DETERMINANTS OF DEMAND FOR HEALTH CARE AMONG SEXUALLY TRANSMITTED INFECTIONS PATIENTS IN KENYA

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3RD NOVEMBER 2021

Declaration

This study is original work and to the best of my knowledge, has not been presented for a degree award in any other University.

Signature………………………………….   Date……………………………………… 3RD NOVEMBER 2021
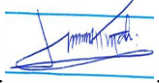
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Dedication

I dedicate my work to my family. Their love and support through the whole process has given me the strength to start and take this to completion.

Acknowledgement

Firstly, I thank God for the strength and will to undertake and complete my thesis. I also thank my esteemed supervisor Dr. Urbanus Kioko for his invaluable guidance, support, and tutelage during the time I wrote my thesis. Additionally, I would like to express gratitude to Dr. Vincent Were for his mentorship in matters health economics and the guidance through the whole course. My appreciation also goes out to my family and friends for their encouragement, prayers, and support all through the duration of my studies.

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Abbreviations

AIDS   Acquired Immunodeficiency Syndrome.

CDC   Center for Disease Control and Prevention.

HIV   Human Immunodeficiency Virus.

KDHS   Kenya Demographic Health Survey.

MOH   Ministry of Health.

NASCOP   National AIDS and STI Control Programme.

SSA   Sub-Saharan Africa.

STIs   Sexually Transmitted Infections.

SES   Socio-Economic Status.

UNAID   United Nations Programme on HIV/AIDS.

WHO   World Health Organization

Abstract

Globally, sexually transmitted infections (STIs) have become an enormous burden leading to high mortality and morbidity. In Kenya, various policies have been formulated to address various conditions including STIs. Individuals suffering from STIs are highly encouraged to seek medical care and avoid transmitting to uninfected individuals. According to the KDHS 2014 report, only 30% of male and 32% of female sexually transmitted infection (STI) patients sought treatment or advice from a health professional in a health facility. The primary objective of this study is to ascertain the factors that influence the demand for health care among sexually transmitted infection patients in Kenya. The study's specific objectives are to ascertain health care utilization rates among STI patients in rural and urban areas of Kenya, and to ascertain the factors influencing health care demand among STI patients in Kenya. The study analyzed data from the 2014 KDHS household survey, a cross-sectional household survey. Because the dependent variable is binary, a binary probit regression model was used to demonstrate the effect of multiple independent variables on health care seeking among STI patients in Kenya. From the results, it was established that about less than 10 percent (about 8 percent) of STI patients acknowledged to be using healthcare services whereas the other huge population that is 91 percent sought healthcare from other sources. Further, it was revealed that age of the individual, sex, marital status, education levels, wealth quintiles, and employment status, residence, and sex partners were statistically significant determinants associated with utilization of healthcare services among STI patients in Kenya. Furthermore, determinants such as age squared and being Muslim were found to be negatively associated with utilization of healthcare services though religion was not statistically significant.

Based on these findings, the study recommendations include the following:

Customization of the existing Sexual and Reproductive Health programs by ministry of health to target increase of uptake of services by the groups shown to have low service utilization including men, young, and rural dwellers.

Intersectoral collaboration among ministries both in central and county governments to improve socioeconomic and demographic indices like literacy levels, unemployment rates, and poverty as these are shown to be statistically significant deterrents of health care uptake.

Innovative healthcare financing strategies through national social health insurance via NHIF. Pro-poor policies with a country wide coverage may reduce barriers to care seeking by the poor in the society.

CHAPTER ONE: BACKGROUND

1.1 Background of the Study

Sexually Transmitted Infections (STIs) are known to have a huge burden of mortality and morbidity in most developing countries (World Health Organization, 2016). This is due to their influence on reproductive health and child health. Globally, STIs in general are a major health problem and their prevention is a priority since the emergence of Human Immunodeficiency Virus (HIV) and AIDS (World Health Organization (WHO), 2012). Previous studies have reported a synergy between HIV/AIDS and STI (Singa et al., 2013; Djomand et al., 2016). In the last few decades, more than 30 sexually transmitted pathogens have been discovered, Human Immunodeficiency Virus (HIV) being among them (Workoski *et al.,* 2015). Globally approximately 340 million new STIs cases (Syphilis, Trichomoniasis, and Gonorrhea and Chlamydial infection among others) occur every year. These infections may lead to unnecessary deaths despite the cost-effective prevention of most of these conditions (Djomand et al., 2016). Worldwide approximately 4000 newborns babies become blind each year due to STIs infection such as gonococcal and chlamydial ophthalmia neonatorum infection (WHO, 2016).

In Sub-Saharan Africa, STIs continue to be a public health problem. According to WHO approximately 12% of those in the age category 15 to 49 years have a curable STI (WHO, 2015). A previous study conducted in South Africa on HIV and STI revealed that STIs are associated with increased risk for getting HIV (Wand, et al., 2020). The existence of these two is associated with increased infectivity to sexual partners. In SSA and many other parts of the world, various interventions have been put in place to reduce the spread and seriousness of these sexually transmitted infections (WHO, 2015).

The standard epidemiological model for STD (Anderson, 1989) defines the basic reproductive rate of an STD in a population as a function of the efficiency of transmission (the average probability of transmitting infection from an infected individual to a susceptible person), the average rate of acquisition of new sexual partners in the population and the average duration of infectiousness. Interventions directed to reducing any of the parameters should be of use in reducing the incidence of STD. The major interventions currently target rate of partner change through prevention campaigns, and rate of transmission (through the use of condoms and other barriers). Theoretically, therefore, reducing the duration of infectiousness should also be of major importance in STD control.

The burden of sexually transmitted disease has been an enormous problem globally. This is due to its contribution to high mortality and morbidity rates (Djomand et al., 2016). The quality and accessibility of services clearly plays a role in attracting people with, or at risk of, STD. However, social stigma around issues of sexual activity and sexually transmitted diseases have a major influence on patterns of presentation to health care services (Ramchandani & Golden, 2019). To increase the proportion of people with sexually transmitted disease who seek effective treatment and counselling, programme planners need to know more about factors that influence health seeking behavior in relation to sexually transmitted diseases.

The significance of health seeking behavior can be seen in the context of delays in symptom recognition and seeking care which can increase the incidence of disease. In contrast, reducing the time between onset of infection and cure, through improved utilization (through, for example, increased accessibility) of services and education about symptom recognition, could play an important part in STI control (Ramchandani & Golden, 2019). Developing countries however have been focusing on promoting health care utilization as an important policy to improve health outcomes (WHO, 2018) and to meet international obligations to make health services universally accessible. Nevertheless, many policy and research initiatives focused on improving physical access rather than focusing on the pattern of health care service utilization related to demand side (Wellay et al., 2018).

In many parts of Africa, only a minority of people with STIs consult public facilities. For example, among adolescent girls in a rural area of Nigeria, over 805 reported a vaginal discharge but few sought treatments (Iorkosu et al., 2020). Similarly, in Democratic Republic of Congo, Crago (2020) established that 87% of 1200 commercial sex workers participating in a survey had signs and symptoms suggestive of an STIs in the previous year, but only 32% had visited public health care facility. In contrast, a population-based study in Tanzania found that nearly all men and 90% of women reporting symptoms of STI had sought treatment in the official health sector (Kerrigan et al., 2020).

The burden of STIs in Kenya, as in the rest of sub-Saharan Africa, is high and increasing (Chesang, et al., 2017). In 2012, the overall prevalence of STIs in Kenya amongst individuals aged 15–64 years was estimated at 0.9%. However, the population prevalence for abnormal genital discharge was 6.2% for women and 1.5% for men, while it was 9.8% and 4.6% for women and men living with HIV, respectively (NASCOP, 2014). In 2010, a cross-sectional study conducted in Kenya amongst 39 of the 42 largest HIV care clinics, involving 1,063

women and 598 men, revealed that 63.1% of women had at least one STI symptom, of which 30.8% were confirmed etiologically (NASCOP, 2014). Trichomoniasis was the most prevalent, at 10.5% and 2.8% for women and men participants, respectively (Singa et al., 2013; Djomand et al., 2016). These results underscore the fact that STIs are frequent among people living with HIV (PLHIV). Additionally, because these populations routinely attend HIV care clinics where STI counseling and screening are a part of the routine care package of services, such high STI rates could be an indication of suboptimal service provision.

A cross-sectional study conducted among women aged 18-49 years attending a family planning clinic at Kenyatta National Hospital found a high prevalence of Chlamydia trachomatis (13%), with the highest age-specific prevalence occurring in the 25-29 years age group (21%) (Maina, Kimani & Anzala, 2016). None of the women were infected with Neisseria Gonorrhea (Maina et al., 2016). Among respondents who had ever had sex in the 2014 Kenya Demographic and Health Survey (KDHS), it was reported that 2% had an STI in the 12 months preceding the survey, while 6% of women and 2% of men reported having recently experienced an STI or STI symptoms (Kenya National Bureau of Statistics, 2014).

