SOCIO-ECONOMIC DETERMINANTS OF KNOWLEDGE ON SEXUALLY TRANSMITTED INFECTIONS AMONG YOUTH IN TEMEKE DISTRICT, DAR ES SALAAM, TANZANIA

By

John George

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CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance a dissertation titled: **Socio-economic Determinants on Knowledge of Sexually Transmitted Infections among Youth in Temeke District, Dar es Salaam,** in partial fulfillment of the requirements for the degree of Master of Arts in Health policy and management of the Muhimbili University of Health and Allied Sciences.

Anne Outwater

Anne Outwater RN, PhD
(Supervisor)

Date: 26 Nov. 2005

DECLARATION AND COPYRIGHT

I, **John George,** declare that this dissertation is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature George.

Date 27th November 2009

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DEDICATION

This work is dedicated to my wife Nyakorema Rioba and our lovely daughter Tumaini

Abstract

Sexually transmitted infections (STIs) are a major public health problem globally. Youth are one of the most vulnerable groups to reproductive health problems globally. In Tanzania, more than 50% of youth are unable to mention gonorrhea and syphilis as diseases transmitted through sexual activities. Knowledge of a disease`s causation has effects on its transmission. Socio-cultural and economic factors put young people into risk of STI infection and HIV transmission. This study was conducted to determine socio-economic factors influencing youth knowledge on transmission of sexually transmitted infection in Temeke District

A cross sectional descriptive study using quantitative research methods among youth aged 15-24 years living in Temeke District, Dar es Salaam, Tanzania was conducted at the household level by using interviewer administered questionnaires. Multi stage sampling technique was used to select 2 rural and 2 urban wards where 4 streets from each ward were selected and at least 17 households were randomly selected from each street making a total of 261 participants.

More than half of participants had low STI knowledge score (56.7%) while medium score were (13.4%) and high knowledge score were (29.9%). High STI knowledge level were low among respondents with primary education level compared to secondary school with adjusted (OR 0.26, 95% CI; 0.14 – 0.49). Male respondents were two times more likely to have high STI knowledge score compared to female respondents (OR 1.96, 95% CI; 1.13 – 3.40). Also younger youth aged between 15 – 19 years were less likely to have high STI knowledge after adjusted for education, residence, and sex (OR 0.53, 95% CI; 0.30 – 0.93) compared to older youth aged 20 – 24 years. High STI knowledge had no significant difference between youth living in rural and urban and across SES groups.

This study clearly indicates that STI knowledge among youth is low whether living in urban or rural areas. Socio economic status has been shown to be a weak determinant of STI knowledge among youth; other determinants such as education, age and sex have been strong predictors of STI knowledge among youth. There should be strong emphasis towards attainment of higher education beyond primary education if we wish to achieve high reproductive health outcomes starting from STI knowledge.

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List of abbreviations or Acronyms

AIDS----------Acquired Immunodeficiency Syndrome

CBO----------Community Based Organizations

HIV----------Human Immunodeficiency Virus

IEC----------Information education and communication

IRB----------Institutional Research Bureau

SES----------Socio-economic status

STI----------Sexually Transmitted Infections

SPSS----------Statistical package for socio science

TACAIDS----------Tanzania Commission for AIDS

MUHAS----------Muhimbili University of Health and Allied Sciences

NGO----------Non-governmental Organizations

UN----------United Nations

WHO----------World Health Organization

CHAPTER ONE: INTRODUCTION

1.1. Background

Sexually transmitted infections (STIs) are a major public health problem globally; it is estimated that about 430 million cases of curable STI occur every year. STI can cause acute illness, infertility, long-term disability and death. Also STIs are related with negative social, economic, psychological and health consequences for many people. In Tanzania STI prevalence is caused by: genital discharge syndromes 44.1%, genital ulcers diseases 21.2%, and pelvic inflammatory diseases 23.3% (1).

The United Nations (UN) categorizes youth as those aged 15 to 24 years (2). World Health Organization (WHO) defines reproductive health as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity in all matters relating to reproductive health system and to its functions and processes" (3).

The Tanzania 2002 census showed that youth aged 15-24 are 20 percent of the total population (4). Youth are faced with challenges including sexually transmitted infections, unplanned pregnancy, post abortion complications, coerced sex and unintended pregnancies, lack of information about their sexual reproductive health and rights, unemployment and lack of educational opportunities. A comprehensive approach for youth reproductive health needs include youth friendly services, linking reproductive health to livelihood and life skills education programs.

Transmission of HIV is highly enhanced by sexually transmitted infections. Young people below 25 years are the most affected (5). The prevalence of syphilis among female youth antenatal attendees in Tanzania in 2006 was 6.5%. There was no significant variation from the previous surveillance report for 2005 that showed that the prevalence of syphilis of the same group to be 6.8% (6). There is a remarkable observable significant difference on prevalence of syphilis among pregnant antenatal attendees between sites under sentinel survey sites in Dar es Salaam sites in that some sites show low prevalence rates while others show high rates (6).

Knowledge of a disease's causation has effects on its transmission. It has been documented that socio-economic inequality is directly related to health outcomes across the society (7). Knowledge on disease causation can be on prevention, transmission methods, or experience through contracting the disease itself. This study examined the effects of socio-economic determinants on knowledge of transmission of sexually transmitted infection among youth.

1.2. Problem statement

Youth are one of the most vulnerable groups to reproductive health problems globally. Their vulnerability includes: unintended pregnancies, rape, illicit drug abuse, abortion related complications, sexually transmitted infections and HIV infection, maternal mortality associated with teen pregnancy. Socio-cultural and economic factors put young people into risk of STI infection, HIV transmission, cigarette smoking and alcohol use, early and unintended pregnancies. In addition, youth in Tanzania face challenges related to socio-economic status including: unemployment, and failure to accomplish educational goals beyond primary education. Hence they often rely on the availability of poorly paid, part or full time labor (8). Results from Tanzania HIV/AIDS indicator survey showed that STI self reported prevalence is highest in the poorest quintile, unlike HIV infection which is not self reported increases with wealth quintiles (9).

In Tanzania, policies and strategies are well designed to address youth reproductive health challenges, however challenges related to livelihood are not well addressed or linked to reproductive health.

Various actors including government, NGOs and CBOs implement youth mobilization programs that use educational approaches to reinforce behavior change. Some of the interventions are focused on the information education and communication (IEC) without considering the socio-economic status of the youth. Such programs and policies intend to improve youth reproductive health without considering other important underlying problems.

Evidence shows that no one general approach to sexual health promotion will work in isolation and also no single-component intervention will be effective (10). One of the

strategic objectives of the National Adolescent Health Development Strategy 2004-2008 was to encourage development of innovative livelihood skills initiatives such as income generating activities and micro credit that will enable young people in Tanzania to realize their full potential (11).

