ANALYSIS OF FACTORS INFLUENCING STIs TRANSMISSION AND ACCESS TO STIs-RELATED SERVICES AMONG YOUTHS IN SOUTHWEST NIGERIA

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A thesis submitted in partial fulfilment of the requirement for the degree of
Master of Science in Public Health

by

FAYOMI ABIGAIL OLUDAYO

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List of Abbreviations

AYFHS	Adolescent and Youth Friendly Health Services
BCC	Behavioural Change Communication
EPT	Expanded Partner Treatment
FMoH	Federal Ministry of Health
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
LGA	Local Government Area
LGBTQ	Lesbian Gay Bisexual Transgender Queer
MSM	Men having Sex with Men
NASCOP	National AIDS and STD Control Programme
NDHS	Nigeria Demographic Health Survey
NBS	National Bureau of Statistics
OOP	Out of Pocket Payment
PHC	Primary Health Care
POC	Point of Care
STIs	Sexually Transmitted Infections
STD	Sexually Transmitted Diseases
SDG	Sustainable Development Goals
SRH	Sexual and Reproductive Health
SES	Socioeconomic Status
UHC	Universal Health Coverage
WHO	World Health Organization

Glossary

STIs- related services:	Prevention, Diagnosis, Treatment and Case management of STIs (1).
Youth:	A transition period from childhood dependency to adulthood independence (15-24years) (2).
Health seeking behaviour:	Actions taken by an individual with a health problem with the purpose of finding appropriate remedy (3).
Socioeconomic Status:	Social and economic measurement of people based on their education, income, and type of job. It can be described as low, medium, and high (4).
Risky sexual behaviour:	These are sexual behaviours or activities that puts one at risk of an adverse health outcome like STIs, unwanted pregnancy etc (5).
Multiple sexual partners:	Having more than one sexual partner over a period (5).
Commercial sex:	"The act of involving in the exchange of sex for money, gifts, services, or other favours such as promotion at the workplace and grades in school" (6).
Unsafe sex:	The act of practising sexual intercourse without condom (7).
Early sexual Debut:	The act of having first sexual intercourse at or before age 14 years which is associated with risks to sexual and reproductive health (8).
Wealth index:	"A composite measure of a household's cumulative living standard" (9).
Opportunity cost:	"The profit lost when one alternative is selected over another" (10).
Polygamy:	A customary practise of marrying more than one spouse at a time (11).

Abstract

Introduction: Sexual transmitted infections (STIs) are infections contacted through sexual contacts. STIs are one of the leading causes of mortality and morbidity across the globe with young people 15-24 years accounting for one third of total occurrence. In Nigeria, the prevalence of the curable STIs (Gonorrhoea, Syphilis, Chlamydia and Trichomoniasis) among the youth is 27.7%. Despite the availability of Adolescent and Youth Friendly Health Services (AYFHS), the rate of STIs transmission continue to rise among the young people.

Objective: To explore the factors influencing STIs transmission, access, and utilization of STIs-related services among youths in the southwestern Nigeria.

Methods: This research is a review of literature analysing the drivers of STIs transmission among the youths, and factors influencing access and utilization of AYFHS. Literatures from other context with successful STIs intervention programmes were also analysed.

Results: The interplay of individual, societal and health system factors contribute to the increase in STIs transmission and utilization of services. Poor knowledge of youths on STIs influences their care seeking behaviour. Also, poor knowledge on the availability of AYFHS, the use of only syndromic approach in the treatment of infection and poor political commitment of the government to youth health contribute to increasing rate of these infections.

Conclusions: Population based awareness on drivers of non-HIV STIs, behavioural change communication and awareness on the availability of AYFHS will reduce STIs transmission. Also, training of health workers in the provision of youth focused SRH intervention is paramount to controlling the spread of STIs.

Keyword: Sexually Transmitted Infections, Youth, Southwestern Nigeria.

Word count: 11,508

Chapter 1: Background Information

1.1 Geographical and Demographic Features

Nigeria is located on the western coast of Africa and is the most populous country on the African continent. Nigeria is a country with diverse features ranging from geography to climate to people and language. Nigeria shares her border with Niger to the north, Chad to the east, Cameroon, the Gulf of Guinea to the south and Benin to the west (12). Nigeria has a total area of 923,768 square kilometres, land: 910,768 square kilometres and water**:** 13,000 square kilometres (13) It is located between latitude 4° and 14°N and longitude 5° and 14°E (13).

Fig. 1: Map of Nigeria showing the international borders (16). Source: Wikipedia

Aside being the most populous country in Africa, Nigeria is ranked as the seventh most populous country in the world (14). Nigeria is composed of 36 States with Abuja being the federal capital. Nigeria's population may further grow from 210 million in year 2022 to 396 million by 2050 potentially making the country the world's third largest population (14). Nigeria has a young population structure as the median age of the country is 18.1 years (15).

Youth (aged 10-24 years) make up 33% of the population, Women in the reproductive age group make up 22%, children under five makes up 20%, children under 15 years constitute 45%., and the elderly (at least 65 years) make up 5% of the population (14). In Nigeria, there is a high rate of youth employment as the dependency ratio of the country is 73.3% (14).

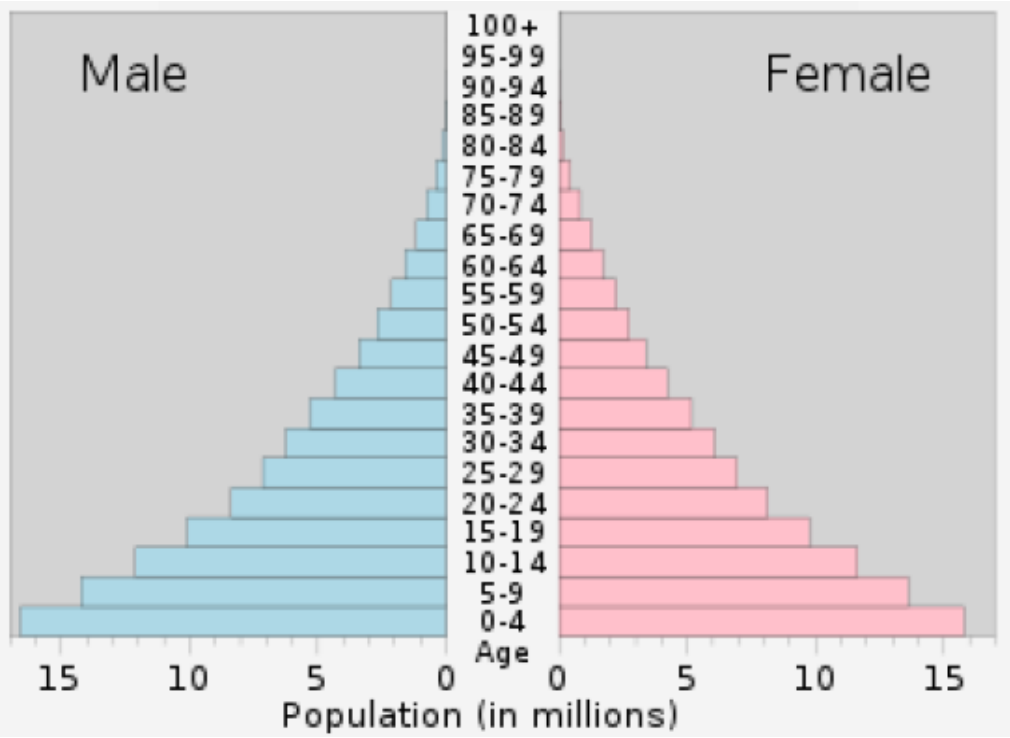

Fig 2: Nigeria's population pyramid (14). Source: Federal ministry of Health 2018.