According to NASCOP (2014) the future for course of STI elimination depends on access to health care services for sexually transmitted infection and modification of risk behaviors. Figure 1.1 shows that 68% of women and 70% of men who reported to have STI or showed STI symptoms had sought advice or treatment from hospital, clinic, or private doctor or any other health facility. Nevertheless 25% of women and 14% of men had not sought any advice or treatment.
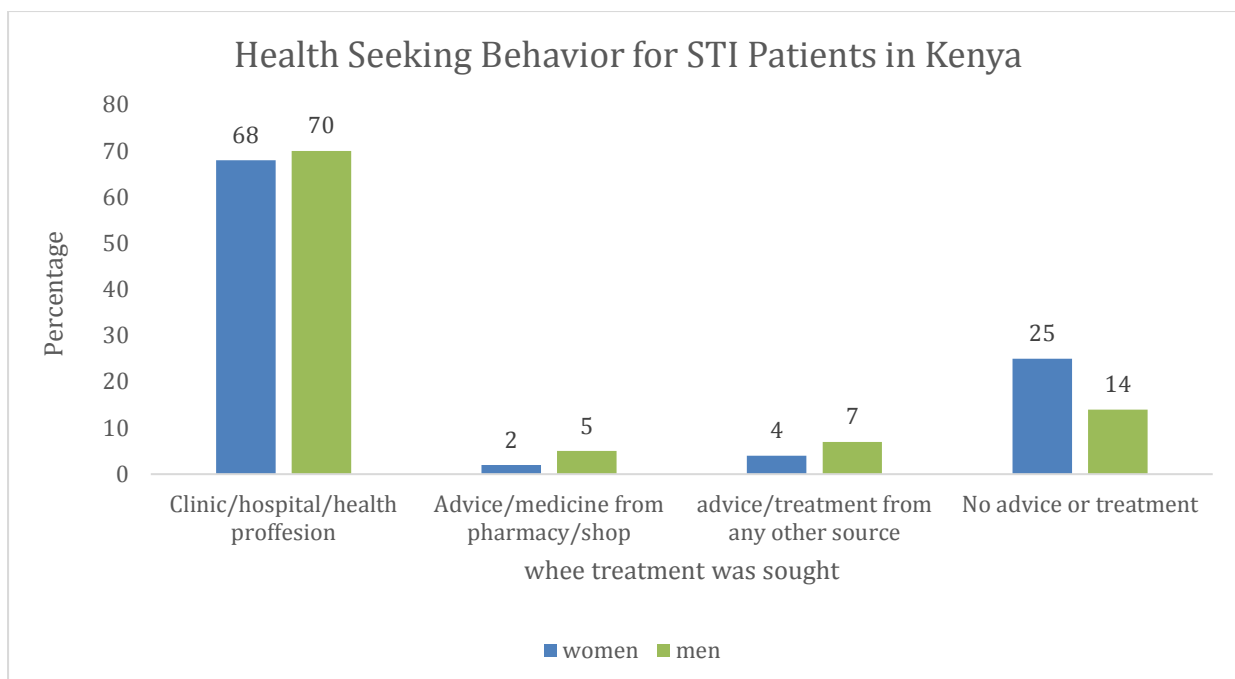
Figure 1.1: Health Seeking Behavior for STI Patients in Kenya
Source: Kenya National Bureau of Statistics (2014)

The physical, psychological, and social consequences of STIs severely compromise the quality of life of those infected. According to NASCOP (2018) adequate control of STIs will contribute to reducing disease and human suffering. Health care providers should recognize the serious stigma surrounding STIs and treat patients with respect and privacy (Arnault, 2009; Newton-Levinson, Leichliter & Chandra-Mouli, 2017). Furthermore, STIs have an ndirect impact through their role in facilitating sexual transmission of human immunodeficiency virus (HIV). Infection with syphilis, Gonorrhea, chlamydia or HSV does not only increase the risk of acquiring HIV infection, but also increases the risk of HIV transmission by increasing genital HIV load (NASCOP, 2018). Unfortunately, there is little information on health seeking behavior of STI patients in Kenya but it is believed that similar trends are shared with other developing countries.

1.2 Statement of the Problem

Sexually transmitted infections (STIs) are a major public health concern in developing countries (World Health Organization, 2016). In sub-Saharan Africa, STIs and their associated complications account for a substantial proportion of outpatient care visits ranking among the top five leading causes of health care seeking. According to Tsadik, Lam and Hadush (2019) health-seeking behavior affects people's actions when they suspect an infection. Individuals who experience a symptom of STI are likely to delay seeking timely care or may not seek care

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despite the available service. Consequently, delayed treatment or untreated infection can lead to pelvic inflammatory disease, ectopic pregnancy, infertility, cervical cancer, fetal loss, a health problem of newborn, and increased risk of HIV infection (Voeten et al., 2004). Those infected with STI are required to seek health care to treat curable STIs and get advice on how to avoid infecting others (NASCOP, 2018).

In Kenya, the government has put various interventions in place to reduce STI prevalence by 50% and ensure better health. The developed national guideline outlines how the health system's components will interact to provide efficient and effective STI services (NASCOP, 2018). The Kenya Demographic Health Survey KDHS (2014) however indicated that among the STI patients surveyed, about 14% of men and 25% of women never sought treatment for STIs or advice from any healthcare service provider. In addition, it was found that 42% and 23% of STI patients had been symptomatic for a period of one and two weeks respectively. According to Tsadik et al., (2019) most of STI patients delay seeking care because they had previously sought treatment in the informal sector. On the other hand, available information reveals that men who report to have recently purchased sex, and women who were selling sex in informal settlements in Kenya are likely o present to a health center earlier than others (NASCOP, 2018). According to Maina et al., (2016) such delays are likely to lead to an increased probability of long-term complications and to continued transmission.

Empirical studies at global and local levels have been undertaken examining factors affecting healthcare use. Specifically, studies on STI patients have examined factors influencing patients' online health information-seeking behaviors (Graffigna et al., 2017), as well as the determinants of health care service demand in Northern Ethiopia(Wellay, et al (2018). Other studies include a longitudinal study to explore experiences of stigma related to health care in the Atlanta (Eaton et al., 2018), delayed health care seeking among patients presenting STIs in HIV hotspot areas in Ethiopia (Tsadik, Lam & Hadush, 2019), and barriers to STI service use by men in Nepal (Jahangir, et al., 2020). Despite the high prevalence of STI in the country and various studies undertaken in the country on STIs, empirical studies on health seeking behavior among STI patients/clients remains scanty in Kenya.

In Kenya, studies including Muriithi (2013) examined determinants of care seeking behavior in Kibera slums. Chesang et al. (2017) conducted a qualitative thematic analysis to elicit perspectives from healthcare providers in Kenya on managing sexually transmitted infections. (Oliver et al., 2018). Despite these studies attempting to establish determinants of healthcare

use among STI patients (such as Kufa et al., 2019) were either facility based or case studies whereas some were either descriptive or qualitative studies. There is no country level studies employing robust econometric methods in investigating determinants of healthcare use among STI patients in Kenya. This study is conducted therefore to fill this gap.

1.3 Research Questions

i. What is the uptake levels of health care among STI patients in rural and urban regions in Kenya?

ii. What are the determinants affecting demand for healthcare among STI patients in Kenya?

iii. What measures should be put in place to boost demand for care seeking among STI patients in Kenya?

1.4 Aim and Objectives of the Study

1.4.1 Aim

The main aim of this study is to investigate factors affecting demand for health care among STI patients in Kenya.

1.4.2 Specific objectives

i. To determine the uptake levels of health care among STI patients in rural and urban regions in Kenya.

ii. To determine factors affecting demand for health care among STI patients in Kenya.

iii. To suggest policy recommendations from the findings objective (2) above.

1.5 Justification of the Study

Sexually and Transmitted Disease (STD) programs are frequently being integrated with broader AIDS programs to address the significant public health problems (NASCOP, 2018). Many STDs, such as syphilis, gonorrhea and urethritis can be diagnosed and treated, and yet millions of cases in the world are left untreated leading to continued transmission and serious sequelae. An understanding of health seeking behavior is therefore important if STD control programs are to be effective. This study will contribute to existing knowledge on health seeking behavior of STI patients in Kenya by establishing the key determinants to be considered in policy making. The findings will be of importance to policy makers and planners who are tasked with designing STI policies as well as allocation of resources to curb the spread

of the disease. In addition, the results build up to human capital model and employs econometric model to identify significant predictors in demand for healthcare use by STIs.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical and empirical literature reviews, as well as an overview of the literature. The theoretical review covers the Health Belief Model by Hoch Baum. The empirical literature gives a review of previous studies and related findings. In conclusion, the overview literature highlights the gaps.

2.2 Theoretical Literature

Scholars from different streams of economics, anthropology, epidemiology, public policy, and management have explored the reasons behind utilization of healthcare services by an individual. There are different models to explain healthcare services utilization for instance the health belief model based on the various perceptions and motivations of the individual (Rosenstock, 1952), human capital model (Grossman, 1972) and Andersen model of health use (Andersen, 1968).