According to behavioral surveillance surveys among youth in Tanzania, it has been reported that youth aged 15-24 years were more aware of HIV/AIDS than about STIs. Also more than 50% of youth were unable to mention gonorrhea and syphilis as diseases transmitted through sexual activities. Generally, there is limited knowledge of symptoms of STIs among youth (12). However these surveys did not explore if knowledge on STIs differs according to socio-economic status.

Little research has examined the socio-economic influence of knowledge on STI transmission among youth in Tanzania. The study examined whether it is important to consider socio-economic status of youth when designing and implementing youth reproductive programs particularly in prevention and management of sexually transmitted infections among youth. Youth need information and skills to make informed decisions about behaviors that affect their health, such as whether and when to have sex. Likewise, youth need a social, legal, and regulatory environment that supports healthy behaviors and protects them from harm (13).

1.3. Significance of the study

It is important to address prevention of sexually transmitted infection in socio-economic perspectives as a broad based public health approach. This study will inform stakeholders about the socio-economic influence on knowledge of prevention of sexually transmitted infections among youth. It will also inform equitable approaches to: prevention of sexually transmitted infection among youth and other sexual reproductive health interventions.

Many studies have focused on the biomedical approach of knowledge of sexually transmitted infection; this study will add to existing literature on sexually transmitted infection about knowledge of STIs outside the health care facility. Knowledge related to socio-economic correlates of STIs is an under researched area. The approach of

identifying community based randomly selected youth participants is another perspective that adds value to the current study.

1.4. Operational definitions of terms

Socio-economic status

Social classes that people belong to, can be determined by personal or household per capita income or wealth/net worth, including the ownership of land, property/asset, means of production, occupation, education qualifications, family background and support. For this study a composite variable for SES was derived based on ownership of property at the household level.

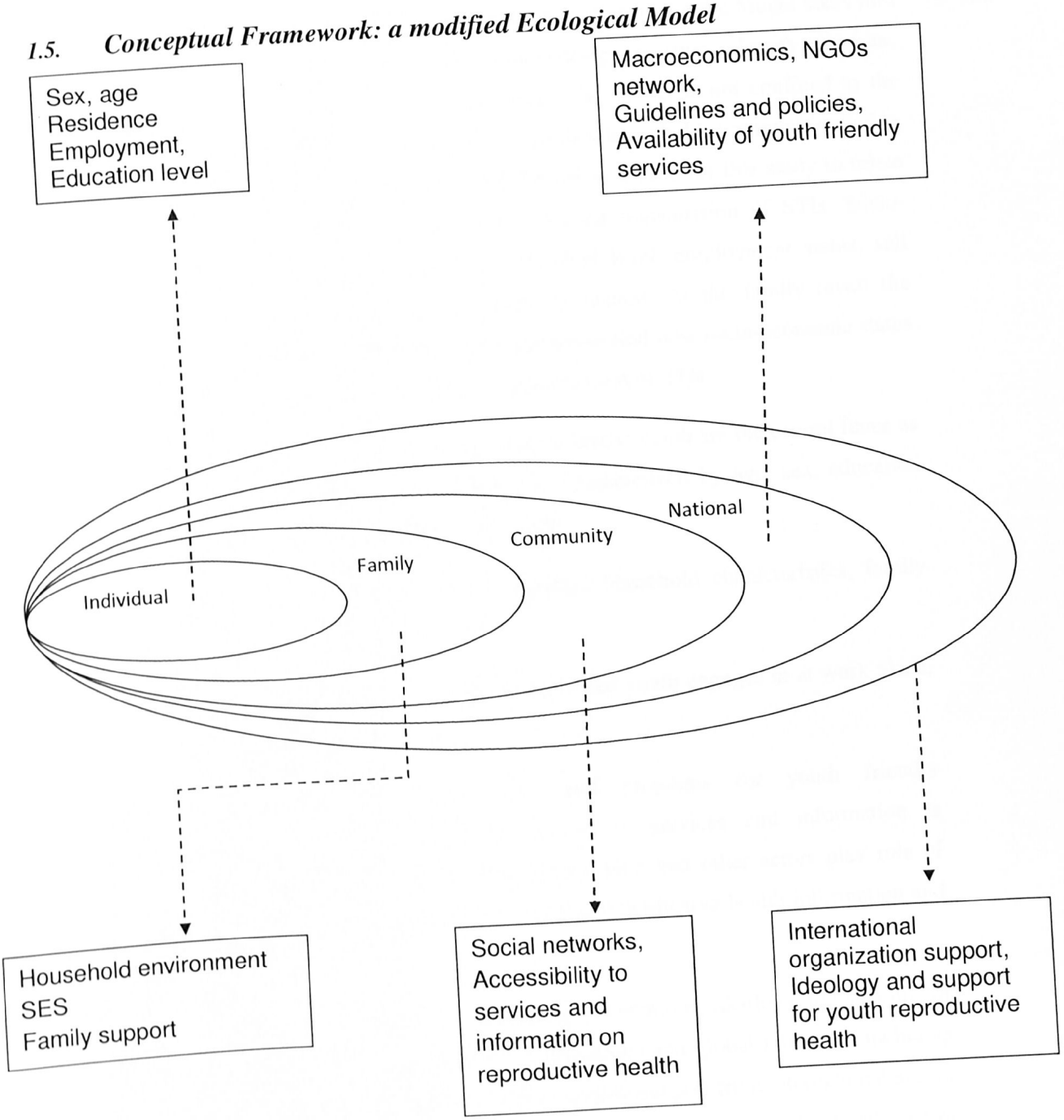
Sexual transmitted Infections

Infectious diseases that are predominantly transmitted through sexual contact from an infected person. For this study STI excludes HIV.

Knowledge of sexually transmitted infections

STI knowledge included identification of at least two names of STIs, symptoms and complications of STIs for both male and female. High knowledge score included those who could mention at least two STIs, and one female or male STI symptom. Medium knowledge scores categorized those who could mention one STI, and those who could identify at least one symptom of STI for men and women. Low knowledge scores were assigned to those who were not able to mention any STI, or symptom. For the purpose of regression analysis, knowledge score were categorized into binary variables; high knowledge score and low knowledge score whereby. High knowledge was to those who were able to mention at least two STI and mention either one male or female STI symptom while the rest were considered to have low STI knowledge score.

1.5. Conceptual Framework: a modified Ecological Model



Adapted from Bronfenbrenner (14) and Outwater (15)

The Ecological Model is useful in health disparities research because the Model takes into account the root causes of diseases and can be used to design the study, classify variables, inform interventions and explain phenomenon (16). The model is not confined to the individual rather it considers the individual within families/household, communities and as part of a national and the world. The Ecological Model was used for this study to relate various levels of youth involvement and knowledge on transmission of STIs. Socio-economic status of youth was considered at individual level: employment status, self action related to access to health care services/information. At the family level: the household unit in which the youth lives were evaluated to find how socio-economic status of the household influences their knowledge on transmission of STIs.