Nigeria has an estimate of 250 ethnic groups. However, there are three major ethnic groups: the Hausa-Fulani, the Igbos and the Yorubas. Also, there are hundreds of languages/dialects spoken in the country with English language being the official language. Nigeria is divided into six geopolitical zones: The North Central, North-East, North-West, South-East, South-South and South-West (16).

The South-Western Nigeria has an estimated population of about 47 million people and makes up 22 percent of the total population (17). It has a total land area of 77,818 km^2 and comprises of six states: Oyo, Ogun, Ekiti, Lagos, Osun, and Ondo (15). This region has a high percentage of youth and a high incidence of sexually transmitted infections (18). Lagos State which is one of the states in this region was the former capital of Nigeria. Lagos is a cosmopolitan city, one of the biggest economic hubs in Africa and a major financial centre of the country (19). This

region is highly sociable with numerous bars, clubs, lounges, and pubs enhance sexual networks and activities.

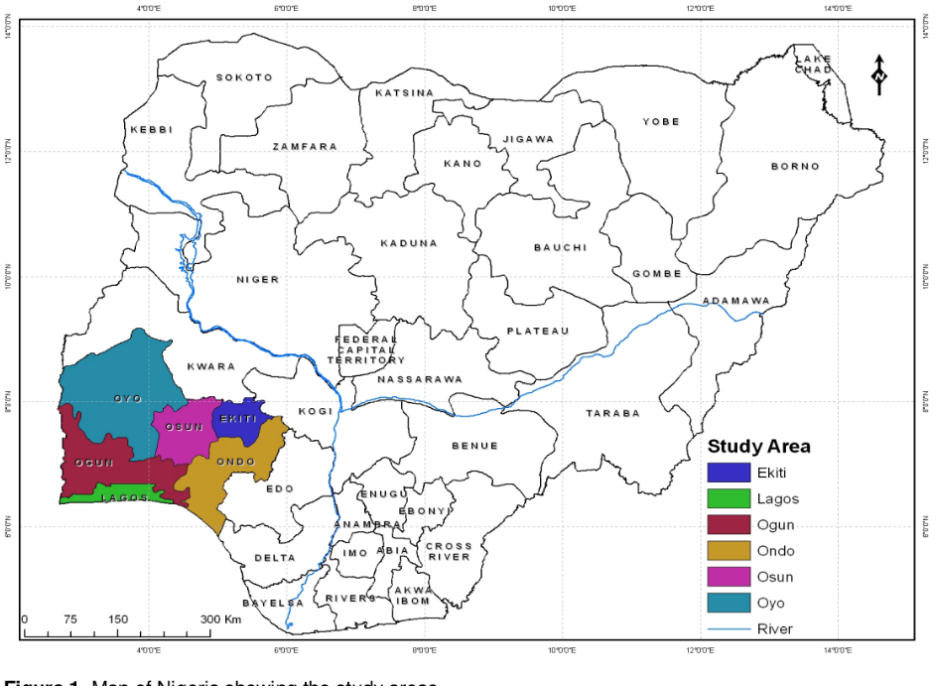

Fig. 3: Map of Nigeria showing the Southwest States (17).

1.2 Socioeconomic Profile

Nigeria has the largest economy in Africa as her gross domestic product (GDP) grew from NGN 54.6 trillion in 2010 to NGN 80 trillion ($502 billion) in 2013 (14). Also, crude oil accounts for 90% of export earnings and over 75% of the government's revenue. However, the country went into recession in 2016/2017 due to a sharp decline in the global price of crude oil. The GDP dropped from 6.2% in 2014 to 2.8% in 2015, to minus 1.5% in 2016 and 0.7% in 2017. The inflation rate increased from 7.8% to 18.7% during this period. As at 2021, Nigeria GDP is at 1.5% (14).

This decline in the GDP negatively impacts the country's public finances including health financing and related expenditure at both state and local government levels. This is because healthcare funding is dependent on allocation from the Federal Government(14). Also, the Covid 19 pandemic has a negative outcome on the country's economy as Nigeria's GDP experienced 34.1% loss ($16 billion) during the pandemic(20). The lockdown caused by the pandemic also increased the poverty rate in Nigeria by 14% as 27million people further

dropped down below the poverty line (20). Nigeria is ranked among the poorest countries in the world, with about 70% of the population living below the internationally agreed poverty line of US$ 1.90 per day (21).

1.3 Organisation and Structure of the Nigerian Health System

The Nigeria's national health system is a decentralized one with a three-tiers structure; the Federal, State, and Local government level. The Federal level is responsible for the tertiary level of care, the State tier of government is responsible for the secondary level of care and some tertiary institutions while the Local government level is responsible for the primary health care delivery. The three tiers collectively drive the primary, secondary and the tertiary health care system, as seen in fig. 4 (22).

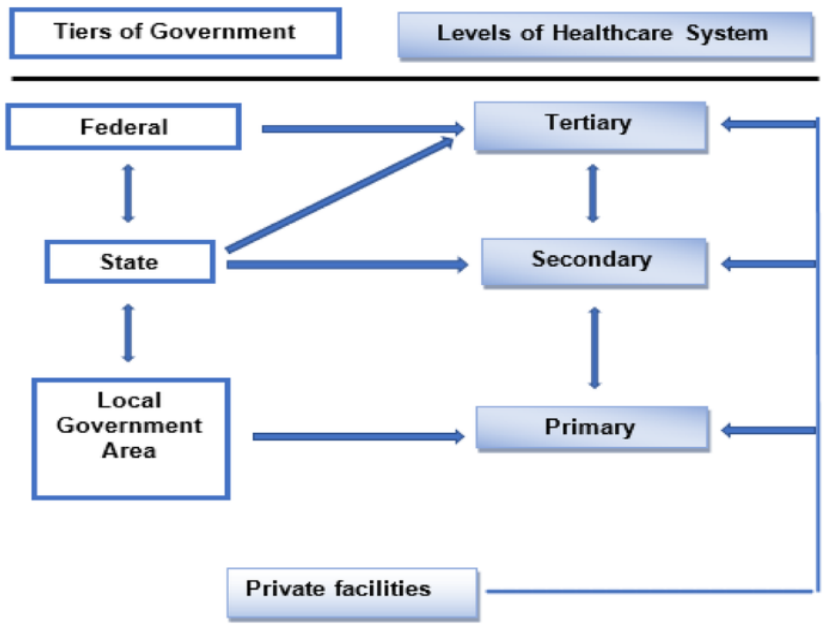

Fig. 4: Levels of Healthcare delivery in Nigeria (22)

Source: Koce F, Randhawa G, Ochieng B. Understanding healthcare self-referral in Nigeria from the service users' perspective: a qualitative study of Niger state. 2019 (22).

The Nigerian healthcare system is composed of both the public sector, the private sector and the traditional mode of care which are all involved in service provision. Secondary and tertiary health facilities are mostly found in cities and urban areas, while the primary health care (PHC) facilities are predominantly found in the rural areas.