2.2.1 Health Belief Model

Hochbaum, Kegels, and Ronsenstock (1952) developed the Health Belief Model (HBM) as a systematic approach for explaining and predicting preventive health behavior. HBM is concerned with the connections between health behaviors, practices, and health service utilization. According to HBM, a person's motivation to engage in health-related behavior can be explained by three concepts: individual perception, modifiable factors, and likelihood of action. Individual factor theory in HBM presupposes that a person takes a health-related action in response to what the individual perceives to be a serious or dire health consequence and believes can be avoided.

Modifying constructs focuses on demographics like knowledge of a condition, experience of a serious condition and social pressure that shapes a person's perception that he/she might be susceptible to a particular condition (Verelst, Willem & Beutels, 2016). Perceived threat motivates individuals to act and benefits from taking recommended actions to avoid negative health consequences. Additionally, this increases readiness and encourages explicit behavior to overcome barriers to taking health-related action. Cues to action such as information, education, and the symptoms of a condition serve as reminders that behavioral change is necessary. The last construct, likelihood of action, focuses on the probability of a person of taking the recommended preventive health action after weighing

the perceived benefits of a health-related action. This study adopted the HBM because it focused on the element of behavioral change necessary in use of healthcare services by STI patients.

2.2.2 Human Capital Model

Healthcare systems increasingly becoming more complex, thereby impacting healthcare providers' ability to provide high-quality healthcare with consequent decrease in demand for specialized care. The human capital model was suggested by Schultz (1961) popularized by Becker (1962) and advanced by Grossman (1972). The human capital theory considers health as a commodity that is utilized and maximized with respect to budget constraint; because of endogenous and exogenous variables or characteristics that impact on an individual's health (Grossman, 1972).

The theory likens health to stock of goods inherited but depreciates over time. Due to the depreciation, an investment in health is needed such as medical care in combination with other relevant factors to produce new health stock to replace the deterioration in health stock. If the health stock is not replaced, the health stock depletes to zero, and finally results to death (Grossman, 1972). In this study, this theory helps in understanding the various drivers such as socio-demographic and economic factors that motivate the STI patient to seek care to maintain his or her stock of current and future health.

2.2.3 Andersen Health Utilization Model

The Andersen model considers healthcare service use to be linked to socio-cultural and economic needs. The model was developed by Andersen (1968) with the predisposing, enabling and the need factors being the main components in general use of healthcare services. The model is grounded on major issue that influences decision making which includes, economic, distance travelled or coverage areas, education levels, distinct achievement cantered on past services used as well as perception on quality of care to clients. To expand the model, Maina et al (2016) also suggested consideration of other administrative, social, topographical, environmental, and financial facets that appear to relate to the health of individuals.

Further, it is claimed that contemplations need to be given to household(s) or healthcare systems (Pokhrel & Sauerborn, 2004). Hence, the stimulus for healthcare service use are also affected by aspects such as socio-economic as well as political and cultural factors as

alleged and explained by the community or individual(s). From Andersen's model, it is important to consider Social determinants of Health (SDH) that is both demographics as well as socioeconomic characteristics in evaluating the use of healthcare services among STI patients. In this context, this model indicates how socio-economic characteristics, determines demand for healthcare services for STI patients in Kenya.

2.3 Empirical Literature

This section provides a review on previous studies conducted with regards to health care seeking behavior among STI patients based on proximate factors, providing evidence and related findings.

Jahangir et al., (2020) did a study to explore the barriers to STI service use in public hospitals in Nepal. Eighteen semi-structured interviews were conducted through purposive sampling for healthcare service providers while Nepali male service users between ages 25 and 49 years were interviewed following a convenience sampling. Qualitative thematic analysis, separately for providers and service users was conducted in order to identify varying perspectives regarding barriers to STI service use. From the findings, the main barriers by healthcare providers include low health literacy, poor user-provider interaction, overcrowding in service delivery, and in maintaining confidentiality. Service users mentioned about poor sexual health knowledge and confidentiality remain a concern, while both groups mentioned about fear of infection with STI as a facilitator factor in availing sexual health service screening and treatment.

Delayed health care seeking is high among patients presenting with sexually transmitted infections in HIV hotspot areas (Tsadik, Lam & Hadush, 2019). A multivariate logistic regression analysis was used to identify factors associated with health-seeking behavior. The findings showed that the proportion of delayed health care seeking among patients treated for STIs was 56.8%. On the other hand, knowledge, number of sexual partners were found to be significantly associated with early seeking behavior in multivariate logistic regression, patients who had better knowledge of STIs, had single sexual partner, those who perceived stigma for STIs, and perceived severity of STIs.

A cross sectional survey was carried out to identify the variables affecting patients' online health information-seeking behaviours (Graffigna, et al.,2017). They

examined relationships between patient participation in their healthcare and online health information-seeking behaviours. The study targeted Italian chronic patients. Structural Equation Modelling analysis was conducted to test the hypothesis. From the findings, it was shown that the healthcare professionals' ability to support chronic patients' autonomy affect patients' participation in their healthcare and patient's online health information-seeking behaviours.

A community based cross sectional study design was conducted by Wellay et al (2018) in Northern Ethiopia to establish determinants for health care services. Systematic random sampling technique was used to select participants. A pretested and standardized semi-structured interviewer administered questionnaire was used to collect the data Multinomial logistic regression model was used to identify the determinants of demand for health care service. From the findings, 72.5% of the participants demanded modern health care services. The multinomial logistic regression econometric model revealed that perceived severity of illness, being educated, household head, quality of treatment, distance to health facility, and cost of treatment were significantly and statistically associated with demand for health care service among patients.

Rates of HIV/STI transmission among Black men who have sex with men (BMSM) are alarmingly high and demand urgent public health attention. A study conducted by Eaton et al (2018) analysed experiences of stigma related to health care among 151 BMSM residing in the Atlanta, GA area, both prior to and post HIV or STI diagnosis in a longitudinal study (data collected from 2014 to 2016). The findings demonstrated that inadequate health care engagement was associated with post-diagnosis anticipated stigma. Pre-diagnosis prejudice is a predictor of post-diagnosis enacted, anticipated, and internalized stigmas. Results provide a novel understanding of how stigma unfolds over-time and provide direction for stigma intervention development.

Studies have shown that health care seeking behaviour among STI patients varies between socio-economic and demographic characteristics of people in a country. Nyalela et al (2018) used an observational, analytical cross-sectional study design to examine health seeking and sexual behavior among men with sexually transmitted infections attending clinic in Durban. Pearson chi-square and fisher's

exact tests were used to test the association between categorical variables. Multiple regression was used to examine factors associated with delayed health care seeking behaviour. The results showed a significant association between participants who used condom only when sober and delayed seeking for health care. Majority of the participants 97(72.4) did not use condoms when they were not sober, but timely sought health care and 27(87.1%) of non –condom users delayed in seeking health care. Other reasons that delayed health care seeking was bad attitude of the nurses and staff stigma.

The timing of the health care seeking behavior among individuals is often influenced by socio-demographic, behavioral, perception, and knowledge of STIs. Besides, access to health care and cultural norms of society matters the time for health care seeking among STI patients. STI treatment and care are often embarrassing and disgraceful. Other studies revealed that health care-seeking behavior is often influenced by socio-demographic, behavioral, and health system factors (Amin, Shah & Becker, 2010).

Utilization of health care often depends on socio-demographic factors, social structures, cultural beliefs and practices, economic and political systems, environmental conditions, and the disease pattern and health care system itself (Glanz et al., 2008). Closing the knowledge gap regarding STIs through education and counselling is a strategy to avoid the delay in health care seeking and prevent the development of complications from STIs (Shiferaw et al., 2011).

In a related study, Khalid et al (2018) conducted a health facility-based study to explore the factors affecting STIs patients' service satisfaction at the Primary Health Care (PHC) in El-Damazin locality at Blue Nile State (BNS) in Sudan. From the findings, more than half STIs patients were females, more than 40% were at the age of 25 years or less and single. Majority of studied patients stated that the PHC centers were accessible, and the service is affordable. More than 60% rated the patients Care Providers (CPs) communication pattern as good, yet more than 50% of the single STIs patients, and more than 40% of the young patients did not receive education and counselling on condom. Also, more than 60% of the illiterate patients did not receive education and counselling for HIV. Though the study showed that more than 60% were satisfied with provided

service, the validation of this satisfaction those patients were not fully aware of their rights to communicate and discuss their cases with health CPs, even how to deal with the community and to receive all component of STIs service without discrimination.

Further studies reveal that patients with single partner were more likely to seek health care early than those with multiple partners in this study. This is consistent with the study conducted in Gondar Town (Small et al., 2013). The possible explanation could be those with a single partner are often married or in a union so that they worry about their health as well as the health of their partner. Besides, fear of complications and being committing risky sexual behavior may trigger them to seek care early (Shiferaw et al., 2011). The probability of STI transmission increases with time if patients with STIs are not treated early.

