smoke showed increased odds of having STDs than their counterparts who do not smoke in bivariate (OR = 10.96, 95% C.I. 1.12-107.69). However, this was not significant in multivariate analysis. The belief that tobacco is readily available in the community was found as a significant predictor of having sexually transmitted diseases. Compared to young women who do not believe that tobacco was readily available in the community, young women who believed that tobacco was readily available in the community were significantly more likely to have STDs (OR = 3.45, 95% C.I. [1.78-6.69], P = 0.001); (AOR = 6.79, 95% C.I. [1.44-32.01], P = 0.016).

Additionally, young women who believed that there were norms in the community forbidding tobacco use were less likely to have STDs compared to those who do not believe that norms exist in the community prohibiting tobacco use (OR = 0.32, 95% C.I. [0.11-0.96], P = 0.038).

Table 4.6: Predictors of STDs symptoms among young women

Variable	Have STDs	Bivariate OR (95% CI)	Multivariate OR (95% CI)
Drink Alcohol	Yes	4.46 (1.43-13.93)**	11.03 (1.12-108.66)**
	No	1.00	
Smoking	Yes	10.96 (1.12-	9.99 (0.19-511.28)
	No	107.69)**	
Multiple sexual partners	Yes	1.00	0.74 (0.26-2.09)
	No	0.46 (0.20-1.05)	
Young women's belief that alcohol is readily available in community	Yes	1.00	2.72 (0.22-33.37)
	No	1.96 (0.72-5.32)	
Young women's belief tobacco is readily available in community	Yes	3.45 (1.78-6.69)***	6.79 (1.44-32.01)**
	No	1.00	
Condom use during sexual intercourse	Yes		0.45 (0.11-1.79)
	No	0.65 (0.26-1.61)	
Young women's belief there are norms in community forbidding alcohol use	Yes	1.00	13.68 (0.76-244.91)
	No	1.00 (0.20-4.98)	
Young women's belief there are norms in community forbidding tobacco use	Yes	1.00	0.54 (0.08-3.65)
	No	0.32 (0.11-0.94)**	
Young women's belief peers influenced them to have multiple sex partners	Yes	1.00	0.88 (0.33-2.37)
	No	1.10 (0.55-2.22)	
Receive education on STDs from health workers in community	Yes	1.00	1.16 (0.43-3.14)
	No	1.05 (0.53-2.08)	
Receive education on STDs from family	Yes		2.55 (0.82-7.96)
	No	0.84 (0.43-1.63)	

Notes: ** Denotes P-value < 0.05 and ***p-value<0.005

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter discussed the results of the study and attempts to compare the findings with earlier studies on the subject under investigation with the view to identifying similarities as well as differences.

5.1 Knowledge of sexually transmitted infection

In this study, it emerged that awareness of sexually transmitted diseases was widespread among young women. This indicates that most young women in the study area are conscious of sexually transmitted diseases and this is instructive for instituting measures geared towards controlling sexually transmitted diseases. Samkange-zeeb, Spallek, & Zeeb (2011), revealed that despite knowledge and awareness not being significant contributors towards changing attitudes and behavior of young women relative to sexually transmitted diseases, they form key aspects of sex education which help to empower young women to make informed decisions regarding their sexual life. It is further noted that young women who are not conscious of sexually transmitted diseases may likely fail to identify them and seek for treatment and this may jeopardized prevention and treatment of sexually transmitted diseases among young women (Amu & Adegun, 2015).

However, contrary to the widespread awareness of sexually transmitted diseases found in this study, Samkange-zeeb et al.(2011), in a review of 15 studies to determine awareness and knowledge of STIs among adolescents reported that in general, low levels of awareness of sexually transmitted diseases was found. In another study in rural North Vietnam, Lan, Lundborg, Mogren, Phuc, & Chuc (2009), reported that majority of females examined were found lacking to have low awareness of STI.