The Federal government of Nigeria through the Federal Ministry of Health (FMoH) develops, coordinate, and controls the implementation of public health programme at the national level.

Among the public health programmes is the National Acquired Immunodeficiency Syndrome and Sexually Transmitted Infections Control Programme (NASCOP). Sub-national programmes are being coordinated at the state level by the state ministry of health of each of the 36 States while the primary level of care is run at the local government level (see figure 5). However, the state regulates and give technical support for primary health care services including basic health care provision for Universal Health Coverage (UHC) (14). The local government oversees the provision of basic health care services, community health, hygiene, and sanitation in the primary health centres of their respective geographical locations.

Nigeria health care is financed through tax revenues, international funding, health insurance and out-of-pocket (OOP) payment. Household OOP is the major source of health financing in the country, it represents two third of the total health expenditure which is 3.7% of the country's GDP proportion (23).

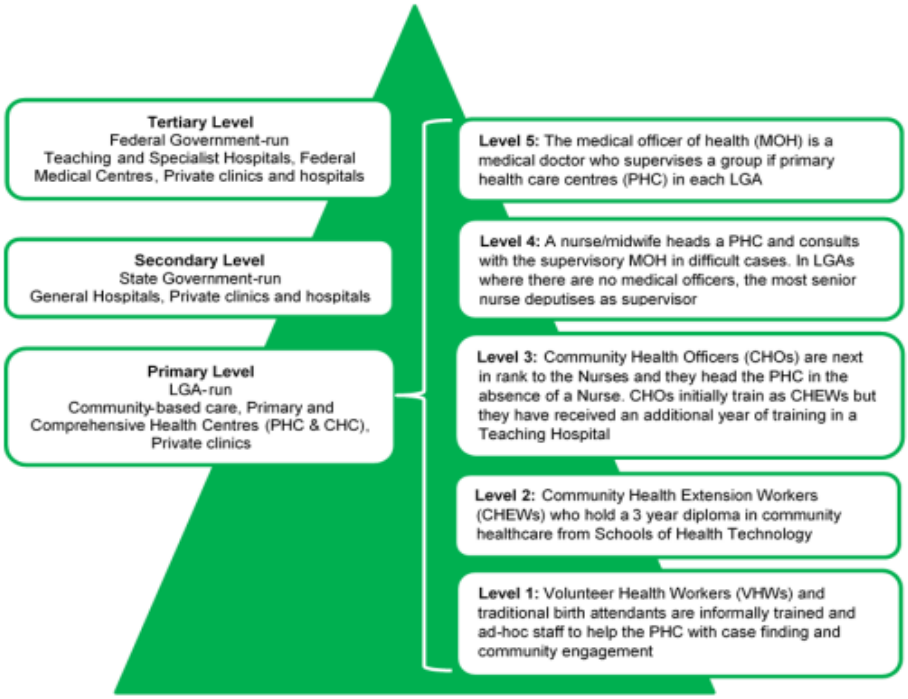

Fig. 5: Nigeria's health system (14).

Source: Federal Government of Nigeria. Ensuring healthy lives and promoting the wellbeing of Nigerian populace at all ages. 2018.

Chapter 2: Sexually Transmitted Infections – An Overview

2.1 Global Overview of Sexually Transmitted Infections

Sexually transmitted infections (STIs) are "infections passed from one person to another person through sexual contact"(24) STIs are caused by more than 30 different bacteria, viruses, and parasites (1). Daily, more than one million cases of STI are acquired globally and half of these new cases of STI are in people aged 15 to 24 years (24) which the United Nation defined as youth (2). Youth (young persons) are in the transition stage between the childhood (dependency stage) to adulthood (independent stage) (2).

On a yearly basis across the globe, an estimated 376.4 million new cases of curable STIs occur. These consist of 86.9 million new cases of gonorrhoea, 127.2 million cases of chlamydia, 6.3 million cases of syphilis, and 156 million cases of trichomoniasis (25). Africa is one of the regions with the highest incidence of STIs as seen in fig 7. According to WHO, approximately 40% of the global burden of STIs is from Sub-Saharan Africa (25).

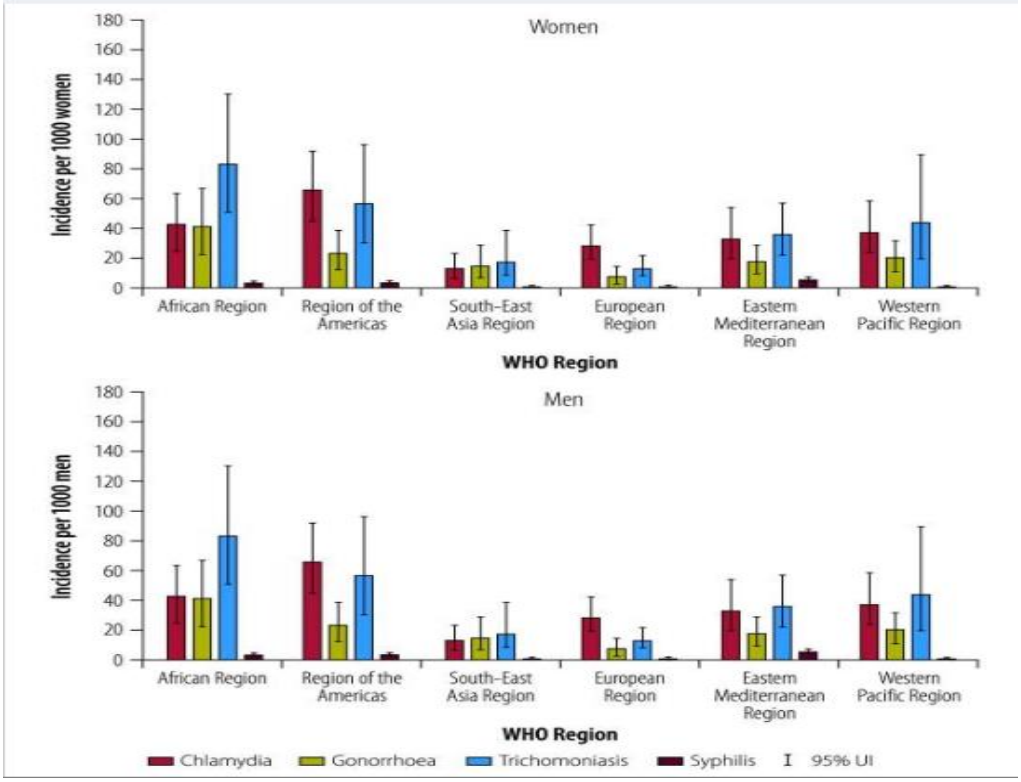

Fig 6: WHO estimate of incidence rate for chlamydia, gonorrhoea, trichomoniasis and syphilis according to sex (aged 15-49years) 2019 (25).

2.2 Overview of Sexually Transmitted Infections in Nigeria

In Nigeria, STIs are a major public health concern especially among youths as one-third of new cases occur among young persons less than 25 years old due to various reasons (26). It is worthy of note that there is limited data on incidence and prevalence of STIs in Nigeria and this is due to under-reporting of STIs cases especially among young persons. This under-reporting can be attributed to limited access to treatment facilities, inadequate diagnostic centres, asymptomatic episodes of the infections and stigma. However, the FMoH states that Nigeria has a yearly estimate of about three million reported cases of STIs including chlamydia, N. gonorrhoeae and trichomonas vaginalis (27).