Oliver, et al., (2018) did a study in Kisumu to assess prevalence of sexually transmitted infections among women screened for a contraceptive intravaginal ring study. The study assessed prevalence and correlates of bacterial vaginosis (BV) and Sexually Transmitted Infections (STIs) including herpes simplex virus type 2 (HSV-2), gonorrhoea (GC), syphilis (SYP), Chlamydia (CT) and HIV among Kenyan women aged 18–34 years who were screened for a contraceptive intravaginal ring study. Women provided demographic, behavioural, and medical information, and underwent medical evaluation, including a pelvic exam. The study used log-binomial regression. From the findings, 72.2% tested positive for any STI or BV. Point prevalence was 55.6, 38.5, 3.9, 2.0, 4.6, and 14.7% for HSV-2, BV, GC, SYP, CT, and HIV, respectively. Having ≥ 1 STI/BV was associated with younger age at first sex, history of exchange sex, sexual intercourse in the past seven days, and older age. STI/BV diagnosis was less likely for women reporting one lifetime sexual partner compared to women with ≥ 4 lifetime sexual partners.

Chesang et al (2017) did a study to explore barriers to the management of STIs. They obtained data from 87 HCPs working in 21 high-volume Comprehensive HIV Care Centers (CCCs) in 7 of Kenya's 8 regions. This was purely qualitative study.   The main barriers to the management of STIs reported were low commitment by higher levels of management, few recent STI-focused trainings, high stigma and low community participation, and STI drug stock-outs.   Further,

it was revealed that, health providers were knowledgeable and prioritized STIs, providers were aware that the number of cases of STIs is high and increasing, most services for STIs except for condom provision were suboptimal, health providers believed STI diagnosis carried high stigma in the community, and community participation in STI prevention and stigma reduction was low.

Medical male circumcision (MMC) is a proven intervention for preventing HIV acquisition among males. Kufa et al (2019) did a study to examine the circumcision status, eligibility for MMC referral and associations with HIV positivity among symptomatic males seeking Sexually Transmitted Infections (STI) services in primary care facilities located in six South African provinces. In the sentinel surveillance conducted at, an anonymous questionnaire was administered followed by collection of appropriate genital and blood specimens for laboratory testing including HIV, Rapid Plasma Reagin (RPR) and HSV-2 serological testing. During analysis, multivariable logistic regression was used to determine association between prevalent HIV infection and male circumcision among males who were HSV-2 AND/OR RPR serology positive and among those who were negative. Among those HSV-2 AND/OR RPR positive, MMC had a statistically insignificant 26% lower odds of being HIV positive. In both groups HIV positivity increased with age but was positively associated with condom use at last sexual encounter and previous treatment for an STI syndrome among those HSV-2 and RPR negative. High HIV positivity and high yield of eligibility for VMMC referral among males attending STI services points to the need for better integration of HIV prevention and treatment with STI care.

To explore whether HIV stigma negatively impacts adherence to antiviral medications in HIV-infected adolescent women, Martinez et al (2012) conducted a moderational analysis and factors identified that could alter said relationship. Study participants were 178 adolescent females age 15–24, enrolled between 2003 and 2005, from 5 different cities and 60 provided adherence information. HIV stigma was not found to be a significant predictor when binary logit regression was run with medication adherence at 1 year. Using moderational analysis, factors that could moderate stigma's effect on medication adherence was still pursued and identified the following to be significant at 12 months: health care satisfaction; and Coping (proactive coping strategies, turning to family, spiritual

coping, professional help, and physical diversions. Factors that had no significant moderating effects included: social support measures and depression score greater than 43%. The study conclude that HIV-infected adolescent women experience HIV stigma and poor adherence over time. Factors like health care satisfaction and coping may minimize stigma's effect on medication adherence. The study was however based on small population and lack of a direct relationship between stigma and adherence on binary logit regression analysis.

2.4 Overview of Literature

This section examined various models, which provided us with a framework for selecting variables for the purpose of developing the theoretical framework for this study. It is theoretically feasible that socio-demographic, economic and health facility factors have influence health care seeking behavior among STI patients. From empirical literature, health care-seeking behavior is often influenced by socio-demographic, behavioral, cultural beliefs and practices, economic and political systems, environmental conditions, the disease pattern and health system factors (Glanz et al., 2008; Amin, Shah & Becker, 2010; Oliver et al., 2018; Tsadik et al., 2019). Unfriendly health service, lack of privacy, a culture, and perceived norms cause variation in individual preference to seeking health care (Arnault, 2009).

Level of education, being HIV negative, had a friend who did not seek treatment, misconceptions about the cause of STIs, perceived the severity of STIs and no condom use were reported as factors for delay in health care seeking (Agambire & Clerk, 2013; Nyalela et al., 2018; Tsadik et al., 2019). Studies also revealed the association of health care-seeking behavior with limited access to health services, negative attitude of health workers, socio-cultural, and gender issues (Langeni, 2007; Govender & Eche, 2012). A review study also identified confidentiality, cost, and stigma as barriers to making a decision to seek care (Newton-Levinson, Leichliter & Chandra-Mouli, 2017).

Additional research indicates that patients' healthcare seeking behavior may be influenced positively or negatively by their age, gender, level of education, household size, occupation, and marital status (Amin, Shah & Becker, 2010; Muriithi, 2013). Economic determinants had a negative effect on care seeking behavior, with existing research indicating that those in the poor quintile were more likely to delay seeking timely treatment for STIs, in comparison to those in the wealthier quintiles.

The review of the literature on health facilities as predictors of care seeking behavior revealed a detrimental effect on timely seeking of services (Graffigna et al., 2017). This could be attributed to the fact that health care providers' attitudes, the geographic location of health facilities, a lack of privacy and confidentiality, a shortage of female doctors, a shortage of medicine, a lack of health education, the cost of services, waiting times, and opening hours all played a role, and there is a need to address these issues in order to promote timely uptake of STI treatment services(Singa et al., 2013; Nyalela et al., 2018; Oliver et al., 2019). Most of these studies are either facility based, or location/region based and not country level.

Different study designs including qualitative and quantitative designs were employed with models such as multiple linear regressions as well as correlation analysis used. There is limited use of binary regression models. Thus, this study will analyze the determinants of healthcare demand among the STI patients in Kenya using binary probit regression model. Robust dataset will be obtained from KDHS (2014).

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter contains the theoretical framework, the estimable model, and its specifications. Description of the variables as well as diagnostic and data source are provided.

3.2 Theoretical framework

Demand is an economic concept that describes consumer's desire to pay a price for goods or services. If all other factors are constant, a rise in the price of a good or service will reduce demand and a decrease in the price of a good or service will increase demand. On the other hand, demand for health care is characterized by the level of actual consumption of an individual n case of facing illness/injury, this consumption could differ in accordance with demand factors such as income, cost of care, education, social norms and traditions, and the quality and appropriateness of the services provided (Nahu, 2006; Wellay et al., 2018).

Healthcare is different from other services because it is not clearly defined. In most industries, he product or service can be standardized to mprove efficiency and quality. In healthcare, every consumer is structurally, chemically, and emotionally different (Halamka, 2011). What works for one person may not necessarily work for another. Healthcare also differs in terms of choosing consumers. In other services, there is a choice in selecting which person or industry business can be conducted with. It is not so in healthcare as treatment has to be provided to patients in places like the emergency room regardless of patients' ability to pay or not (Babalola, 2017).

According o human capital model, the demand for healthcare comes from the desire of the consumer to gain good health (Grossman, 2000). Most people prefer being healthy to being sick. Another factor that makes health care different from most other goods and services is that it is simultaneously an investment (Orayo, 2014). The money consumer spends on being healthy today will also benefit the consumer in the future. Another key characteristic of health care is that demand is relatively inelastic (Halamka, 2011). If a consumer is sick and requires medical care, the consumer will purchase healthcare services at almost any price. The consumers' ability to purchase healthcare is ultimately limited by

the customers' income, but consumers are likely to trade off spending on many other products to purchase the medical care needed.

Healthcare demand is gradually rising. According to Babalola (2017) many countries will spend more than 20% of Gross Domestic Product (GDP) on health care by 2050. Two main contributors to this growth are the increasing prevalence of preventable illness including STIs and the suboptimal use of healthcare resources (Dixon-Fyle & Kowallik, 2010; Wellay et al., 2018). These factors however are influenced by choices consumers make.

3.3 Analytical Framework

This study applied Mwabu's framework (2007). The framework presents a unified model of demand for health care inputs and health production, which was first proposed by Rosenzweig and Schultz (1983). The theory presupposes that a consumer allocates his or her income to maximize utility by balancing competing needs.

An STI patient is assumed to maximize the following utility function.

$$U = U(X, Y, H)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.1$$

The utility depends on a health neutral good (X), a health related good or STI patient's behavior that affect his/her health (Y) and the health status (H).

The individual's (STI patient) health is produced using the following health production function

$$H = F(Y, Z, \mu)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.2$$

Where Z refers to healthcare services purchased by STI patient, μ refers to the genetic and environmental factors that may affect the health status of the STI patient but which he or she has no control over and Y the health-related behavior.