The Ecological Model is interrelated within different levels; youth are the central focus as individuals. At the individual level, youth can be characterized by age, sex, education attainment, area of residence, and employment status.

At the family/household level, the model considers household characteristics, family support to youth and its socio-economic status.

Community level was integrated on social networks that youth engages in at work place, and other institutions.

The national level includes the policies and programs for youth friendly services/information, and macro-economy. Access to services and information is considered at the organizational level where government and other actors play role of ensuring that environment facilitates youth to access reproductive health information and services.

Programs and policies are shaped by international conventions, ideology and support for the reproductive health from multinational organizations and global initiatives including the United Nations. In addition, the government receives support from international aid for youth reproductive health programming. Hence international factors affect delivery of information to increase knowledge on sexual transmitted infection.

1.6. Research questions

1. Is socio-economic status associated with knowledge of STI transmission among youth in Temeke?
2. Is socio-economic status associated with access to STI information among youth in Temeke?

1.7. The aim of the study

The aim of this study was to determine if socio-economic status influences knowledge of sexually transmitted infections among youth.

1.8. Research objectives

1.8.1. Broad Objective

To determine socio-economic factors influencing youth knowledge on transmission of sexually transmitted infection in Temeke District, Dar es Salaam, Tanzania.

1.8.2. Specific objectives

1. To determine social economic profile of a sample of youth in Temeke District.
2. To determine knowledge on transmission of sexually transmitted infection among youth in households in Temeke District.
3. To determine accessibility to STI information related to sexual and reproductive health among youth in households in Temeke District.

1.9. Research hypothesis

STI knowledge level increases with increase in social economic status among youth.

CHAPTER TWO: LITERATURE REVIEW

Few studies have evaluated the effect of household socio-economic status on knowledge of transmission of sexually transmitted infection among youth. However several studies have focused on youth knowledge on transmission of sexually transmitted infection and their socio-demographic factors.

2.1. Sexual transmitted infection prevalence and trends in Tanzania

In Tanzania Sexual transmitted infection are tracked through ongoing surveillance system through selected national sentinel centers. National sentinel are tracking those data from women attending antenatal clinics. Among 17,323 of women screened for syphilis, 7.3% were found to be positive. The trends of high infection are found to be highest for women from roadside clinics 16% followed by those from rural 10.5% and the last is among those from urban clinics 5.8%. Also there are some regional variations ranging from 2.1% Kigoma to 14.9% in Kagera region (17). Unlike HIV infection rates among those women it was found that syphilis prevalence was higher among those women with low education background. The above finding is supported by the national HIV/AIDS and Malaria indicator survey 2007/08. The survey showed that STI prevalence and reported symptoms in the last 12 month prior the survey were higher among men and women who had lower education background compared to those with higher education background. Generally men have higher rates of STIs compared to women (18). A study in Moshi among pregnant women utilizing primary health care facilities shows varied sexual transmitted infection. Also among those women, more women seropositive women had STI infection as compared to those without HIV infection (19).

2.2. National youth policy

Tanzania developed its first national youth development policy in 1996. The policy clearly identify youth the same way as the United Nations define youth however, it recognize for differences of the youth concept in relation to customs, socio behavior, traditions, and location (20). However various religious group and political parties define youth differently from this perspective in Tanzania. For example some political parties identify youth as those aged below 35 years of age.

National youth policy was developed following the great need of the policy following the less priority given to youth development programs. Furthermore, youth are targeted due to increased vulnerability to STI including HIV, substance abuse, poor nutrition status, harmful traditional practices, and child bearing at early age. The same policy intends to promote lives of youth by developing them in areas of health among other things on its objectives.

2.3. Socio economic determinants of STI knowledge among youth

Youth contribute 60% of the national workforce; still many are unemployed and are dependent upon their parents for daily living. Many young people have only completed primary education with limited chances to proceed to secondary education, hence they lack many skills and opportunity to gain livelihood (20).

A study to determine risky sexual practices among youth attending a sexually transmitted infection clinic in Dar es Salaam found that some youth engage in sexual intercourse at younger than age 16 years(21). This indicates the risk of HIV and STIs infection at an early age is relatively at this age group. Also female youth receive gift/money for sexual favors. However the same study found that STIs other than HIV was relatively low among youth. The findings suggest women with low SES are more vulnerable to HIV. Based on surveillance reports (22, 23) and other literatures, it seems that STI among youth in Tanzania is not higher than in other groups of reproductive health age, however it is an important issue to be addressed for prevention purposes.

Behavior is embedded within the socio-economic and cultural contexts that inform individual vulnerability (24). This study adds knowledge on influence of socio-economic status to some of available literature that only focused on behavioral and health care seeking behavior on STIs among youth.

The relationship between health care seeking behavior and socio-economic aspects has been explained by Meyer-Weitz and colleagues in their study in South Africa 1998 (25). They suggest that early health care seeking behavior for STI related symptoms could be facilitated through improved education and increased employment opportunities. The present study envisaged relating the socio-economic status of youth and their knowledge on STI transmission. The delay in seeking health care among respondents with no or very

low level of education could be attributed to lack of knowledge regarding STIs symptoms and their consequences.

Studies in Russia showed that adolescents with syphilis were those who were unemployed, or engaged in the informal economy (26). Sexually transmitted infection in adolescents is an under-researched area particularly on the knowledge about socio-economic correlates of STIs and other service delivery models (27).

2.4. *STI risk and HIV infection among youth*

A study among youth in Dar es Salaam city showed that 80% of youth know that condoms could protect them from STIs; however there was no significant relationship between this knowledge and HIV serostatus (28). It is further shown that knowledge on prevention of STI is high among youth attending Dar es Salaam STI clinics. The study was a clinical study which recruited only infected individuals and hence it was necessary to conduct a household survey. The current study went beyond health care facility level to determine the knowledge and socio-economic factors among youth at the household level.

A study in Mwanza showed that female workers in bars were at higher risk of sexually transmitted infection. They were paid below the lawful minimum wage. The researchers call for economic and cultural appropriate activities that may facilitate resolution to the situation (29). However, the study did not specify from which age group those at risk belong to. Hence this study was intended to add existing knowledge on the age specific level of knowledge on transmission of STI and socio-economic status among youth.

2.5. *Determinants of STI knowledge among youth*

Low knowledge of STI complications was found in a study in Kilimanjaro rural area. It was learned that knowledge on STIs is low in rural populations. The study also shows that the knowledge among youth aged 15-24 years is as low as 33.2% (30). This study however was not a comparative study between rural and urban; rather it was a case study in Moshi rural. Tanzania HIV/AIDS indicator survey which is a household based survey showed that the percentage of self reported STIs is higher in rural as compared to urban population (9).