According to the 2018 Nigerian National Demographic and Health Survey (NDHS), 12% of young women and 2% of young men aged 15-24years had their first sexual experience before the age of 15 years (26). This early exposure to sex may have contributed to the high incidence of STI. Youth in Nigeria has an increased risk of contracting new STI because of lack of knowledge on non-HIV causes of STI, increased risky behavioural practises, the urge to experiment sexual activities due to peer pressure, engaging in unprotected sex, transactional sex, and having multiple sexual partners (18). Also, young people under the age of 20years account for most victims of rape and sexual assault (28) which increases the risk of STIs.

2.3 Sexually Transmitted Infections Control Programme in Nigeria

In 2016, the Nigerian Federal Ministry of Health (FMoH) formed a technical committee whose role is to reduce the incidence of STIs by creating control measures to tackle the menace. The FMoH through the National AIDS and STD Control Programme (NASCOP) published a manual on sexually transmitted disease (STD) which contains a syndromic management approach to STIs treatment. This manual was to help health workers especially at the primary care level to manage different STD associated syndromes (29).

The syndromic approach makes treatment of STDs accessible and affordable to the population as it does not involve the use of expensive laboratory or sophisticated equipment. The health care provider uses a flow chart and symptoms presented as a guide for treatment (29). The goal of the syndromic management was not limited to treatment of infection but to also break the

chain of transmission (29). The NASCOP was committed to control the STIs epidemic as a means to achieve UHC.

The guideline is simple to use and if properly used by the health workers was to provide effective treatment for patients with symptoms of STIs. The curative effect of this approach prevent new infections, allows follow up of patients, and helps in behavioural change (27).

2.4 Strategy for the Control of STIs among Nigerian Youth.

In line with the Sustainable Development Goal (SDG) 3, efforts were made by the Nigerian Government to include adolescent and young adults in sexual and reproductive health programmes. Adolescent and youth friendly services (AYFHS) were created and integrated into the public PHC services (30). The purpose of this integration was to better address the reproductive health needs of the youths, considering that PHC is the closest and the first point of contact of the population to health care services (30). However, despite the availability of these health services, the incidence of STI among the youth continues to rise. Possible reasons for this increase are risky sexual behaviours, cultural practices (31), poor utilization of adolescent and youth-friendly health services, and knowledge on symptoms of STIs.

Chapter 3. Problem statements, Justification, Study Objectives and Methodology

3.1 Problem Statements

The incidence of STIs in Nigeria has reportedly increased between 2013 and 2018. The 2018 NDHS reported that 14% of women and 8% of men reported having an STI and/or symptoms of STIs compared to 4% reported among women and 2% among men in 2013 (32).

Similarly, STIs incidence and prevalence among adolescents and young adults in south-western Nigeria continued to rise due to various factors including unmet need of STIs-related services. A survey conducted in the southwest Nigeria showed that the prevalence of STIs including gonorrhoea, syphilis, and chlamydia among sexually active respondents aged 15-24years was 27.7% (33).

Morbidity due to STIs decreases the quality of life as the infections compromise the physical, psychological, social, sexual, and reproductive health of the infected individuals (34). For instance, delayed or untreated STIs such as gonorrhoea and chlamydia may lead to tubal infertility and ectopic pregnancy in women, chronic pelvic pain, psychosexual problems, and economic burden. Similarly, STIs like syphilis are transmissible during pregnancy to a new-born baby leading to congenital deformities and neonatal death (35). Additionally, STIs increases the chance of HIV transmission thus serving as a determinant for the incurable infection (25).

While there are several STIs, Gonorrhoea, Chlamydia, Syphilis, Trichomoniasis are the most common ones and can be treated with an existing single-dose regimen of antibiotics (24). Despite being curable, the development of resistance to antimicrobials by STIs-causing pathogens makes their management more challenging and contributes to the high burden of the infections (24). In Nigeria, due to a poor antibiotics regulation system, all people including the youths have access to antibiotics without prescription and can practice self medication. This may lead to poor treatment of STIs and further fuel antimicrobial resistance (24).

Despite the reproductive and financial effects of STIs on individual and household, the burden of disease among youth in southwest Nigeria continues to increase (32). There is an increased rate of risky sexual behaviours due to various factors such as age, gender, socioeconomic status, geographic residence, parental residence, alcohol use, attending night parties, and accessing pornographic websites (28). Also, there is evidence for an increased risk among females due

to biological factors such as hormonal changes which cause cervical ectopy, increasing their risk of contracting STIs (36).

Also, in some cases, infections are asymptomatic e.g., chlamydia or cause mild symptoms making it possible to be infected and not aware of infection (25). Moreover, in Nigeria, it is not uncommon that young people who tested positive to any of the STIs or have symptoms of STIs try treating themselves, and/or seek treatment from patent medicine sellers or traditional healers (37). Poor treatment of infection further increases the prevalence of STIs (27).

3.2 Justification

Past evidence showed that there are several factors influencing the transmission of STIs, access and utilization of healthcare including sexual and reproductive health (SRH) services. It is therefore important to develop an effective strategy targeting the most-at-risk groups (the youth). For the strategy to be effective, there is a need to understand the various factors that drive STIs transmission as well as the key factors influencing care-seeking for the use of treatment and of prevention.

There is a need to prevent the transmission of STIs and corresponding complications among the young people. Youths are the ones with high incidence, low financial capability, and low decision-making power. In addition, this category consists of a large proportion of the country's population and the future workforce of the country. Hence, it is paramount to prevent low quality of life due to STIs. It is also important to learn from countries with successful STIs intervention program and identify effective interventions in other to make recommendations to the Nigerian government and other stakeholders.

There are few studies across the southwestern region of Nigeria documenting various determinants influencing STIs transmission and access to STIs services among the youth. Although there are other studies conducted in different settings and among different categories of youths such as in-school and out-of-school young people across other regions. Therefore, it is important to explore these studies in order to identify the common and varying determinants in this geopolitical region. It is also important to provide a comprehensive review of the determinants that drive STIs transmission and factors influencing young people's access and utilization of STIs services.

Moreover, there are limited studies exploring the interplay of these determinants and hence the rationale for this study.

3.3 Study Objectives

3.3.1 General Objective:

To explore the factors that drive STIs transmission, access, and utilization of STIs-related health services in order to review options for the design of effective STIs control programmes.

3.3.2 Specific Objectives:

1. To identify factors that contribute to the transmission of STIs among youths in south-western Nigeria.
2. To identify strategies and interventions focusing on prevention, screening, diagnosis, and treatment to reduce the burden of STIs.
3. To make recommendations to government and relevant organizations to improve access and utilization of sexual and reproductive health services among young adults.

3.4 Methodology:

3.4.1 Study Design

The study design is a review of the available literature on STIs among youth in the southwestern Nigeria. This study is descriptive and a search of peer reviewed articles, and grey literatures on STIs related services in the southwest, Nigeria, Sub-Sahara Africa and globally was conducted. Also, documents on STIs programs and interventions for youths were reviewed for this study.

3.4.2 Search Strategy

For this study, the search include literature using the Vrije Universiteit Online Library, PubMed, ResearchGate and Cochrane Library databases. Also, Google Scholar and Advance Google were used as search engines for relevant materials. Relevant reports from the WHO website, Nigeria NDHS, and available sexual and reproductive health (SRH) policy & program documents, strategic plans from FMoH and other government agencies related to Nigeria's health system were identified to search for information relevant to the study.