The STI patient maximizes his/her utility function subject to the health production function and the budget constraint given as:

$$I = XP_x + YP_y + ZP_z\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.3$$

Whereby I is the exogenous income,

P_x is the price of the health neutral good

P_y is the price of the health related good

P_z is the price of STI related services

The demand for health related good, non-health related good and healthcare services by STI patients can be expressed as follows:

$$X = Dx\ (Px, Py, I, \mu) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..3.4$$

$$Y = Dy\ (Px, Py, I, \mu)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots\ldots\ldots\ldots..3.5$$

$$Z = Dz\ (Px, Py, I, \mu)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots\ldots\ldots\ldots..3.6$$

This indicates that demand for healthcare services by STI patients is a function of the price of healthcare services, price of other goods and income.

3.4 Empirical Model and Specification

To establish empirical relationship between various determinants and healthcare use among the STI patients, the study used one of the binary regression model and in this case probit model which was also used by Wanyoike (2016) in the same context. This is because the dependent variable is binary in nature. According to Wooldridge (2010), we assume that there exists a linear relationship between the latent variable y^* and explanatory variables (X_i). The structural model illustrates

$$y^* = X_i\beta + \varepsilon\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots3.7$$

Where: X_i is a vector of explanatory variables

β is a vector of parameters to be estimated

ε is error term

Whereby $y = 1$ when $y^* > 0$

The probability of using healthcare services among STI patients as a function of a set of independent variables is given as follows:

$$\ldots\ldots\ldots.3.8$$

Where:

$$G(z) \equiv \Phi(z) \equiv \int_{-\infty}^{Z} \emptyset(v)dv$$

Whereas $\phi(z)$ is the standard normal density $\phi(z) = (2\pi)^{-1/2} exp\left(-z^2/2\right)$

The model to be estimated is specified as follows:

$y = \beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \beta_5 X5 + \beta_6 X6 + \beta_7 X7 + \beta_8 X8 + \beta_9 X9 + \beta_{10}X10 + \beta_{11}X11 + \varepsilon$………………………………………………..………..…3.9

Where y being the dummy that is uptake of healthcare services by STI patient

X_1=Age

X_2= Sex

X_3= Marital Status

X_4= Level of Education,

X_5= Wealth Index,

X_6= Employment Status

X_7= Place of Residence

X_8= Medical Insurance

X_9= Religion

X_{10}= Sex Partners

X_{11}= Autonomy in Decision Making

The expected signs of the model are as shown in Table 3.1.

3.5 Description of Variables and Measurement

Demand for healthcare among STIs patients: This is the binary outcome measuring uptake or failure for uptake of healthcare services by STI patients.

Age: This is a discrete variable. Individuals' chances of utilizing health care services increase as they age. This is a result of physiological changes that occur over time. These changes increase an individual's susceptibility to health care problems, which results in increased utilization of healthcare services.

Age square: This measures efficiency based on experience of an individual using STI healthcare services. It examines whether there is a positive correlation between experience, as measured by age squared, and demand for STI healthcare services. This is calculated by squaring the STI patient's age.

Sex: This is a binary variable. It refers to the state of being either a male or a female.

Marital Status: This is the case for the binary variable. It refers to the various ways in which a person's relationship with a significant other can be described. It is broken down into four categories: married, single, divorced/widowed, and separated.

Level of Education: This is a categorical variable with a categorical value. It is a term that refers to the years of formal education received and successfully completed, which is typically based on o It is a term that refers to the years of formal education that have been successfully completed, typically by-passing formal exams. It is classified as follows: 1 if no education exists, 2 if primary education exists, 3 if secondary education exists, and 4 if post-secondary education exists in the form of passing formal exams. It is classified as follows: 1 if there is no education, 2 if there is primary education, 3 if there is secondary education, and 4 if there is post-secondary education.

Wealth Index: This is a categorical variable. It is a composite metric for the cumulative standard of living of a household. The five wealth quintiles were aggregated and classified into three broad categories: poor, middle-income, and wealthy.

Employment Status: Binary variable. This is the status of a worker in a business based on the terms of the employment contract or the duration of the work performed. It is quantified in terms of employment or unemployment.

Place of Residence: Binary variable. A dwelling or home used as a main residence, either originally or currently. It is measured as either being urban or rural.

Medical Insurance: Binary variable. It refers to whether an individual's medical expenses are covered by a form of health insurance. It is measured either as having an insurance cover or not.

Religion: is a categorical variable indicating an organized collection of beliefs, cultural systems, and world views that relate humanity to an order of existence. It is measured as if one has any religion or no religion.

Sex Partners: Binary variable. This is the number of sex partners, including spouse in the last 12 months. It is measured in three categories that is: no sex partner, one sex partner and more than one sex partners.

Autonomy in Decision Making: It is a binary variable. It refers to the ability of the STI patient to make his or her own decisions regarding his or her health. It is measured as; if self-decision making on own health, and if decision on own health is made from spouse or both.

$\beta_i = estimated\ coefficients,\ X_i = the\ various\ independent\ variables$ **Table 3.1: Variable Measurement and Expected Signs**

Variables	Measurement	Expected Sign
Health Care Seeking for STIs patients	A dummy variable taking the value of 1 if the respondent sought general healthcare services, 0 otherwise.	
Age	Age of the respondent in complete years	Positive
Age squared	This is the age of the respondent squared. It measures the experience of STI patient. As one gets older, they are more knowledgeable on why they should seek early treatment	Negative
Sex	This is the respondent's gender as a dummy variable with a value of 1 if the respondent is male and 0 otherwise.	Negative
Marital Status	This is the current marital status measured as a dummy variable taking the value of 1 if married, 2 if single, 3 if divorced/widowed, 4 if separated. Single will be used a reference variable	Indeterminate
Education Level	This will be the highest level of education measured as a dummy variable with values of 1 indicating no education, 2 indicating primary education, 3 indicating secondary education, and 4 indicating post-secondary education. There will be no reference variable for no education.	Positive
Wealth index	A categorical variable taking the value of 1 if poor, 2 if middle and 3 if rich. Poor is reference category	Positive

Employment	A dummy variable, 1 if employed and 0 if otherwise	Positive
Residence	This is the current type of residence. It will be measured as a dummy variable where 1= urban and 0= rural	Positive
Distance to nearest health facilities	A dummy variable taking the value of 1 if more than 5 kilometers, and 0 if less than or equal to 5 kilometers	Negative
Medical Insurance Ownership	A dummy variable taking the value of 1 if one has insurance, and 0 otherwise	Positive
Religion	A dummy variable taking the value of 1 if one belongs to any religion, 0 if no religion	Indeterminate
Sex Partners	A dummy variable taking the value of 1 if No sex partner, 2 if one sex partner and 3 if more than one sex partners	Positive
Autonomy in Decision Making	A dummy variable taking the value of 1 if Self-decision making on own health, 0 if decision on own health is made from spouse or both	Positive

3.6 Data Analysis

Analysis comprised both descriptive and inferential statistics. Under descriptive statistics, means, standard deviation, minimum and maximum was used. This study used the probit regression analysis model. The STATA version 14 software was used to run the probit regression model and the findings presented where the marginal effects were interpreted. The betas showed the elasticities.

3.7 Data Source and Type

The study employed the latest Kenya Demographic and Health Survey (KDHS) dataset which is a national dataset that is (KDHS, 2014). In collecting this type of data, two-stage cluster sampling methodology applied in sampling of households. At the first stage 1,612 clusters were obtained from the master sampling frame after which 25 households were systematically extracted from every sampled clusters. It collected information at national

and county levels with the representative sample of 40,300 households is available. This data was used because it had all factors or variables for individuals seeking different types of healthcare services including for STI patients. The survey collected information regarding demographic and socioeconomic profiles of the women in terms education levels, age, gender, occupation, as well as health seeking behaviors, information on STIs among other information. The key variables were be constructed as described in Table 3.1.

3.8 Data Issues

Data issues occur when the data lack quality. This means that the data is invalid, inconsistent, and inaccurate. Carrying out analysis with this type of data leads to misleading results. The following (multicollinearity and heteroscedasticity are some of the key issues to be examined in datasets as one used in this study:

3.8.1 Multicollinearity

When two or more variables in the model are highly correlated, this is referred to as multicollinearity. In such a case we say that one independent variable can be used to predict the other leading to redundancy and skewness. In case of multicollinearity, this study will compute correlation matrices. Collinear variables with high collinearity have magnitude above 0.5 absolute value. If variables are found highly correlated then this study will remove the redundant factors. A different technique for determining multicollinearity is to use Variance Inflation Factors (VIF)/tolerance values. VIF denotes the proportion of variance in an independent variable that is unrelated to the other independent variables in the model. In the case of multicollinearity, a tolerance value of 0.01 was used to exclude variables from the model.