Low knowledge of STI transmission and symptoms is associated with lower risk perception and delayed health care seeking behavior (31). The current study will generate more knowledge on further reasons for low knowledge of transmission of STIs.

A study among Australian youth attending a music festival revealed that, low knowledge of transmission, treatment and prevention of STI is associated with high risk sexual practices among young people (32). However, this was not a population based survey, but involved self selected participants who attended the festival.

Another study on correlates of knowledge of prevention of sexually transmitted infection among primary school pupils in 20 regions of Tanzania showed significant differences high STI knowledge among boys compared to girls (33). The same study showed variation of knowledge between rural and urban pupils. Forty percent of boys and girls were knowledgeable on STIs by names. The study also discovered that youth with low knowledge on STIs transmission are less likely to be aware of prevention methods. These are younger youth still growing and they need to be knowledgeable on transmission of STIs. Many young people who graduate from primary school cannot continue with secondary education, hence they may have limited likelihood of accessing information on prevention of STIs. This is because youth with advanced education level may access various sources of STI knowledge.

CHAPTER THREE: METHODOLOGY

3.1. Research Design

A cross sectional descriptive using quantitative research methods was done in 2009 between March and April 2009. Descriptive cross sectional study design was chosen because the study was meant to collect information once and there were no follow up of participants to the study.

3.2. Study population

The study population was youth aged 15-24 years living in households in Temeke District. According to the 2002 census there were about 127,082 youth aged 15 – 24 years in Temeke District (29).

3.3. Area of the study

The study was done at the household level in Dar es Salaam region in Tanzania. Dar es Salaam is located in eastern part of the Indian Ocean. This is the commercial and most popular city with most of the most government ministries situated here. The Dar es Salaam city is comprised of three districts namely; Temeke, Kinodnoni and Ilala Districts. Temeke District where this study was specifically conducted is located in southern part of Dar es Salaam. The total population of Temeke District was 771,500 people (29). The district was selected because it belongs to one of the regions with the high reported STI incidences in Tanzania (23) and also it includes both urban and rural settings typical of many districts in Tanzania. Temeke District is comprised of 24 wards namely: Yombo, Makangarawe, Chamazi, Tua ngoma, Mbagala, Mbagala kuu, Charambe, Keko, Chang`ombe, Azimio, Miburani, Kurasini, Temeke, Sandali, Tandika, Kisarawe, Kigamboni, Mjimwema, Somangila, Kimbiji, Pemba Mnazi, Kibada, Vijibweni, and Mtoni.

3.4. Inclusion Criteria

The study involved youth (both males and females) aged 15-24 years. All youth who were found in household during the day of the interview were recruited to the study for interviewed.

3.5. Sampling techniques

A multi stage sampling technique was used to obtain study participants. At the district level, wards were divided into urban and rural clusters. Each wing (rural and urban) was randomly selected from a list provided by the District Authority Secretary: two rural wards and two urban wards were chosen. Four streets in each ward were selected randomly making a total of 16 streets. Seventeen households were visited in each street. One youth was recruited from each household. However, for households where there were more than one youth one was randomly selected by lottery so that everyone had an equal chance to be recruited. Up to two visits were made to ensure that eligible individuals were interviewed. Sampling techniques were the same in both urban and rural areas, except that in rural wards, households were selected by rotating a bottle at the centre of the village whereby the direction of the head of the bottle was followed to collect data after every fourth household. This method was adopted since the houses are not consistently numbered in rural and urban areas. A total of 261 respondents were recruited into the study.

Half of the participants were interviewed in urban areas while the other half was recruited in rural areas. Based on the 2002 Census the population structure is almost the same between male and female hence equal number of young men and women were intended to be conveniently interviewed (34).

3.6. Sample size estimation

The sample size was calculated from the following formula:

$N= Z^2 (P (1-P)/ E^2$

Given that:

N= sample size

Z=1.96 corresponding to 95% confidence level;

P= proportion of youth who know that condoms could protect them from STIs, 80% (28).

E= maximum likely error taken to be 5%

Thus,

$$N = \frac{1.96 \times 1.96 (0.8 (1-0.8)}{0.05 \times 0.05} =$$

N = 246

3.7. Research tool

A guided structured interview schedule was used for data collection. The questionnaire had been translated into Swahili as shown in Appendix D. The source of knowledge questions was adapted from the Tanzania HIV/AIDS indicator survey which uses validated questions. Questions for knowledge on STI were adopted from the Youth Behavior Surveillance Study of the National Bureau of Statistics (9, 12).

3.8. Variables

Independent variables

- Socio economic status as a social class which people belong to characterized by asset ownership
- Demographic characteristics including sex, age and area of residence be it in urban or rural
- Access to information on sexual and reproductive health services

Dependent variables

- Knowledge on transmission of STIs as described on section 1.1

3.9. Defining socio-economic status

Studies on health equity and SES show that socio-economic status can be best measured by the use of asset index as the proxy indicator rather than consumption and income (35). Household assets were used to categorize youth into their respective socio-economic status. It was assumed that youth gain advantage from the assets that are available at the household. Hence in a way they directly belong to the particular household`s socio-

economic status. Since the study involves two settings (urban and rural), separate socio-economic indices were selected for each setting; however some indices cut across both settings. This approach has also been suggested by other researchers (36).

A composite variable for SES were based on household characteristics; possession of some assets at the household as suggested by E. Karugendo, from National Bureau of Statistics, Ministry of Planning, Economy and Employment (25th January 2009 personal communication). Socio-economic status was categorized into three income levels: high, middle and low socio economic status. The composite of variables were as follows:

- The high socio economic status households owned at least one of the following: car, tractor, motor-cycle or any other motor vehicle for both in urban or rural setting.
- The medium socio economic status households were the combination of any of the following: salaried employee who owns the fields; in rural areas, only owns field and lives in a house with a concrete or cement floor, owns both bicycle(s) and plough(s) then either radio/radio cassette recorder, owns any of the following: cooker, TV, video, refrigerator, sewing machine, computer, telephone, complete music system/stereo radio cassette for both urban and rural.
- The low socio economic status household owned any other assets such as wheelbarrow, and lived in a mud house with dust floor.

First, a score was derived for each person based on household characteristics or ownership of assets: 1= ownership of a car, tractor, motor-cycle or any other motor vehicle for both in urban and rural setting by household member; 2 = combination of any of the following composite:

- Salaried employee who owns the fields in rural areas only
- Owns field and lives in the household with concrete or cement floor,
- Owns both bicycle(s) and plough(s) then either radio/radio cassette recorder,
- Owns any of the following: cooker, TV, video, fridge, sewing machine, computer, and telephone, complete music system/stereo radio cassette for both urban and rural. 3 = the rest of other assets not mentioned.

SES was then categorized according to score into high, medium and low. The 3 = low SES, 2 = medium SES, 1 = high SES. The socio-economic status of youth was defined based on the household and some personal characteristics.