A snowballing technique was also used to identify relevant articles (checking the reference list of the limited articles to access more articles on the research topic). The conceptual framework on the determinants of sexually transmitted diseases by SO Aral (38) was used as a guide to analyse related articles describing the factors that drive STIs.

Inclusion criteria were:

- Grey literature and peer-reviewed articles in English language related to factors that drive STIs as described in the framework, STIs interventions for youth in Nigeria and globally.
- Relevant international documents and guidelines e.g., WHO guideline on global strategy for STIs were used as additional resources.
- Grey literature and peer-reviewed articles published between 2007 and 2022 in other to explore recent research on the topic.

Exclusion criteria:

- Studies published in other languages
- Articles and literatures published before 2007.
- Articles on other STIs beyond gonorrhoea, syphilis, chlamydia and trichomoniasis.

However, the article on "Household socioeconomic status and sexual behaviours among Nigeria female youth" (33) is included in this study. Also, "Approaches to the control of sexually transmitted infections in developing countries: old problems and modern challenges" (39). These articles were published in 2004 but include information that are relevant for the study.

3.4.3 Key Words

Keywords used in the literature search include Sexually Transmitted Infections, Sexual and Reproductive Health, Determinant, Factor, Driver, Predictor, Sexual behaviour, Health-seeking, Utilization, Prevention, Treatment, Management, curable STIs, Gonorrhoea, Syphilis, Chlamydia, Trichomoniasis, South-western Nigeria, Oyo, Ogun, Ondo, Ekiti, Lagos, Osun, Health system, Health worker, Prevalence, Incidence, Youth friendly services, Intervention, Program, Initiative, Nigeria, Global. These keywords were combined using the Boolean operator OR/AND during the literature search as seen in annex 1.

3.4.4 Study Limitations

As compared with the array of studies on HIV in Nigeria, the literature in Nigeria on the non-HIV sexually transmitted infections is limited. The use of primary data through In-depth interview, focus group discussion for youths and key informants' interviews for health workers could have given additional relevant information on the factors influencing access to STIs services in the southwest Nigeria. Considering the regional diversity in Nigeria, the results of this study may not be generalized for interventions among youths in the entire country.

3.4.5 Conceptual Framework

The framework below (38) was selected because it highlights both the underlying determinants and the proximate determinants of transmission of STIs. The transmission dynamics at the right-hand side of the framework will not be used in this paper as it is beyond the scope of this study. The four most common curable STIs (Gonorrhoea, Chlamydia, Syphilis, Trichomoniasis infections; WHO list (34) will be the focus of this study.

The framework will be used to analyse the determinants that drive STIs, while different literature will be reviewed in addition to the framework to achieve the overall objective of this study.

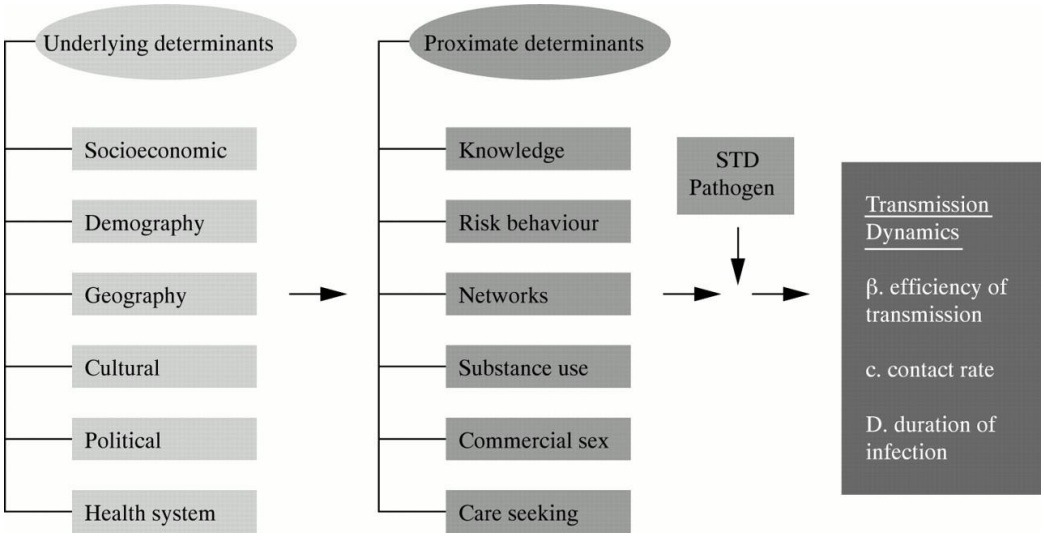

Figure 7: Conceptual framework on the Determinants of sexually transmitted infections (38). Source: Aral SO. Determinants of STD epidemics: implications for phase appropriate intervention strategies. 2002 (38).

Chapter 4: Study Findings and Results

4.1 Underlying Determinants of STIs Transmission

There are various underlying factors that influence the risk of STIs transmission among youths in the southwest Nigeria. These factors include: the socioeconomic status of the youths; the demographic and geographical location; culture; and political factors specific for this region. There are also important health system related factors that contributes to transmission risk of STIs among this group.

4.1.1 Socioeconomic Determinants

Generally, the socioeconomic status (SES) of an individual or household determines the capacity to access and afford healthcare services. It also influences health behaviour and health seeking. SES reduces the financial capability to pay for healthcare including SRH services. This increases vulnerability to STIs as youth with low SES are unable to access STIs prevention and management services such as condoms, SRH information, diagnostic and treatment at the health facilities (40). One of the factors leading to low SES is unemployment (41).

According to the Nigeria National Bureau Statistic (NBS) report, the unemployment rate among Nigeria youths as at the fourth quarter of 2020 was 42.5%, and the highest among all category (42). This high unemployment rate has implications for the household wealth index and increases the susceptibility of youths to STIs (41). The increased in the unemployment rate reduces the family income of Nigerians and adversely affects the household living conditions. Households are not able to meet the needs of their children prompting youths to engage in different informal labour activities in other to contribute to the family income (43). This increases their network and may lead to engaging in risky behaviours that increase the risk of STIs transmission.

Unemployment which may lead to poverty increases the risk of youth engaging in commercial sex. It increases the risk of young female adult being lured into sexual relationship for gifts and financial returns (43). Also, the need to survive motivate poorer female youth to engage in sexual relations with non regular partners (43).

The female use of condom with non regular partners is low among poor youths as they often lack the social power to negotiate condom use (44). The economic needs and survival instincts of these female youths outweighs their consideration of the risk of unprotected sex (44). A qualitative study using focus group discussion (FGD) method of data collection reported that young people believe the pleasure derived from engaging in risky sexual behaviours outweighs the risk of STIs transmission (5).

Another study shows that the proportion of female youths contracting STIs increase with increasing wealth index (45). The study shows that there is a statistically significant association ($p < 0.001$) between the wealth index and STIs. Incidence of STIs increased from 0.9% among female youths with the poorest wealth index to 3.2% among the richest (45). This is contrary to previous studies that shows an increased risk of STIs with the poorest wealth index (43). In the study, about 20% of youths with high SES reported ever used of condom while 12.8% of youths in low SES households had ever use condom (43).