3.8.2 Heteroscedasticity

Heteroscedasticity, the second test, is defined as the situation in which a variable's inconsistency varies according to the group of values of a second factor that forecasts it (Lewis-Beck & Lewis-Beck, 2015). This matter is mainly because of the obtainability of data deviance. According to Manoharan, Ganesh and Sathiaseelan (2016) this means that the observations that are either small or large in respect to the other observations are accessible in the sample. It also occurs as a result of exclusion of factors from the model. Lack of constant variance also referred to as heterogeneity of variance will be tested by the

use of residual plots. Its existence is eradicated through the use of heteroscedasticity probit regression models or use of standard errors that are robust via software known as STATA.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Introduction

This section discusses the empirical findings from an investigation into the factors that influence STI patients' demand for health care in Kenya. The study examines STI patient uptake of health care in rural and urban areas of Kenya, as well as the factors that influence STI patient demand for health care in Kenya. Tables and figures illustrate the empirical findings.

4.2 Descriptive Statistics

In the first objective, the study explored the uptake levels of health care among STI patients in rural and urban regions in Kenya. Considering the levels of usage of health care among STI patients in Kenya, 8.3 percent of STI patients (2.24 percent being from rural regions and 6.06 percent from urban regions) acknowledged to be using these services whereas the other huge population that is 91.7 percent used other sources of healthcare services. The results are as shown in Table 4.1.

Table 4.1: Uptake levels of healthcare services in Kenya

Variables	Observations	Mean	Std	Min	Max
Demand for healthcare services	31,079	.0831	.2761	0	1
Age	31,079	28.94	9.39	15	49
Marital Status (Married=1)	31,079	.5712	.4949	0	1
Education Levels					
No education at all	31,079	.1346	.3413	0	1
Primary level education	31,079	.5024	.5000	0	1
Secondary level education	31,079	.2766	.4473	0	1
Higher education	31,079	.0865	.2811	0	1
Wealth Index					
Poorest	31,079	.2337	.4232	0	1
Poorer	31,079	.1921	.3940	0	1
Middle	31,079	.1913	.3933	0	1
Rich	31,079	.1917	.3936	0	1
Richest	31,079	.1912	.3933	0	1
Employment status	14,724	.5740	.4945	0	1
Medical Insurance	14,733	.1520	.3591	0	1

Religion					
No religion	31,079	.0163	.1266	0	1
Christians	31,079	.8463	.3607	0	1
Muslims	31,079	.1339	.3405	0	1
Desire for More children	13,947	.5704	.4950	0	1
Distance to health facility	14,735	.7361	.4408	0	1
Exposure to Mass Media	31,079	.8267	.3785	0	1

Source: Author based on KDHS (2014)

The results in Table 4.1 indicate that most respondents were on average 29 years old. When considering the youngest and oldest women, the youngest was 15 years old and the oldest was 49 years old. The study examined women's marital status, comparing married women to those who were not married. 57.1 percent of respondents were married, according to the findings.

In terms of educational attainment, most participants (50.2 percent) had a primary education, followed by 27.6 percent who had a secondary education and 13.5 percent who had no education. Only 8.7 percent had tertiary or higher education level. On wealth quintiles, there was a constant trend in distribution across different wealth cadres. Apart from the first wealth quintile (poorest) which had 23.4 percent, the other four wealth quintiles that is poorer, middle, rich, and richest had almost equal distributions of 19.2, 19.1 and 19.2 percent respectively. Also, those who indicated to be working were 57.4 percent whereas respondents who reported to have medical insurance cover were 15.2 percent.

On religion, majority of the respondents (mean=84.6 percent) were Christians (either Roman Catholics or protestants) followed by Muslims (mean=13.4 percent). It was shown that only 1.6 percent of the respondents had no religion. In addition, about 57 percent of the respondents indicated that they would like to have more children within a period of two years or more than two years.

Most respondents (mean=73.6 percent) indicated that distance to a health facility was not a significant issue. 26.4 percent of respondents indicated that the nearest health facility was inconvenient. Additionally, the findings indicated that 82.7 percent of Kenyan women were exposed to mass media.

4.3 Diagnostic Tests

4.3.1 Multicollinearity test

The study computed correlation coefficients as specified in the correlation matrix to determine the presence or absence of multicollinearity (table 4.2). According to the correlation coefficients obtained, the study concluded that all pairs of variables were moderately correlated. Most correlation coefficients were less than 0.5 in absolute value, except for one pair (woman's age and desire for more children), which had an absolute value of 0.6158. Mukras (1993) determined that the difference is insignificant and thus retained the pair for further analysis. As could be observed, the dependent variable which is healthcare services use among STI patients in Kenya was positively correlated with age, marital status, education, wealth index, employment, medical insurance, distance, and exposure to mass media whereas it had a negatively correlation with religion and desire to have more children. Table 4.2 shows more other details.

Table 4.2: Correlation Matrix

Variables	Demand for H/C	Age	Marital Status	Education	Wealth Index	Employment	Medical Insurance	Religion	Distance	Exposure to mass media
Demand for H/C	1.0000									
Age	0.0805	1.0000								
Marital Status	0.1367	0.3435	1.0000							
Education	0.0782	-0.1101	-0.1523	1.0000						
Wealth Index	0.1004	0.0158	-0.0582	0.5108	1.0000					
Employment	0.1062	0.3885	0.1796	0.1157	0.1193	1.0000				
Medical Insurance	0.0838	0.1290	0.0984	0.3443	0.3280	0.1652	1.0000			
Religion	-0.0525	-0.0329	0.0503	-0.2079	-0.0656	-0.1889	-0.0584	1.0000		
Distance	0.0253	-0.0549	-0.0613	0.1831	0.2703	0.0182	0.1138	-0.0298	1.0000	
Exposure to mass media	0.0708	-0.0348	-0.0724	0.3965	0.4187	0.1413	0.1597	-0.1659	0.1681	1.0000

4.3.2 Heteroscedasticity

The heteroscedasticity residual plot was used to determine the variance's variation/constancy. The outcomes are depicted in Figure 4.1.
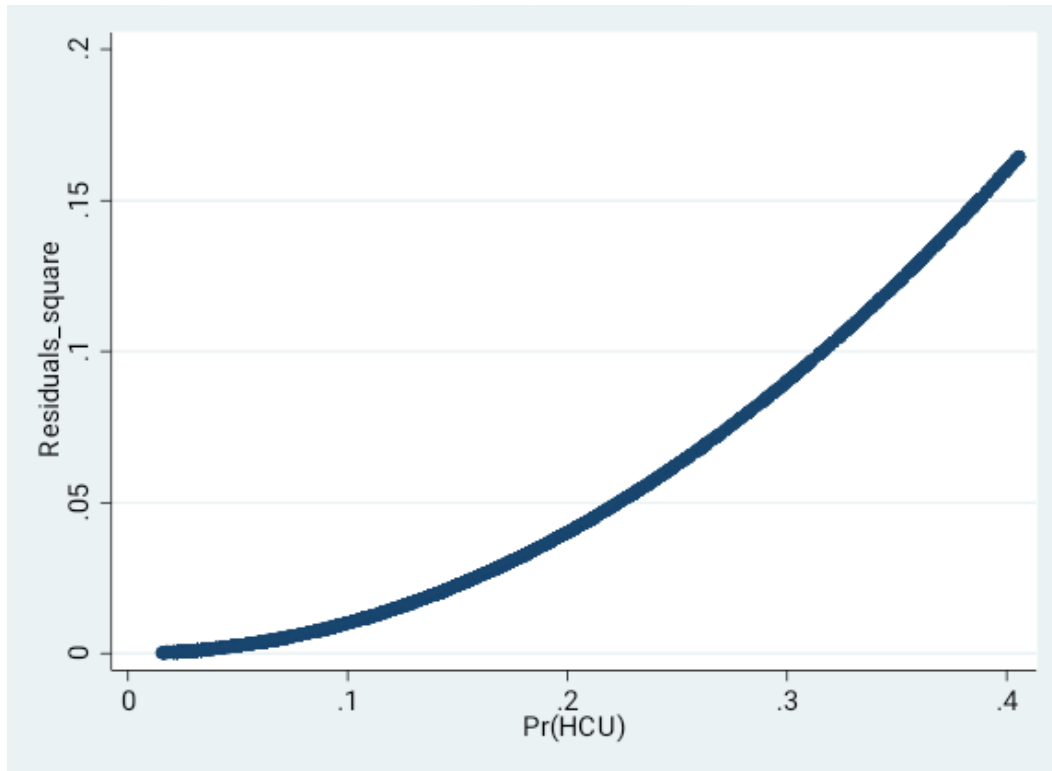

Figure 4.1: Heteroscedastic Test through Residual Plot Analysis

Source: *Computation from KDHS 2014*

A consistent trend can be observed in the heteroscedasticity test results, implying the absence of homoscedasticity for the fitting full probit model with significantly fewer iterations. As a result, robust standard errors were required in the final estimated model.

4.5 Estimating the determinants of demand for healthcare services among STI patients in Kenya

The second objective of the study was to ascertain the effect of various determinants on STI patients' healthcare utilization in Kenya. The results of the econometric analysis using the Probit model are summarized in Table 4.3. Overall, the p-value was less than the 5% level of significance (Prob > chi-square = 0.0000), indicating that the identified determinants significantly explained the dependent variable (use of healthcare services among STI patients in Kenya). Additionally, the pseudo R2 value of 0.1081 (11%) indicates the proportion of explanatory variables that explained healthcare utilization among STI patients in Kenya.