3.10. Pre testing

The pretest was conducted in Kawe mzimuni ward in Kinondoni District involving 10 youth to test for applicability of the research tool. Adjustment was made according to the results of the pre-test. Some of the questions were merged or rephrased for clear understanding by the participants. For instance on the demographic profile of participants it was necessary to change some questions like the age of birth to be exact year of birth, also it was necessary to add the student on the question with occupation. Ownership of some assets was re-categorized to the household level instead of individual youth. School and hospital was added as another source of STI information Source of information

3.11. Data analysis procedures

Data was entered twice using EPIDATA for validity. Comparative methods for dependent and independent variables were done using SPSS (37). Two by two tables for Chi-square test were done to test for significance difference between variables. Frequency distribution of findings was presented for analysis. Logistic regression by univariate and later multivariate analysis was done to compare independent variables. In logistic regression; high knowledge score were categorized, each independent variables were analyzed to get crude odds ratio i.e. SES, education, age, residence and sex. Later age, sex, residence and education were adjusted to determine their confounding effects.

3.12. Research assistants

The principal investigator was assisted on data collection in the field. Principal investigator has experience on field research methods and data collection techniques, so he guided research assistants on the process.

Two research assistants with backgrounds in social sciences, and experienced in reproductive health research were hired to collect data. They were trained for one day to be acquainted with background, objectives, research ethics and methods used on this study. The principal Investigator coordinated day to day overall activities for data

collection, securing verification and ensures quality and consistency of data collected from the field.

3.13. Ethical considerations

Ethical clearance for this research was sought and received from Muhimbili University of Health and Allied Sciences (MUHAS) Research and Publication Committee.

Permission letters were obtained from Temeke district administrative secretary, and at the ward level, permission was sought from the ward executive officer and village/street executive officer. Respondents were informed that participation is voluntary; the right to refuse or withdraw was at the discretion of the respondent. They were informed about the purpose of the study. Respondents were informed about benefits and that there is no risk involved on participating in the study.

Anonymity was assured by not recording names of the respondents on the questionnaires apart from the serial number that were given to each questionnaire. Data collected from participants were stored in a safe environment such that it was only accessed by appropriate person involved with in the study. Individual respondents were asked for their consent to participate in the study. They consented by signing on the consent form. All participants were assured for confidentiality of the information they provided to the interviewer.

Youth aged 15 – 17 years were considered incompetent individuals for consenting so as to participate into the study. Those minor were recruited after their parents/guardian assent and signing the consent form. Since the study was done at the household setting, researchers identified the private location to hold interviews. No publication will identify respondents from this study. Individual respondent were given the contact of the chairman of university research and publication committee to claim or inform inappropriate treatment from researchers in the field.

Youth who participated on the study that seemed uninformed or had misconceptions about prevention of STIs got oral information related to STI and other reproductive health or referred to the health care facilities at the end of the interview.

3.14. Study Limitations

Based on the sampling technique homeless youth were not recruited hence this can be regarded as a non response bias hence a methodological challenge to this study.

Knowledge scale developed was based on recall from the previous exposure to STI information; there might be recall bias for those who had forgotten correct responses. Sexual related matters may not be discussed openly due to norms and taboo in our societies. Some participants might have been shy to respond due to limited knowledge. Interviewers ensured privacy and assured participants maximum confidentiality.

Determination of household SES is not universally applicable, household assets were used as indicators for SES; hence this method does not look at the quality of assets and hence makes it challenging to further categorize those household SES. Due to emerging differences on SES related results from other study. Multivariate regression analysis was used to counteract such differences.

The sample was not representative of youth in Temeke as more youth were more educated than the normal population. Likewise, there were more females than males due to the reason that more women were found at home during the data collection.

CHAPTER FOUR: RESULTS

4.1. Socio - demographic and socio - economic profile of respondents

The background characteristics of participants by socio economic status are presented in Table 1. A total of 261 respondents aged 15 – 24 years (median age 20 years) were recruited. Among those, males were 42.1% (110) while 57.9% (151) were females. Participants were almost equally distributed between urban and rural wards. There were twice as many participants with primary education 64.0%, compared to those with secondary education 30.7%. More than three quarters of participants were single while married participants were about 21.5%.

Distribution of respondents who were students and those who were either employed or self employed were same across SES group. There was an increase of proportion among those who were jobless as the SES decreased. More than half of respondents were those from medium SES followed by those within low SES while a few were from high SES group.

Within the high SES group there were significantly higher proportions of participants from urban compared to those in rural areas and in low SES group a higher proportion of participants were from rural areas. In rural area the distribution of participants decreased with increase in SES and in urban there was opposite trend. The proportion of participants with secondary education achievement was significantly increasing from low to high SES. Proportion of respondents with primary education level increased with increase in SES from low to high SES.

Table 1: Background characteristics of participants by socio economic status

Variable			High SES n = 41		Middle SES n = 149		Low SES = n 71		P value
	N=261	(%)	n	%	n	%	n	%	
Location									
Rural	125	(47.9)	8	(19.5)	55	(36.9)	62	(87.3)	**0.00**
Urban	136	(52.1)	33	(80.5)	94	(63.1)	9	(12.7)	
Age group									
15-19	115	(44.1)	13	(31.7)	63	(42.3)	39	(54.9)	**0.05**
20-24	146	(55.9)	28	(68.3)	86	(57.7)	32	(45.1)	
Sex									
Male	110	(42.1)	23	(56.1)	60	(40.3)	27	(38.0)	0.14
Female	151	(57.9)	18	(43.9)	89	(59.7)	44	(62.0)	
Antenatal attendance									
No	91	(34.9)	12	(29.3)	55	(36.9)	24	(33.8)	0.44
Yes	60	(23.0)	6	(14.6)	34	(22.8)	20	(28.2)	
Not applicable	110	(42.1)	23	(56.1)	60	(40.3)	27	(38.0)	
Marital status									
Married	56	(21.5)	4	(9.8)	31	(20.8)	21	(29.6)	0.05
Single	205	(78.5)	37	(90.2)	118	(79.2)	50	(70.4)	
Education									
No education	9	(3.4)	0	0	4	(2.7)	5	(7.0)	
Primary	167	(64.0)	21	(51.2)	91	(61.1)	55	(77.5)	
Secondary	80	(30.7)	20	(48.8)	49	(32.9)	11	(15.5)	0.002
Other	5	(1.9)	0	0	5	(3.4)	0	0	
Occupation									
Working	100	(38.5)	16	(39.0)	49	(33.1)	35	(49.3)	0.03
Students	79	(30.4)	17	(41.5)	51	(34.5)	11	(15.5)	
Jobless	76	(29.2)	8	(19.5)	44	(29.7)	24	(33.8)	
Others	5	(1.9)	0	0	4	(2.7)	1	(1.4)	
Socio network									
Yes	22	(8.4)	5	(12.2)	12	(8.1)	5	(7.0)	0.62
No	239	(91.6)	36	(87.8)	137	(91.9)	66	(93.0)	

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4.2. STI Knowledge by socio economic group

More than half of the participants had low STI knowledge score, 56.7%, while those with medium score were 13.4% and high knowledge scores 29.9%. Proportion of respondents with high knowledge score decreased with increase in SES level. High knowledge scores were more common among respondents with high SES compared to low SES group. Respondents from the low SES group had the least amount of knowledge (see Table 2).