4.1.2 Demographic Determinants

Youths dominate the south-west region of Nigeria. Also, Lagos State being a former capital of the country remains attractive to young people of diverse ethnicity and language. This makes this region economically diverse as people from different spheres of life come to this region for business and economic opportunities (19). The above reasons increase the sexual networks and activities of the youths that inhabit this region, and this in turn increase the risk of STIs.

Demographic characteristics like age, sex, place of residence and educational level influences sexual debut which increases the risk of STIs transmission (37). Young people who experience early sexual activities are more at risk of STIs than youth who initiate sexual intercourse late (32). According to the NDHS, sexual debut is earlier among youths with no education compared to their counterpart with more education as seen in Table 1 (32). Females have an early sexual debut compared to males and this increase their risk of STIs transmission. Also, the place of residence of young people influences their early exposure to sexual activities (32).

Table 1: Age of sex debut among youth according to age, sex residence and education (32).

Percentage of young women and young men age 15-24 who had sexual intercourse before age 15 and percentage of young women and young men age 18-24 who had sexual intercourse before age 18, according to background characteristics, Nigeria DHS 2018

	Women				Men			
Background characteristic	Percentage who had sexual intercourse before age 15	Number of respondents (15-24)	Percentage who had sexual intercourse before age 18	Number of respondents (18-24)	Percentage who had sexual intercourse before age 15	Number of respondents (15-24)	Percentage who had sexual intercourse before age 18	Number of respondents (18-24)
Age								
15-19	8.6	8,448	na	na	2.4	2,415	na	na
15-17	7.3	5,242	na	na	2.0	1,583	na	na
18-19	10.8	3,206	47.3	3,206	3.1	832	12.9	832
20-24	15.8	6,835	55.9	6,835	2.2	1,472	13.8	1,472
20-22	16.0	4,625	56.9	4,625	1.9	1,038	13.0	1,038
23-24	15.3	2,211	53.9	2,211	2.7	435	15.6	435
Residence								
Urban	5.8	6,737	35.7	4,375	2.0	1,661	14.4	1,000
Rural	16.6	8,546	66.7	5,666	2.5	2,227	12.8	1,304
Education								
No education	24.0	4,383	81.6	3,070	0.9	803	6.1	430
Primary	16.3	1,601	70.8	989	1.3	370	10.3	184
Secondary	5.7	8,262	39.5	4,978	3.0	2,404	16.9	1,385
More than secondary	2.1	1,037	16.6	1,005	1.9	311	10.2	305
Total	11.8	15,284	53.2	10,041	2.3	3,888	13.5	2,304

na = Not applicable

Source: NDHS, 2018 (43).

4.1.3 Geographical Location

About 52.2% of the Nigeria's total population including the southwest of Nigeria live in rural areas (23). According to the NDHS 2018, young girls in the rural area engage in sexual relation (17%) before the age of 15years compared to girls in the urban area (6%) (26). The median age of sexual debut in the rural area is 2years earlier than that of the urban area as seen in Table 2 below (43). This early sexual debut increases the risk of STIs. The early sexual debut may be due to access to educative information, traditions, or the network of the girls.

Table 2: Percentage distribution of unmarried female youths who have never had sex, are sexually active and median age of first sex (43).

Characteristic	Have Ever Had Sex	Sexually Active 4 Weeks to Survey among those Who Have Ever Had sex	Median Age at First Sex	Total
Current Age				
15-19	20.9	50.4	16.0	1,258
20-24	55.8	56.5	18.0	550
Total	31.5	54.0	17.0	1,808
Region				
North-east	8.6	50.0	18.5	116
North-west	17.4	54.5	18.0	69
South-east	35.3	51.5	16.0	646
South-west	33.6	57.1	17.0	562
Central	31.6	52.8	17.0	415
Residence				
Urban	30.5	57.7	18.0	709
Rural	32.2	51.3	16.0	1,099

Source: NDHS, 2018 (43).

The risk STIs transmission is further increased by the limited availability of health facilities in these regions. Long distance to health facilities due to geographical location, bad road networks, and non availability of skilled health workers makes it difficult for youths in the rural areas to access STIs-related services (23).

A survey by Adebowale et al., shows that there is statistically significant association between place of residence and the risk of contracting STIs ($p < 0.01$) (45). However, female youths in the urban area have a higher percentage of STIs (2.7%) as compared to female youths in the rural area (1.8%) (45). The difference in prevalence of STIs can be due to a lower number of sexual partners in female youth in the rural areas as compared to urban area. Also, sexual activities can be easily monitored in the rural area due to its relatively smaller topography thereby limiting the numbers of sexual partners (45).

Also, the rate of early marriage and cultural norms disapproving promiscuity is high in the rural area is higher compared to the urban area. This limits sexual networking particularly among female youth (45). However, access to condom use is limited in rural area compared to the urban area as seen in table 3 (43). Thus, increasing the risk of STIs transmission in rural area.

Table 3: Percentage distribution of unmarried Nigerian youth according to condom use

Characteristic	Ever Used Condom	Condom Use During Last Sex among those Sexually Active	Total
Current Age			
15-19	9.0	18.6	1,276
20-24	28.6	24.3	555
Region			
North-east	7.6	30.0	118
North-west	8.5	18.2	71
South-east	13.9	22.6	656
South-west	15.0	18.6	568
Central	19.9	24.0	418
Residence			
Urban	18.5	28.6	714
Rural	12.7	17.4	1,117
Place of Childhood residence			
City	17.5	22.5	725
Town	19.2	21.6	291
Country side	10.8	19.0	740

Source: NDHS, 2018 (43).

4.1.4 Culture

Culture plays an important role in SRH and health behaviour (46). It has a dominant impact on the knowledge and attitudes that influence risky sexual behaviours (46). Therefore, it is important to understand this interaction as a basis for design of effective STIs related interventions.

Despite the southwest region of Nigeria being predominantly occupied by the Yorubas, its socio-cultural context is quite complex, with many different languages spoken. This diversity makes it difficult for STIs campaign programs to be effective (46). In a study conducted in Ogun State, the youth respondents stated that they preferred STIs related messaging in their different local languages. This gives them a sense of identification with the STIs intervention. They explained that Nigeria has over 250 languages and so STIs related messaging should not be limited to the use of English, Hausa, Igbo, or Yoruba which are the dominant language in the country (46).

The cultural practice of polygamy and social norms that permit men having concubines are important factors that increases the risk of STIs transmission (44). These practices encourage male youth to engage in multiple sexual relationships, make women submissive to their male counterpart and create power imbalances (47). This prevents safe negotiation of sex and contribute to the risk of contracting STIs. Inequality in gender power relation increases the risk of STIs transmission in southwest region of Nigeria (47).

Also, due to socio-cultural beliefs, youth seek STIs treatment from traditional healers. A survey in this region shows that 19% of women and 10% of men seek treatment and management of STIs from traditional healers (48). This is due to low cost of treatment and the believe in the potency of traditional remedies against modern medicine (48). It is however unclear if they are cured using the traditional herbs or if this act contributes to the prevalence of STIs.

Cultural norms and beliefs that frowns at engaging in premarital sex also prevent youths from seeking STIs related services (49). Young people do not seek SRH services due to fear of the parents and the perceived stigma associated with STIs by the community (49). These cultural norms also prevent parents from discussing issues around sex and sexuality with their children. This makes young people rely on information from the media and from peers which can lead to misinformation and increase the risk of STIs transmission (50).