Table 4.3: Probit Regression Results

Probit Regression						
				Number of obs	=	13,880
				LR chi2(17)	=	
		884.26				
				Prob > chi2	=	0.0000
				Log likelihood	=	-3649.2551
				Pseudo R2	=	0.1081
Demand for H/C	**Coefficients**	**Std. Err.**	**z**	**P>z**	**[95% Conf.**	**Interval]**
Age	.1940	.0162	11.98	0.000	.1623	.2257
Age Squared	-.0031	.0002	-12.44	0.000	-.0035	-.0026
Marital Status (Married=1)	.4109	.0384	10.71	0.000	.3357	.4862
Education Level						
Primary	.4790	.0840	5.70	0.000	.3143	.6437
Secondary	.4463	.0907	4.92	0.000	.2685	.6241
Higher	.5778	.1016	5.69	0.000	.3786	.7770
Wealth Index						
Poorer	.2105	.0612	3.44	0.001	.0906	.3304
Middle	.2315	.0623	3.71	0.000	.1093	.3536
Rich	.2791	.0634	4.40	0.000	.1549	.4034
Richest	.4113	.0668	6.16	0.000	.2804	.5422
Employment Status	.0918	.0388	2.37	0.018	.0159	.1678
Place of Residence	.0473	.0117	.404	.003	.0241	.489
Medical Insurance	.0534	.0448	1.19	0.233	-.0344	.1412
Religion						
Christian	.0490	.1475	0.33	0.740	-.2402	.3381
Muslim	-.1592	.1597	-1.00	0.319	-.4721	.1537
Sex Partners	.457	.0628	7.277	.043	.264	.581
Autonomy in Decision making	.1089	.0599	1.82	0.069	-.0086	.2263
_cons	-5.2618	.3032	-17.35	0.000	-5.8561	-4.6674

Table 4.3 summarizes the regression analysis. At the 5% level, the age coefficient was positive and statistically significant (β= 0.1940, p value=0.000), whereas the age squared coefficient was negative and statistically significant (β= -0.0031, p value=0.000). There was a significant positive correlation between marital status and income (β= 0.4109, p value=0.000). Primary education had a coefficient of 0.4790 with a p-value of 0.000, indicating that respondents with a primary education had a 0.479 point higher probability of utilizing H/C services than those without a primary education. Secondary education had a coefficient of 0.4463 with a p value of 0.000, indicating that respondents with a secondary education increased their use of H/C

services by 0.4463 compared to respondents without a secondary education. Additionally, the results indicated that the coefficient for tertiary education was positive and statistically significant (β=0.5778, p value=0.000). This means that participants who reported having a higher level of education used H/C services at a rate of 0.4847 points higher than those who did not report having any education.

The study examined respondents' wealth quintiles. The first quintile of wealth was used as a baseline. The coefficient for the second wealth quintile was 0.2105, which was statistically significant (p = 0.001). This means that, when all other factors were equal, STI patients in the lowest wealth quintile were 0.2105 points more likely to use H/C services than those in the highest wealth quintile. The coefficient for the third wealth quintile was 0.2315 (p=0.000), indicating that STI patients in the third wealth quintile were 0.2315 points more likely to seek H/C services than those in the first wealth quintile. The coefficient for the fourth wealth quintile was 0.2791 and was statistically significant at the 5% level (p = 0.000). When other variables remained constant, patients in the fourth wealth quintile were 0.2791 points more likely to use H/C services than those in the first wealth quintile. Similarly, the coefficient on the fifth wealth quintile was positive and statistically significant at the 5% level (ß = 0.4113, p = 0.000). This indicated that those in the fifth wealth quintile in Kenya were 0.4113 percentage points more likely than those in the first wealth quintile to use H/C services.

At 5%, the employment coefficient (ß = 0.0918, p value=0.018) was positive and statistically significant. The results indicate that being employed increased the likelihood of utilizing H/C services significantly by 0.0918 points while controlling for other variables. Additionally, the coefficient on sexual partners was 5 percent positive and statistically significant (ß = -0.457, p value ß =0.043). The findings indicate that having more than one sex partner had a beneficial effect on STI patients seeking H/C services. To interpret the probit results for policy purposes, the study examined the marginal effects of the H/C utilization model's factors. The marginal effects are summarized in Table 4.4.

Table 4.4: Average Marginal Effects (Health seeking behavior among STI patients in Kenya)

Demand H/C	Marginal Effects	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age	.0275	.0023	11.89	0.000	.0230	.0321
Age Squared	-.0004	.00004	-12.35	0.000	-.0005	-.0004
Marital Status	.0584	.0054	10.66	0.000	.0476	.0691

(Married=1)						
Education Level						
Primary	.0528	.007	7.50	0.000	.0390	.0666
Secondary	.0480	.0082	5.89	0.000	.0320	.0640
Higher	.0684	.0114	6.00	0.000	.0461	.0908
Wealth Index						
Poorer	.0253	.0072	3.53	0.000	.0113	.0393
Middle	.0282	.0074	3.83	0.000	.0138	.0427
Rich	.0352	.0077	4.57	0.000	.0201	.0502
Richest	.0565	.0089	6.32	0.000	.0390	.0740
Employment Status	.0130	.0055	2.37	0.018	.0022	.0238
Place of Residence	.0542	.0126	4.302	0.032	.0372	.0631
Medical Insurance	.0076	.0064	1.19	0.233	-.0049	.0200
Religion						
Christian	.0069	.0202	0.34	0.733	-.0327	.0464
Muslim	-.0197	.0212	-0.93	0.352	-.0612	.0218
Sex Partners	-.0783	.0547	1.431	.0443	.0665	.0901
Autonomy in Decision making	.0029	.0057	0.51	0.609	-.0082	.0140
-Cons	.0155	.0085	1.82	0.069	-.0012	.0321

The marginal effects are represented in Table 4.4. Age was found to have a positive and statistically significant coefficient ($\beta= 0.0275$, p $=0.000$) at the 5% level. This means that as the respondent's age increases, the likelihood of a STI patient utilizing H/C services increases by 2.75 percent. However, it was demonstrated that the age squared coefficient ($\beta= 0.0275$, p $=0.000$) has a negative and statistically significant effect at the 5% level. This indicates that the relationship between age and H/C service utilization was nonlinear. The fact that the age distribution of STI patients was not linear implies that as one ages, the effect on H/C service utilization becomes weaker, or in other words, diminishes (declines).

The marital status coefficient had a positive and statistically significant effect on H/C service utilization in Kenya ($\beta= 0.0584$, p value$=0.000$). This means that married STI patients were significantly more likely to use H/C services by 5.84 percent when other variables remained constant. This implies that married STI patients may have been more likely to embrace the method of obtaining adequate H/C than those who are not married.

The study compared individuals with primary, secondary, and tertiary education to those with no education. Primary education had a coefficient of ($\beta= 0.0528$, p value$=0.000$), indicating that STI patients with a primary level of education were 5.28 percent more likely to use H/C

services than those with no education. Secondary education had a coefficient of (β= 0.0480, p value=0.000), indicating that respondents with a secondary education used H/C services at a rate of 4.8 percent higher than respondents without a secondary education. Additionally, the coefficient for higher education was found to be positive and statistically significant (β=0.0684, p value=0.000). This means that STI patients with a higher level of education used H/C services at a 6.84 percent higher rate than those without a high school diploma. The findings indicate that educated STI patients are more likely to comprehend the broader benefits of seeking H/C services than uninformed patients.

Evaluation of the wealth quintiles of STI patients. The first wealth quintile was used as a reference variable. The coefficient for the second wealth quintile was (β= 0.0253, p value=0.000), statistically significant at the 5% level. This meant that, when all other variables were equal, STI patients in the second wealth quintile were 2.53 percent more likely to use H/C services than those in the first wealth quintile. The coefficient for the third wealth quintile was (β= 0.0282, p value=0.000), indicating that STI patients in the third wealth quintile were 3.52 percent more likely than those in the first wealth quintile to seek H/C services. The fourth wealth quintile had a significant coefficient at the 5% level (β= 0.0352, p value=0.000). As a result, when all other variables were equal, STI patients in the fourth wealth quintile were approximately 3.52 percent more likely to use H/C services than those in the first wealth quintile. Similarly, the fifth wealth quintile's coefficient was positive and statistically significant at the 5% level (β = 0.0565, p=0.000). This indicated that those in the fifth wealth quintile were 5.65% more likely to use H/C services than those in the first wealth quintile. The wealth quintile findings indicate that individuals in the higher wealth quintiles are more likely to seek H/C services among STI patients in Kenya.

At 5%, the employment coefficient (β= 0.0130, p =0.018) was positive and statistically significant. The findings indicate that being employed significantly increased the likelihood of seeking H/C services by 1.3 percent when controlling for other variables. This finding implies that STI patients who are employed are more likely to cover the cost of seeking H/C services and other associated costs than those who are unemployed.