Some young women were found in the study to have no awareness of sexually transmitted diseases and this predisposes them to being regularly infected with sexually transmitted diseases. These young women may not also seek for treatment of their conditions since they are ignorant about sexually transmitted diseases. For instance Amu & Adegun (2015), found that people who are not aware of sexually transmitted diseases may fail to recognize the signs and symptoms as well as their need to seek for treatment and so may not seek help. The unawareness about sexually transmitted diseases reported by these young women is even more worrying considering the fact that most sexually transmitted diseases are asymptomatic (WHO, 2004).

Educational level was found to be associated with awareness of sexually transmitted diseases. This could be due to the fact that as young women advance in education, they are more likely to read and learn about sexually transmitted diseases and thus become aware of them. This is consistent with findings of another study which found that adults with decreased health literacy are more likely to have less education (Pereboom et al., 2014). Interestingly, the religious affiliation of young women was also associated with awareness of sexually transmitted diseases.

This study found that friends constitutes the common source of information on sexually transmitted diseases for young women in the old Ningo Sub-district similar to findings in a study in Accra Madina by Zaami (2010) .This finding that friends are the major source of information on sexually transmitted diseases among young women, could lead to a lot of young women having wrong information on sexually transmitted diseases due to the fact that information emanating from friends regarding sexually transmitted diseases may not be standard compared to those obtained from the mass media and health facilities. However, this could constitute an important avenue to institute education on sexually transmitted

diseases through the use of friends and peers since young women most likely associate with friends rather than use the mass media and health care facilities.

In spite of widespread awareness about sexually transmitted infections, in general, knowledge on signs and symptoms of sexually transmitted diseases was low among respondents in this study. This has implications for transmission of the diseases as well as seeking for treatment. Most young women could not identify signs and symptoms especially when the World Health Organization (WHO) notes that signs and symptoms of STIs are subtle to identify and most STIs are asymptomatic and can thus be passed on unawares during unprotected sexual intercourse (WHO, 2004). The low knowledge of signs and symptoms found in this study could partly be attributable to the fact that respondents were asked to identify about three signs and symptoms and their knowledge was determined as such. It presupposes that participants who experienced only one sign and symptom will most probably be able to identify only that. This is supported by the fact that most of them identified vaginal discharge as the sign and symptom most experienced.

5.2 Prevalence of signs and symptoms of sexually transmitted infections

This study found 77.6% prevalence of signs and symptoms of sexually transmitted diseases among young women in the study. This is extremely high compared to findings of other studies. For example, Adanu et al. (2008), in a study of STI and the behavior towards seeking health care among Ghanaian women in Accra reported a prevalence of 18.5% of sexually transmitted infections symptoms among study participants. This high disparity in findings of prevalence of STIs signs and symptoms could be explained by the wide disparity in sample size and target populations in the two studies. While the target population in this study involved young women between age 15 and 24 years in a limited Old Ningo sub-district, the target population of their study involved women of Accra.

Additionally, the sample size in their study was 1329 which is far greater than the small sample size of 232 used in this study. Furthermore, the difference in prevalence could be attributable to the assertion that STIs are infections of sexually active young women and hence prevalence of signs and symptoms are expected to be high among young women compared to older women (Adanu et al., 2008).

However, the high prevalence of STI signs and symptoms found in this study agrees with the widely established reports that STIs have a much higher incidence and prevalence in developing countries (Adler et al., 2004).

It is instructive, however, to state that, this study assessed the prevalence of signs and symptoms of sexually transmitted diseases among study participants. Hence the high prevalence of signs and symptoms reported by respondents does not imply high prevalence of sexually transmitted diseases among the study participants.

Moreover, some young women experienced repeated signs and symptoms yearly suggesting intermittent resolution and recurrence of sexually transmitted diseases' signs and symptoms. It could further mean that treatment was not sought or treatment was not effective. Furthermore, it could mean that preventive measures were not taken after the occurrence of the first thus leading to subsequent occurrences.