Respondents who mentioned woman's STI signs and symptoms had relatively equal proportions across SES groups. Among those mentioned were: lower abdominal pain, genital discharge, foul smelling, genital sores, itching and the results for those mentioned that woman may not show any symptoms are not shown on the tables. Among those respondents who mentioned painful urination (dysuria) as a female STI symptom had significant differences in their proportion with increase from low to high SES group. Unlike knowledge on female STI symptoms, there were several male STI signs and symptoms mentioned with significant difference across SES groups. Male STI symptoms that had significant difference were: pus discharge, genital sores, swelling groin and itching. Generally syphilis and gonorrhea were more commonly mentioned STIs than chancroid, and candida. However there was no significant difference between SES groups when asked to mention STI names they knew (see Table 3).

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Table 2: STI knowledge by socio economic status

Variable			High SES n = 41		Middle SES n = 149		Low SES = n 71		P value
	N=261	(%)	n	%	n	%	n	%	
STI knowledge score									
Low	148	(56.7)	14	(34.1)	88	(59.1)	46	(64.8)	**0.00**
Medium	35	(13.4)	4	(9.8)	18	(12.1)	13	(18.3)	
High	78	(29.9)	23	(56.1)	43	(28.9)	12	(16.9)	

Table 3: Knowledge symptoms and signs of STI, according to socio economic status

	High SES (n=41)		Medium SES (n=149)		Low SES (n=71)		Total	P value
	n	%	n	%	n	%		
Dysuria for women	11	(26.8)	18	(12.2)	4	(5.6)	33	0.01
Pus discharge for man	18	(43.9)	25	(17.0)	13	(18.3)	56	***0.00***
Genital sores for men	10	(24.4)	26	(17.7)	4	(6.6)	40	***0.02***
Swelling groin - men	4	(9.8)	4	(2.7)	0	(0.0)	8	***0.02***
Itching	10	(24.4)	15	(10.2)	4	(5.6)	29	***0.01***
Mentioned syphilis	31	(76.6)	98	(65.8)	48	(67.6)	177	0.65
Mentioned Gonorrhea	32	(78.0)	105	(70.5)	51	(71.8)	188	0.67
Mentioned Chancroid	4	(9.8)	9	(6.0)	0	(0.0)	13	0.11
Mentioned Candida	1	(2.4)	7	(4.7)	1	(1.4)	9	0.44
Mentioned other STIs	1	(2.4)	3	(2.0)	0	(0.0)	4	0.49

Proportion of respondents' knowledge on abstinence, mutual faithfulness as STI prevention methods was generally high. There was no significant difference across SES groups among respondents (see Table 4).

Table 4: Proportion of respondents with correct knowledge on ways to prevent STIs and complications

	High SES		Medium SES		Low SES		Total	%	P value
	n/total	%	n/total	%	n/total	%			
Mutual faithfulness can prevent STIS	39/40	(97.5)	131/140	(93.6)	59/68	(86.8)	229	92.3	0.10
Can condom prevent STIs	33/39	(84.6)	101/132	(76.5)	49/64	(76.6)	183	77.9	0.54
Abstinence can prevent STIs	38/41	(92.7)	128/142	(90.1)	55/64	(85.9)	221	89.5	0.51
Delayed STI treatment has complications	40/40	(100)	123/129	(95.3)	55/59	(93.2)	218	95.6	0.26

Among those respondents who reported they would comfortably talk to health care providers, the majority were those from the high SES group. Proportion of respondents who reported they would talk comfortably to their parents about STI had significant difference across SES groups, with those from lower SES being more willing to discuss with parents (see Table 5).

Table 5: Respondents' talking about STI with friends, health care providers and parents according to socio economic status

	High SES (n=41)		Medium SES (n=147)		Low SES (n=70)		Total		
	n	%	n	%	n	%		%	P value
Talk to a long term friend	2	(5.9)	12	(8.2)	12	(17.1)	26	10.1	*0.06*
Talk to health care provider	29	(70.7)	72	(49.0)	35	(50.0)	136	52.7	***0.04***
Talk to parents	13	(31.7)	35	(23.8)	30	(42.9)	78	30.2	***0.02***

The commonest source of information about STI among respondents were school (44.1%) followed by radio (28.7%). School and radio were commonest sources of information but did not show significant difference across SES groups. There were significant difference among those who reported leaflets as source of information between respondents belonging to medium (15.6%) and low SES (4.5%). Among participants who reported health care facilities as source of information there were significant differences noted between those with low and high SES, with lower SES having more respondents who reported health care facility as source of information (see Table 6).

Table 6: Proportion of respondent showing source of STI information by socio economic status

	High SES (n=39)		Medium SES (n=132)		Low SES (n=64)		Total	(%)	P value
	n	%	n	%	n	%			
Magazine	9	(23.1)	24	(18.2)	11	(17.2)	44	16.9	0.74
Leaflets	0	(0.0)	6	(4.5)	10	(15.6)	16	6.1	***0.00***
Posters	1	(2.6)	11	(8.3)	2	(3.1)	14	5.4	0.22
Radio	9	(23.1)	47	(35.6)	19	(29.7)	75	28.7	0.31
TV	11	(28.2)	29	(22.0)	6	(9.4)	46	17.6	***0.04***
Tabloids	0	(0.0)	3	(2.3)	1	(1.6)	4	1.5	0.63
Peers	11	(28.2)	31	(23.5)	20	(31.3)	62	23.8	0.49
Parents	1	(5.1)	9	(6.8)	3	(7.8)	16	6.1	0.87
Trainings/seminars	2	(5.1)	17	(12.9)	5	(7.8)	24	9.2	0.28
Schools	20	(51.3)	67	(50.8)	28	(43.8)	115	44.1	0.62
Health care facility	3	(7.7)	32	(24.2)	19	(29.7)	54	20.7	***0.03***

High STI knowledge score was more common among older respondents compared to younger age group. Fewer male respondents had low STI knowledge score while more

female had low STI knowledge score (see Table 7). The proportions of sex and age group by three SES categories are presented on Table 7.