4.1.5 Political Factors

Political interest is important for public health interventions including implementation of STIs related services. Although, the Nigerian government integrated AYFHS into the PHC, however, these centres receive little commitment and funding from the government (51). Lack of political will of the government leads to inadequate funding to the PHCs, misappropriation of funds and inadequate inter-sectoral collaboration (51). These hinder an effective operation of the system since health supplies and manpower is limited, and staffs are unmotivated. These leads to low performance of the PHCs.

The low performance of the PHCs affects the implementation of health services including the provision of AYFHS. Since the PHCs are poorly funded, there are inadequate commodities for diagnosis and treatment. Unavailability of test-kits, drugs, skilled health workers etc makes the PHCs under perform and young people do not seek care at these centres. Also, there is a general belief that PHC are for the poor and services are for lower class citizens.

Overall, the Nigerian health system is underfunded and remains dependent on foreign grants. The low funding of the health sector makes it difficult to prioritize STIs related services. Nigeria has one of the lowest health sector funding in Africa as only 4.9% of the national Government budget goes to the health sector (52). This is against at least 15% of national budget to fund the health sector by the Abuja declaration (53).

4.1.6 Health System's Related Factors

Rapid STIs treatment breaks the chain of infection, promotes faster recovery of the infected and prevent future complications of infection. However, in the southwest region of Nigeria (just as with many other regions of African continent), there is lack of proximity of young adults to health facilities with good STIs diagnostic services. This can be due to barriers such at the geographical location of the facility, availability of commodities, long waiting time, and cost of service (37). The non-proximity to health services hinders the break in the chain of transmission leading to spread of infection.

A quantitative data analysis of the 2018 NDHS shows that 56% of men and 54% of women correspondents' self reported STIs 12months prior to the survey (48). Figure 8 below shows

their health seeking behaviour. 61% of the men and 58% of the women that self reported STIs sought treatments from PHCs, and hospitals. 29% of men and 23% women sought treatment from pharmacies and drug stores whereas; and 19% of women and 10% of men sought for STIs treatment from traditional healers (48). Aside patronizing patent medicine stores and traditional healers for treatment of STIs, youths also engage in self-medication to avoid stigma associated with routine health clinic visits (48).

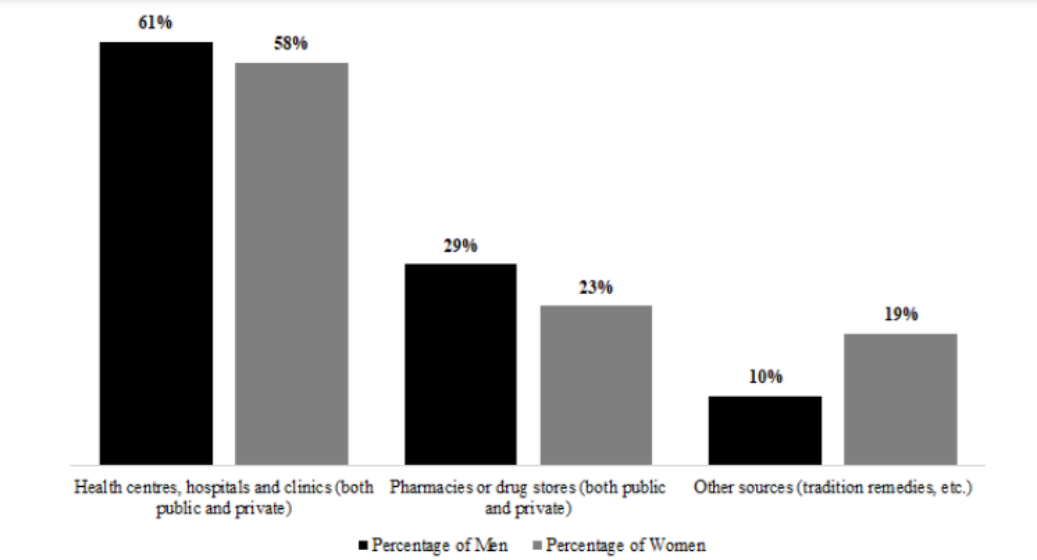

Fig. 8: STIs treatments seeking behaviour by facility type, 2021 (48).
Source: Ebong US, Makinde OA. Determinants of treatment seeking behaviour for sexually transmitted infections in Nigeria 2021 (48).

Despite the integration of adolescent and youth friendly services into the public primary health care as stipulated in the AYFHS guideline, a study in Ile-Ife Osun state shows that these services are lacking in the PHC facilities (54). Services at the health facilities are targeted towards the general population contrary to being youth targeted.

The absence of these youth targeted reproductive services may have contributed to the poor health seeking behaviours of the youth. This is similar to a survey in south Africa in which only 41.8% of youth correspondents have the knowledge of the availability of AYFHS in PHCs within their community (55). This is also consistent with a survey in Ethiopia in which youth are not engaged in governance structure of the AYFHS in the facility and therefore unresponsive to their needs (56).

Health workers in PHC facilities are also perceived to be less qualified (51). The community perceptions of low quality of services and inadequacy of services result in low participation and utilization of the PHC (51) by the youths including STIs-related services. Poor access to these SRH services increases the transmission of the ongoing STIs as more youths are being infected (57). This leads to increase in the population of untreated STIs.

4.2 Proximate Determinants of STIs Transmission

Proximate determinants are behavioural factors that increases the risk of STIs transmission. These determinants include the knowledge of youth on STIs, risky sexual behaviours they involve in, the sexual and social network of youth that increase STIs transmission. Also, substance use, commercial sex and the care seeking behaviour of youth are determinants of STIs transmission. These determinants are from the patients (youth) side and attitude of youth will determine the increase or decrease in the burden of STIs. Each determinant is explained as follows:

4.2.1 Knowledge

The NDHS report more than 70% of females aged 15–19 years and 54% males of same age group had no knowledge of any of the STIs (26). Although infection discharge may prompt the male youth to seek treatment, this is not same with the female youth: inadequate knowledge of STIs makes it difficult for young women to differentiate between normal and abnormal vaginal discharge. This determines whether adequate health care is sought.

Knowledge of STIs in this region varies from one another. A survey on the knowledge of youths in one LGA in Lagos state shows that 65.6% of the study participants has a good knowledge of STIs in this region (58). This is contrary to the report of another region (Ekiti state) still in the southwest Nigeria where only 6.9% of the study participants have good knowledge of STIs (59). 50% of the study participants in Ekiti state could not identify the common symptoms of STIs i.e., painful urination, burning, itching or inflamed genitals and genital discharge.

The difference in knowledge in these two surveys may be attributed to the difference in the age of the study participants; while the survey in Ekiti state was carried out among secondary

schools' students (adolescents), the survey in Lagos state was done with university undergraduates. Therefore, age may influence the level of knowledge on STIs.

Nonetheless, the survey in Lagos state shows that 35.9% of study participants who are sexually active have some myths and misconception about protective methods against STIs. The misconception includes the use of contraceptive medications, taking alcohol before sex, taking drugs before sex, having sexual intercourse while standing etc (58). These misconceptions about preventive measures against STIs will continue to lead to increase in incidence.

Also, a survey by Adebowale et al., shows that increase in level of education of female youth increases the risk of STIs due to increase sexual activities (45). Prevalence of STIs in the survey ranged from 1.3% in female youths with no education as compared to 4.7% in female youth with higher level of education (45). However, the increased risk of STIs in the later maybe due to behavioural factors that increased the risk of STIs transmission and not the level of education of the participants.