5.3 Factors associated with presence of signs and symptoms of sexually transmitted infections

Sexually transmitted diseases are usually regarded as diseases of the young especially among sexually active young women. In the same vein, the signs and symptoms of STIs are expected to be high among young women (Adanu et al., 2008). This suggests that age is associated with STIs and by extension the presence of signs and symptoms of STI. However,

in contrast, this study found no association between age and the existence of signs and symptoms of sexually transmitted infections.

Similarly, educational level of respondents was not associated with presence of signs and symptoms of STIs and this is supported by the fact that educational level was found to be associated with awareness of sexually transmitted infections. Thus, being aware of the disease, educated young women could take preventive measures to avoid contracting sexually transmitted infections and for that matter not show presence of signs and symptoms. Other socio-demographic characteristics of respondents were not found as significant predictors of presence of signs and symptoms of STIs.

Additionally, this study examined and found individual behavioural and societal level factors that predict presence of signs and symptoms of STIs. At the individual level, young women who drink alcohol were more likely to show presence of signs and symptoms of STIs. As earlier stated, even though presence of signs and symptoms of sexually transmitted infections does not equate presence of STIs, this findings partly confirms findings by Diclemente et al. (2002) that young females who had intercourse during the time of drinking alcohol were two times more likely to have had STI likened to their counterpart who don't have sexually transmitted infection.

Similarly, in this study, smoking increases the odds of young women having presence of signs and symptoms of sexually transmitted diseases. At the community level, young women who believed that tobacco was readily available in the community were more likely to have presence of signs and symptoms of STI. This is corroborated by other studies that tobacco use was one of the behavioural contributory factors that play a key role at the individual level in terms of sexually transmitted infection transmission in young women (CDC 2011b, WHO 2013b).

Condom use during sexual activity was not found in this study as a significant predictor of presence of signs and symptoms of STI. This is surprising considering the crucial role condom use during sexual intercourse plays in the prevention of transmission of STI. This finding disagrees with findings by Ohene and Akoto (2008) that factors associated with STI in sexually experienced Ghanaian young women comprised lack of knowledge on where to get condoms. Also, in a study of Cameroonian youth, Suigoli et al., (2001) reported that those who had never used condoms had a quadruple risk of having sexually transmitted infection and condom use at intercourse was found to be protective against STIs.

Studies shows that young women in Jamaica had an odds ratio of four for a sexually transmitted infection if their sexual partners are more than two. (Diclemente et al. (2002), this study found no association between multiple sexual partners and presence of signs and symptoms of STI.

Interestingly, young women who believed that there were norms in the community forbidding tobacco use were less likely to have presence of symptoms of sexually transmitted diseases compared to those who do not. This could be due to the obedience of such norms and thus refraining from smoking which could cause them to engage in risky sexual behaviours leading to contraction of STIs.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Summary

The objective of the study was to determine the factors associated with STI among young women in the Old Ningo sub-district. The study employed a cross-sectional design using quantitative method and study tools. Convenient sampling method was used to select 232 respondents into the study. A structured questionnaire was used to collect data from respondents. The data collected was cleaned, coded and entered into Microsoft Excel and imported into STATA version 14 for analysis.

6.2 Conclusion

The study found widespread awareness about STIs. Friends were the main source of information on STIs among young women of the Old Ningo sub-district of the Greater Accra Region and there was high prevalence of symptoms of sexually transmitted diseases. However, knowledge of signs and symptoms of STI was low despite the high awareness reported. Vaginal discharge was the commonest symptom reported by most young women. The educational level and religious affiliation of young women in the study area were found as significant socio-demographic predictors of awareness of STIs but no socio-demographic characteristic of participants was associated with the presence of STIs signs and symptoms. Alcohol intake and smoking were found as individual behavioral level factors that are significant predictors of presence of symptoms of STIs among young women. At the societal level, factors such as the belief that tobacco was readily available in the community and existence of norms prohibiting tobacco use were associated with presence of symptoms of sexually transmitted diseases among young women.