Table 7: Proportion of respondents with low, medium, and low knowledge score by age and sex

Characteristic	Low knowledge (n =148)		Medium knowledge (n = 35)		High knowledge (n = 78)				
	N	%	N	%	n	%	Total	%	P value
Age									
15 – 19	76	(51.4)	16	(45.7)	23	(29.5)	115	44.1	***0.01***
20 – 24	72	(48.6)	19	(54.3)	55	(70.5)	146	55.9	
Sex									
Male	45	(30.4)	20	(57.1)	45	(57.7)	110	42.1	***0.00***
Female	103	(69.6)	15	(42.9)	33	(42.3)	151	57.9	

Analyzing logistic regression, the determinants of high knowledge score found that respondents in low SES group were less likely to have high STI knowledge (OR = 0.45, 95% CI; 0.20 – 0.10) compared to those in high SES group. As shown on figure 1, the low knowledge score were increasing with decrease in SES from high to low SES. Level of education (primary and secondary school), sex, and age group showed statistical significant difference across SES groups after multiple regression model analysis. High STI knowledge score among respondents with primary education level after adjustment (OR 0.26, 95% CI; 0.14 and 0.49) was lower compared to those in secondary education (see Table 8).

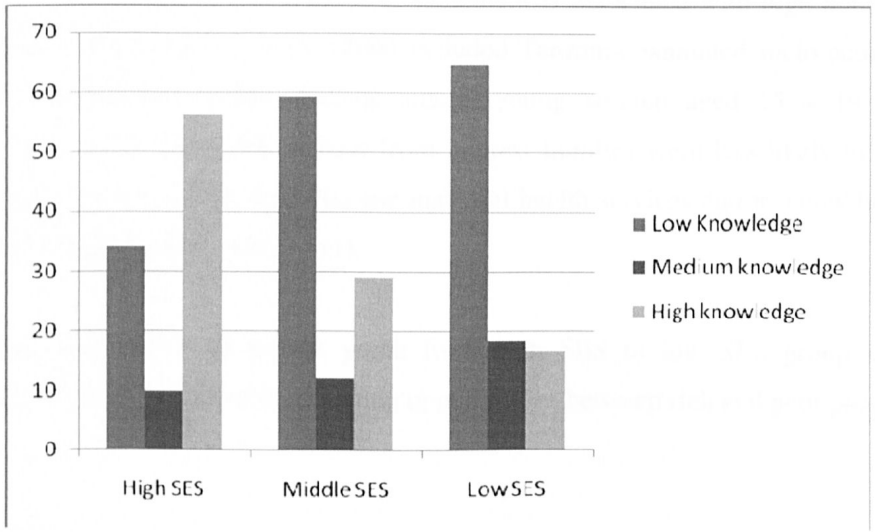
Male respondents were two times more likely to have a high STI knowledge score compared to female respondents (adjusted OR 1.96, 95% CI; 1.13 – 3.40). Also older youth aged between 20 – 24 years were more likely to have high STI knowledge compared to younger youth with (adjusted OR 0.53, 95% CI; 0.30 – 0.93). When high STI knowledge among respondents was compared between rural and urban there were no significant differences.

Table 8: Logistic regression model for determinants of high STI knowledge score among youth

Variable	N	Crude OR (95% CI)	Adjusted OR (95% CI)
Socio economic status			
High	41	1	1
Medium	149	0.40 (0.20 - 0.83)	0.56 (0.26 - 1.23)
Low	71	0.45 (0.203- 0.998)	1.12 (0.43 - 2.94)
Education level			
Secondary	80	1	1
Primary	167	0.24 (0.13 - 0.42)	0.26 **(0.14 - 0.49)**
Other	5	0.10 (0.01 - 0.95)	0.15 (0.02 - 1.52)
No education	9	0.50 (0.12 - 2.05)	0.43 (0.10 - 1.87)
Sex			
Female	151	1	1
Male	110	2.20 (1.33 - 3.61)	1.96 **(1.13 - 3.40)**
Residence			
Urban	136	1	1
Rural	125	0.58 (0.35- 0.94)	0.60 (0.32 - 1.13)
Age group			
20 – 24	146	1	1
15 – 19	115	0.53 (0.32 - 0.87)	0.53 **(0.30 - 0.93)**

The multiple regression models included all the variables in the table above.

Figure 1: Proportion of knowledge score by SES group



CHAPTER FIVE : DISCUSSION

5.1. Socio demographic characteristics

The study sample is skewed, such that there were more females than males who were recruited because it was most likely to find women at home during data collection. Therefore, the study sample cannot be regarded as a representative sample of the general population.

As shown in results, youth aged 15 – 24 years with primary school education 64.0% were twice as many compared to those with secondary education 30.7%. So this suggests that many people can access primary education than secondary education.

The fact that higher proportion of participants with high SES group were living in urban compared to rural suggest that more poor people lives in rural compared to urban population. In low SES group a higher proportion of participants were from rural. The findings are consistent with the recent Household Budget Survey finding that explains that 83% percent of individual living below basic need poverty line resides in rural areas while the rest live in urban (38).

As our results show, the level of education achievement is directly related to socio economic status. More youth with secondary education were from high SES group compared to those with primary education. It has been documented from another study that school drop-out was associated with the economic factors (39). The finding is supported by other research that education attainment is associated with high household income (40). A multi country study which included Tanzania examined socio economic impact on reproductive health outcome among young women aged 15 – 19 years coincided with our results. That women from poorest families were less likely to have: planned birth, practicing contraception, use maternal health services and to know how to prevent sexual transmission of HIV (41).

The increased proportion of jobless youth from high SES to low SES group shows disparity and it can be reflected in education opportunities between rich and poor people.

5.2. *Access to information*

Youth from high SES group reported they would comfortably talk to health care providers compared to low and medium SES groups. A study among adolescents showed that health care workers were a credible source of reproductive health information (42). On the current study, youth from high SES group were more likely reported that they would most likely talk to health care provider. This was the opposite for youth from low SES group who reported that would talk comfortably to their parents about STI had significant difference across SES groups.

According to this study, school, radio, peer and health care facilities have been reported to be the important sources of STI information among youth. The results are consistent with other studies that youth pointed to school as a common source of STI information (43), (44). Also the Tanzania government is implementing HIV/AIDS education curriculum among primary school students though the strategy have been explained as deficient due to incomplete coverage and drop out (45). A study among secondary school youth in Dar es Salaam also showed that radio was the common source of reproductive health information (46). However, on this study, television as the source of STI information showed significant difference by SES as would be expected since poor people in Tanzania do not have televisions. The difference observed between our study and the one cited above might be due to the fact that the present study involved both in and out of school youth. Furthermore this study had average large proportion of youth with secondary education compared to Tanzania population as a whole. So as discussed previously, low SES is related to low level of education attainment among youth.