At 5% (β= -0.0783, p value=0.0443), the coefficient on sexual partners was found to be negative and statistically significant. The results show that STI patients who had no partner, or one partner were less likely to seeking H/C services by 7.83 percent holding other factors constant. This might be the view that STI patients with no or one partner who may perceive

seeking H/C services may have a long-term effect than to those who have more than one sex partner.

4.6 Discussion of the Regression Results

The estimated model revealed a positive and statistically significant coefficient on age, indicating that increasing the age of STI patients increases the likelihood of an individual seeking H/C services. Additionally, it was discovered that the coefficient on age squared has a negative and statistically significant effect. This indicates a nonlinear relationship between age and the use of H/C services. The fact that the age distribution of STI patients was not linear implied that as patients age, the effect on seeking H/C services becomes weaker, or in other words, diminishes (declines). Our findings corroborate those of Njogu (1991), who examined the trends and predictors of contraceptive use and choice among STI patients aged 15–49 in Kenya. The study discovered that patient age had a significant effect on the aggregate change in H/C use by patients across all regions.

The coefficient on marital status had a positive and significant effect on H/C services seeking in Kenya. This means that STI patients were more likely to utilize H/C services. This implies that married STI patients have embraced the method to generally seek H/C services compared to those who are not married. The findings of Coll et al., (2019) differed with our findings. They established that, in most countries, the prevalence of modern contraception was particularly low among married females, who should be considered a priority group for intervention. The findings indicate that social norms regarding marriage and fertility expectations, as well as other cultural barriers, all contribute to the decision to seek healthcare on an equal footing with other factors.

Individuals of various educational levels were compared to those with no education. The coefficients for primary education, secondary education, and higher education indicated that STI patients with these levels of education were more likely than those with no education to seek H/C services. From these findings, it can be deduced that health care seeking for STI patients who are schooled to higher levels are more likely to decipher the importance of H/C seeking in comparison to those who are not schooled. According to Pazol et al., (2015) the importance of H/C education can be seen in the impact of knowledge on the selection, proper

and consistent H/C seeking behavior. Our findings confirmed those of Asiimwe (2013), who conducted a study to ascertain the sociodemographic factors associated with healthcare seeking among young Ugandan women. The study concluded that having a higher level of education had a significant positive effect on healthcare seeking among STI patients aged 25–34 years. This was further supported by Sileo (2015) who revealed that education is among the key determinants of uptake of healthcare services by STI patients.

Patients with STIs were classified according to their wealth quintiles. The first quintile of wealth was used as a reference variable. The coefficients for the second richest quintile, the third richest quintile, the fourth richest quintile, and the fifth richest quintile were all positive and statistically significant. The findings on wealth quintiles generally imply that individuals who are on higher wealth quintiles have more purchasing power and thus higher likelihood of seeking H/C services among STI patients in Kenya. Similarly, the employment coefficient was positive and statistically significant, indicating that STI patients who are employed are more likely to pay for H/C services and other associated costs than their unemployed counterparts. From Grossman (1972) and Andersen (1995), increased incomes enables an individuals to seek for more health services in this case H/C services among STI patients. Women's empowerment is hypothesized as a predictor of reproductive health outcomes.

Finally, the coefficient on sex partners was found to be negative and statistically significant, which may be associated with the belief that having more than one sex partner may increase the likelihood of seeking H/C services and may have a long-term effect in comparison to having no sex partner. Additionally, STI patients who have self-decision autonomy are more likely to seek healthcare, most likely because they are confident about successful H/C outcomes. This finding corroborated Asiimwe's (2013) findings in Uganda, which established that the desire for early H/C had a significant positive effect on healthcare seeking among STI patients. Additionally, Withers, Kano, and Pinatih (2010) discovered that being older, not having regular access to health care, and having recently given birth were all associated with a decreased likelihood of seeking H/C services.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

The findings of the study are summarized in this chapter, and conclusions are drawn based on the established relationship between identified determinants and healthcare utilization among STI patients in Kenya. Subsequent policy recommendations and areas for additional research are made.

5.2 Summary of the study findings

The burden of sexually transmitted disease has been an enormous problem globally. This is due to its contribution to high mortality and morbidity rates (Djomand et al., 2016). The quality and accessibility of services clearly plays a role in attracting people with, or at risk of, STD. However, social stigma around issues of sexual activity and sexually transmitted diseases have a major influence on patterns of presentation to health care services (Ramchandani & Golden, 2019). In order to increase the proportion of people with sexually transmitted disease who seek effective treatment and counselling, program planners need to know more about factors that influence health seeking behavior in relation to sexually transmitted diseases. The study's sole objective was to determine the factors that influence the demand for health care among STI patients in Kenya. The specific objectives are to ascertain health care utilization rates among STI patients in rural and urban areas of Kenya, as well as to ascertain the factors affecting health care demand among STI patients in Kenya. The study used data from the Kenya Demographic and Household Survey (2014). The study used a probit regression model to determine the effects of various factors influencing healthcare utilization among STI patients in Kenya. The study examined significance levels of 5%. Utilization of healthcare services was the dependent variable. The following determinants were used as primary factors in this study: the woman's age, age squared, sex, marital status, education levels (primary, secondary, and post-secondary), wealth quintiles (poorest, poorer, middle, rich, and richest), employment status, residence, medical insurance, religion (Christians and Muslims), sex partners, and autonomy to make choices. From all these factors, only medical insurance, being of Christian faith, and autonomy to make decisions were not significant factors.

5.3 Conclusions

Many STDs, such as syphilis, gonorrhea and urethritis can be diagnosed and treated, and yet millions of cases in the world are left untreated leading to continued transmission and serious sequelae. The study's findings indicate that, while healthcare services are effective, additional factors promote and hinder their use by STI patients in Kenya. The findings revealed that less than 10 percent (About 8 percent) of STI patients acknowledged to be using healthcare services whereas the other huge population that is 91 percent sought healthcare from other sources.

According to the findings, age, gender, marital status, education levels (primary, secondary, and post-secondary), wealth quintiles (poorest, poorer, middle, rich, and richest), and employment status, residence, and sex partners are all statistically significant predictors of healthcare utilization among STI patients in Kenya. Additionally, we discovered that determinants such as age squared and being Muslim were negatively associated with healthcare utilization among STI patients in Kenya. Having a medical insurance and a person's faith were not statistically significant predictors of demand.

5.4 Policy Recommendations

The study makes the following recommendations to increase STI patients' utilization of healthcare services in Kenya.

In an ideal world, healthcare programs for STI patients would be customized to provide a broad range of services and appropriate counseling, enabling STI patients of various ages and male gender to make an informed choice and easily access high-quality follow-up services, as age and gender were found to be a strong and significant predictor of healthcare service utilization.

Intersectoral collaboration among ministries both in central and county governments to improve socioeconomic and demographic indices like literacy levels, unemployment rates, and poverty index as these are shown to be statistically significant deterrents of health care uptake.

On education, better educated people are more likely to be employed in the modern sector and thus likely to be in the forefront of using modern sources of healthcare. Hence the government need to have curriculum revised and integrate training on specialized healthcare services as well as the benefits of the same among this special population. It is critical to recognize that educational interventions can help increase awareness of modern sources of healthcare services, empowering STI patients to make more informed decisions and utilize healthcare

services more effectively. This is because education was found to be strongly associated with the use of healthcare services by STI patients.

Higher socioeconomic status and employment were also significantly associated to increased use of healthcare services among STI patients. The study therefore suggests for a need by the government to consider addressing these demand side determinants impacting use of healthcare services. Poor people indiscriminately face high cost of care as they are most likely to pay out of pocket at points of care. This poses a hinderance to seeking health care services in general as the household budgets face stiff competition among the many needs in the face of the already scarce resources. Innovative healthcare financing strategies through NHIF should be explored for this group of the population. Pro-poor policies with a country wide coverage will reduce barriers to care seeking by the poor in the society.

On the other hand, there is need of campaigning via sensitizing the population especially the Muslim community on the need to use hospital care for STI services. Lastly, sex partners were found to have an inverse effect. The study suggests that specialized clinics be established for outreach workers who may be required to reduce barriers to service utilization among STI patients.

5.5 Areas for Further Studies

The study's primary objective was to ascertain the factors that influence the uptake of healthcare services by STI patients in Kenya. The study examined the extent to which those factors influence the use of healthcare services by STI patients in Kenya. Men and women were included in the data set, and the findings may have been different if only men or women were considered, given that male involvement in health seeking is currently emphasized, but men have little regard for routine use of healthcare services. Multiple linear regression models with the aid of binary probit models were used for estimation.

More research is needed to elucidate how measures of healthcare service use affect the uptake of healthcare services by STI patients in Kenya, given cultural values and health system factors. Additionally, advanced estimation models such as multinomial logit or ordered regression were suggested (apart from probit, logit, or linear probability model). Additional empirical studies must be conducted to account for additional sociocultural, political, and other confounding variables.

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