6.3 Recommendations

The following recommendations were made for consideration by policy makers, policy implementers and researchers against the backdrop of the findings of this study:

6.3.1 Government and Ministry of Health

Considering the fact that, friends emerged as the major source of information on sexually transmitted diseases for young women, there is the need for government acting through the ministry of health to formulate holistic policies on adolescent reproductive health geared at tackling adolescent reproductive health issues at the community level instead of focusing only at the institutional or facility level. This could be done through the creation of adolescent services units in communities with trained identified peers who would attend to the needs of other young women in terms of providing information on sexually transmitted infections.

6.3.2 Ghana Health Service

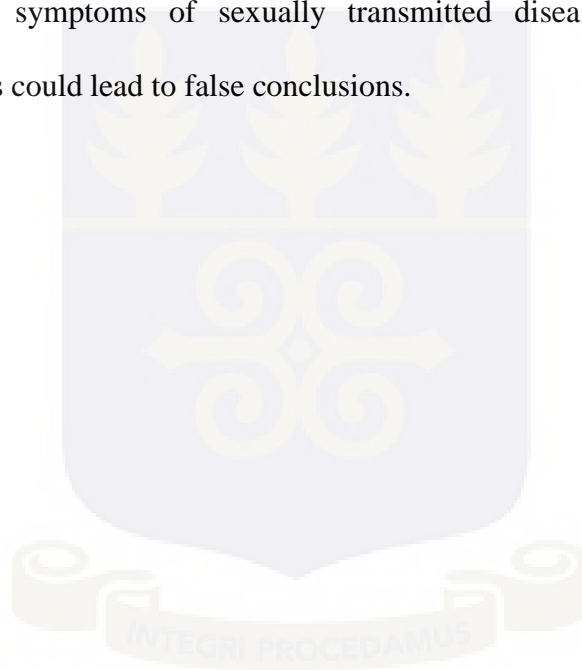
The Ghana Health Service as the main implementing agency of the policies of the ministry of health should structure service delivering relative to adolescent reproductive health to focus more on partnering with communities and community members in service delivery. For instance health facilities located in communities should identify influential and resourceful young women and train them as peer educators who can serve as a conduit in providing adolescent services at the community level to young women. Since young women find it more comfortable to share information about their sexual life with their friends than with health care staff, the peer educators in the community will go a long way to improve the reproductive health of young people at large.

6.3.3 Future research

The study found religious affiliation of young women to be associated with awareness of sexually transmitted diseases among young women. Thus, there will be the need for future research to explore the broader role of religion relative to sexually transmitted diseases.

6.4 Limitations to the study

The sample size employed in the study was limited and the findings could not be generalized to the entire population of young women in the district. The findings were also based on self-reported signs and symptoms of sexually transmitted diseases without laboratory confirmation and this could lead to false conclusions.



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APPENDICES

Appendix A: Participant's Consent Form

School of Public Health

College of Health Sciences

University of Ghana

Research Topic: Factors associated with Sexually Transmitted Infections (STI) in young women in Old Ningo sub- district of the Greater Accra region, Ghana.

Introduction

I am Benedicta Kumassah a student pursuing Masters in Public Health in the School of Public Health, University of Ghana. I am the principal researcher in this study and together with my research assistants we are conducting a study on factors associated with Sexually Transmitted Infections (STI) in young women in Old Ningo sub- district of the Greater Accra region, Ghana. You are warmly invited to take part in the study. But before you make a decision to take part in the study or not, we would like you to read this consent or let someone read it to you to guide you in making your decision.

There will be no costs for participating in this research and there will be no payments awarded for participating in this research. The only cost you will incur will be the time taken to answer the questionnaire.

Confidentiality

Every single information you provide will be held in absolute confidence and data collected in this study are strictly for research purposes and will be stored with passwords on

electronic media and in safely locked boxes. Access to the data will be limited strictly to the researcher and supervisor. Anonymity will be ensured in dissemination of findings from this study since participants will not be identified by their names.