The current study showed that radio and schools as sources of STI information have no significant difference among SES groups. This suggests that those are readily available sources of STI information to youth of from all SES groups. But when health care facilities were cited as source of information there were significant difference across SES groups. It seems that most of youth from low SES receives STI information from health care facilities. However the rich are more likely to get HIV (9) . Another study in Dar es Salaam illustrated that youth from poor communities have low HIV/AIDS knowledge and eventually have high HIV infection rates (47). Based on that we can deduce that youth

from low SES were more likely to get STI and seek health care, therefore they learned at the health facilities.

5.3. Basic STI knowledge

In this study, basic STI knowledge seems to be generally low since more than half of the participants had low knowledge score 56.7%. This means that they were not able to mention any STI or mention any of either male or female STI symptoms. This is current with the reproductive youth survey conducted in Tanzania in 2004 where about 50% of youth respondent could not mention 2 STI (48). A study which included respondents from all reproductive active ages in Kenya showed that about half of respondents were able to mention one female symptom compared to less than half who could not mention at least one male symptom (49).

There are limited studies that have related STI knowledge and youth socio economic status in Tanzania. As shown on results, only one female STI symptom (dysuria) mentioned showed significant difference in proportion across SES groups. Several male STI symptoms mentioned had significant difference across SES groups. Though there are limited studies that show SES differences on STI symptoms but previous studies show that STI symptoms are not well known to youth as the case of our study (46). The results suggest that youth from different SES knew differently most of male STI symptoms compared to female symptoms. Since they showed significant difference while female symptoms only dysuria showed difference across SES. The reason may be that male symptoms are dramatically known compared to female symptoms.

The present results show that syphilis and gonorrhea were commonly mentioned STI compared to chancroid, and candida. A study among American adolescents showed that respondents were more likely to mention STIs that they had earlier contracted. However fewer mentioned syphilis compared to other STIs mentioned in that study (43). Apart from AIDS, youth in Philadelphia most commonly mentioned syphilis and gonorrhea as STIs, similar to our study (50). This suggests that the names syphilis and gonorrhea are widely known to most youth. Lack of knowledge difference across SES groups suggests that most youth in all SES groups had heard of those two diseases.

Regression model shows that secondary education, older age group, and being a male are strong determinants of STI knowledge level. Education attainment is a confounding to SES, and this has been shown on our study that; youth from high SES group are more likely to have high education level. A study among adolescents in San Francisco revealed high rates of STI among youth from low socio economic groups (51). This implies that the effect of socio economic status is not only limited to knowledge acquisition but also disease acquisition.

From our results, male respondents were two times more likely to have high STI knowledge score compared to female respondents (OR 1.96, 95% CI; 1.13 – 3.40). The finding is supported by another study done in Tanzania which suggested that female had low knowledge on STI acquisition and prevention compared to male respondents. However the study (33) among college graduates in Benin showed that STI knowledge had no difference between male and female and across education achievement, the latter study had a different setting considering that their respondents were graduates (52). World Bank multi country study suggested that gender gap is related to wealth and is further associated with poor educational outcome (53). It can be deduced that when youth despite being male or female, are exposed to higher education level they will tend to have similar reproductive health knowledge. But there might be another reason for high STI knowledge among male compared to female, since STI knowledge is partially based on experience. Female may not show STI symptoms compared to male.

Youth from lower SES were less likely to have high STI knowledge score (OR = 0.45, 95% CI; 0.20 – 0.998) compared to those in high SES group before being adjusted for education level, sex, residence, and age group. However after adjusting for confounding variables there was no significant difference across SES groups against high STI knowledge score. A study in South Africa revealed that women in poor households were slightly less likely knowledgeable on HIV/AIDS (54). Also the study showed that poor women were more likely to practice risky sexual behavior. This implies that they were able to mention at least 2 STIs and could mention at least two male or female STI symptoms. Proportion of respondents with high knowledge score decreased with increase in SES level. The results suggest that STI knowledge was high among participants with

high SES though the differences were not statistical significant. The reason might be that, there were confounding factors that are directly related to their SES status i.e. education level. For that reason we can't directly conclude that STI knowledge score is not related to youth SES. Population based survey shows that youth knowledge on source of condom increased with both wealth and level of education (9). This typically shows education and wealth are related to knowledge of important reproductive health matters among youth. Our results seem to differ from the previous survey due to the fact that we used different indicators to measure household SES.

Living in urban areas seems to be an insignificant determinant of high STI knowledge score, however as discussed earlier SES class **is** associated with urban and rural distribution of respondents. Another study determined HIV knowledge showed the different results that urban youth were knowledgeable than rural youth (39). In our study, rural population is not a typical rural population rather it can be considered as peri-urban due to accessibility to the city, Dar es Salaam where the study was conducted.

The risk of high STI knowledge score among respondents with primary education level after adjustment (OR 0.26, 95% CI; 0.14 and 0.49) was lower compared to those in secondary education. Both education and area of residence have been predictors of STI knowledge in other studies (33), (32).

Younger youth aged between 15 – 19 years are less likely to have high STI knowledge (OR 0.53, 95% CI; 0.30 – 0.93) compared to older youth aged 20 – 24 years. Another study on STI knowledge among primary school pupils aged 13 – 16 years showed increase in STI knowledge with an increase in age (33). The recent Tanzania demographic health survey 2004 showed that AIDS knowledge was low among youth aged between 15 – 24 years compared to those aged above 24 years (55). This strongly suggests that knowledge on either STI or HIV increases with age. Therefore there is strong evidence that older youth are more exposed or experienced on STI education, though both youth groups belong to risky group.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusions

This study clearly indicates that STI knowledge among youth is low despite living in urban or rural areas. Socio economic status have been shown to be weak determinant of STI knowledge among youth, but other determinants like education, age and sex have been strong predictors of STI knowledge among youth. There should be strong emphasis towards attainment of higher education beyond primary education if we wish to achieve high reproductive health outcomes starting from STI knowledge.

6.2. Recommendations

6.2.1. Practice

- Younger youth are more vulnerable to most negative reproductive health outcomes. They still need more information education information targeting their specific groups even though STI rates are not higher among them.

- Since the majority of youth do not get formal education opportunities beyond primary education, it is important to ensure that youth gets formal reproductive health information and education that is tailored for primary school youth. Reproductive health education should target younger youth since they are vulnerable, and lack information. Stakeholders should develop curriculum based educative interventions for out of school youth.

- Gender disparities manifest in STI knowledge among youth. Young women seem to be less knowledgeable compared to their male counterpart. This calls for gender focused educational interventions, given that young girls are at risk of HIV infection and other sexual reproductive health challenges.

6.2.2. Policy

- Policy makers and program managers in reproductive health should consider socio-economic status of youth in programming. Strong advocacy on youth reproductive health needs is highly needed.

6.2.3. Future research

- It is strongly advised to use principal component analysis in developing SES indicators for studies of this nature for easy analysis and comparison with other studies.

- More research is needed on socio economic determinants of behaviors and skills acquisition of significant reproductive health challenges including STI in Tanzania.

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