Ethical Approval

The study has been reviewed and approved by the Ghana Health Service Ethical Review Committee (GH-ERC). This committee is there to ensure that participants in researches are protected from harm and their rights are respected.



Participant's Consent Form

I have read the foregoing information/ the foregoing information has been read to me or translated to me in a language that I understand and I have fully understood it. I consent voluntarily to participate in this study. (For participant less than 18 years, consent must be obtained from one of the parents or guardian)

(Name and signature of a witness should be provided in a case where the participant cannot speak or read English)

Name of Participant: _____

Signature/thumbprint: _____

Name of witness: _____

Signature/thumbprint of witness: _____

Interviewer's Statement

I, the undersigned Benedicta Kumassah, have explained this consent form to the participant in simple language that she/he understands, clarified the purpose of the study, procedures to be followed as well as the risks and benefits involved. The participant has freely agreed to participate in the study.

Signature of interviewer

Date / /

Address:

Telephone number:

Email address:

In case of any concern you can contact the Ethics Administrator, Miss Hannah Frimpong, GHS/ERC on: 0243235225 / 0507041223.

Appendix B: Questionnaire

Questionnaire on factors associated with Sexually Transmitted Infections (STI) in young women in Old Ningo sub- district of the Greater Accra region, Ghana.

Serial No.....

This questionnaire is to collect data factors associated with Sexually Transmitted Infections (STI) in young women in Old Ningo sub- district of the Greater Accra region, Ghana. I will be grateful if you could make time to complete it. Every piece of information will be held in absolute confidence.

Thank you

Date.....

Interviewer.....

Please fill in the blanks and mark (√) unless otherwise indicated.

SECTION 1: SOCIO-DEMOGRAPHIC DATA

1 Age (As at last birthday) a.15 [] b.16 [] c.17 [] d.18 [] e. 19 []
f.20 [] g .21 [] h. 22 [] i. 23 [] j. 24 []

2. Educational level a. Tertiary [] b. secondary [] c. JHS [] d. primary []
e. None []

3. What is your profession?

4 Religion: a.Christian [] b. Muslim [] c. Traditionalist [] d. Others []

5. Employment status a. Employed [] b. unemployed [].

6. Age at first sex.....

SECTION 2: KNOWLEDGE OF SEXUALLY TRANSMITTED DISEASE

7. Have you heard about STIs before? a. Yes [] b. No []
8. Source of knowledge a. Radio [] b. Television [] c. Hospital [] d. Friends []
e. Posters/banners [] f. Newspapers/Magazines []
9. The following symptoms could indicate that one has sexually transmitted disease (Please tick all that apply).
- a. Vagina discharge [] b. Genital ulcer disease [] c. Lower abdominal pains []

SECTION 3: PREVALENCE OF STIs

10. Which of the following did you experience in the last one year (Please tick all that apply)
- a. Vaginal discharge [] b. Genital ulcer disease [] c. Lower abdominal pains []
11. How many times did you experience the following in the last one year?
- a. Vaginal dischargetimes
- b. Genital ulcer disease.....times
- c. Lower abdominal pains.....times

SECTION 4: FACTORS ASSOCIATED WITH STIs

12. Do you drink alcohol a.Yes [] b.No []
13. Do you smoke a.Yes [] b.No []
14. Number of sexual partners a. 1[] b.More than one []
15. Alcohol is readily available in my community a.Yes [] b.No []
16. Tobacco is readily available in my community a.Yes [] b.No []
17. Do you use condom during sexual activity? a.Yes [] b.No []
18. Are there norms in my community forbidding alcohol use? a.Yes [] b.No []
19. Are there norms in my community forbidding tobacco use? a.Yes [] b.No []
20. My peers influence me to have multiple sexual partners: a.Yes [] b.No []
21. I receive education on STIs from health workers in my community: a.Yes [] b.No [].
22. My family educates me on STIs a.Yes [] b.No [].