Without adequate knowledge on STIs mode of transmission and symptoms of infection, it is difficult for youth to seek care when infected. Studies shows that the presence and severity of symptoms motivate youth to seek care, but this is dependent on the knowledge of symptoms of STIs (48). Comprehensive STIs knowledge will therefore influence care seeking behaviour reducing the prevalence or incidence of STIs.

Also, access and utilization of AYFHS can be influenced by knowledge about the comprehensive package of the service. A study on youth's knowledge/awareness about AYFHS shows that the service is mainly centred towards provision of contraceptives (60). The limited knowledge about the service influences the non-use of the STIs-related services by the youths.

4.2.2 Risky Behaviour

Young people engage in behaviours that put them at risk of STIs. These risky behaviours include engaging in unprotected sex, having multiple sexual partners and non use of protective barrier (condom) (61).

According to the NDHS, young male age 15-24years reported having more than one sexual partner compared to the female youth of same age (32). 4% of male youth had more than one

sexual partner 12month to the survey compared to 1% of female youth. Also, 15% of male youth as against 13% of female youth have had sexual intercourse with someone they are not married or in a relationship with in the last 12 months before the survey (32). This increases their risk of STIs. Also, some sexual practices like vaginal douching, anal intercourse, and insertion of herbs into the private part for vagina tightening practised by female youths increases the risk of STIs transmission (47). These practices alter the normal pH of the vagina increasing the risk of infection.

A study in one of the southwest states showed that one third of the participants engage in premarital sex and only half of the study participants used condom regularly for 6months prior to the study (54). Another study showed that STD prevalence was higher among the unmarried youths (2.6%) than the married youths (1.8%) (45). Despite high level of sexual activities, only 15% of the unmarried youth reported ever using condom with their sexual networks (43). The use of condom is however lower in unmarried female youths (43). These risky behaviours increase STIs transmission among the youth.

Similarly, a FGD among youth in the south-south Nigeria showed that even though youth have a good knowledge of risky sexual behaviour, they still involve in it (5). The female youth in the survey are more concerned about unwanted pregnancy than they are of STIs. They practice myths like the use of alcohol after sexual intercourse, use of high dose of quinine tablets, or even insertion of herbs into the vaginal to prevent pregnancy (5). The youth in this study believes the pleasure in practising risky sexual behaviour supersede its consequences (5). These attitudes and behaviour increase the risk of STIs transmission.

4.2.3 Network

Youth's sexual networks increases the risk of STIs transmission as the behaviour of partner predisposes the other to infection. STIs transmission is increased among sexual networks and the speed, and the extent of transmission is determined by the characteristics of the network. These characteristics include size of the group, having two or more sexual partners at a time, the frequency of sexual act, the type of sex and rate of partner change (62).

Sex workers and Lesbians, Gays, Bisexuals, Transgenders, and Queers (LGBTQ) are at an increased risk of STIs transmission (64). The increase in risk is due to the sexual practice, network, and linkage in these groups. A survey in London shows that the proportion of men

having sex with men (MSM) compared to the general population is 2%, and yet they contribute to 28% of new cases of STIs in the country (23% chlamydia, 69% gonorrhoea, and 90% new cases of syphilis) (64). Nigeria has no data on this population as LGBTQ is prohibited by the law. This makes their activities underground with limited networks and no access to healthcare thus increasing the rate of STIs transmission among young people that identify with LGBTQ.

Behavioural factors like number of sexual partners and type of sexual relation increases the risk of STIs transmission in this group (62). The study in London shows that MSM reported a mean sexual partner of 24 sexual relationship as against 3.8 mean reported by heterosexual men. Also, the proportion of MSM engaging in multiple sexual practice was 52% while 15% of heterosexual men reported same (62).

Also, the social network of young people has a positive or negative influence on sexual relationships. A survey among youth in Ethiopia shows that the pattern of relationship of youths including the structure and content of their social network influence the ability to engage in risky behaviours (65). The social network influences the sexual behaviours of youth as it serves as source of information about sexual behaviours, practices, and sex partners (65). In the study, the odd ratio of sexual practices and risky behaviours ranges from (AOR1.61; 95%CI: 1.04–2.50) in individual characteristics and (AOR 1.12; 95% CI: 1.06–1.19) with increasing network strength (65).

4.2.4 Substance Use

Alcohol and substance use increase risky behaviours such as unsafe sex (61). The use of substances stimulates the sensory organs preventing youth from making conscious decision which may lead to unprotected sexual relationship. Substance use has been shown to have a positive association with being sexually abused or being an abuser (47). This increases the risk of STIs transmission as no measures are taken to protect against infection.

In a survey on the use of alcohol by youths in South Africa, 59.8% of male and 40.2% of female reported that alcohol use predisposed them to engage in risky sexual behaviours (55). This is similar to research with 55,690 youths in United States in which 3.4% of the respondents reported having an STI 12months prior to the survey. 38.4% of those who reported an STI however also reported the use of illicit drugs (OR:3.10, 95%CI:2.77–3.47) (66).

4.2.5 Commercial Sex

Commercial sex also referred to as "paid/transactional sex is the act of involving in the exchange of sex for money, gifts, services or other favours such as promotion at the workplace and grades in school"(6). The situation of Nigeria's economy has led people to live in poverty. Households are unable to meet the needs its members as resources become inadequate (43). The increased unemployment rate, retrenchment of workers and reduction in family income leads to the financial needs of young people being unmet. This has adversely affected living standards and increased the risk of young people participating in commercial sex work as a means of financial breakthrough (43).

Engaging in exchange of sex for commercial purposes create an uneven ground for negotiating safer sexual intercourse (32). The exchange of sex for financial gains is evident in both male and female youth though more with female (43). Commercial sex increases the sexual networks of the youth and increases the risk of STIs infection. Also, female youth may not be sufficiently empowered to negotiate safer sex with their network and thus increasing the risk of STIs infection (43).

In Nigeria, 2.4% of young men aged 15-24years paid for sex and only 67.5% used a condom as seen in table 4 (32). The non-use of condoms while engaging in commercial sex activities increases STIs transmission. Also, there is stigma and discrimination surrounding the acts of commercial sex. This make it difficult for youth that engage commercial sex access STIs related services (67) further increasing the rate of transmission of infection.

Table 4: Nigeria population-based survey showing the data of men who pay for sex.

	Among all men:			Among men who paid for sex in the past 12 months:	
Age	Percentage who ever paid for sexual intercourse	Percentage who paid for sexual intercourse in the past 12 months	Number of men	Percentage reporting condom use at last paid sexual intercourse	Number of men
15-24	2.4	1.8	3,888	67.5	71
15-19	0.9	0.6	2,415	*	15
20-24	5.0	3.8	1,472	71.9	56
25-29	6.4	4.0	1,599	72.1	64
30-39	6.5	3.1	3,624	84.1	114
40-49	6.0	2.5	2,757	63.7	68
Total 15-49	5.0	2.7	11,868	73.6	316
50-59	3.8	1.5	1,443	*	22
Total 15-59	4.9	2.5	13,311	74.0	338

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

Source: NDHS, 2018 (48).

4.2.6 Care Seeking

Care seeking behaviour for STIs treatment is dependent on factors such as perceived seriousness of infection, availability and accessibility of health care, cost of treatment including opportunity costs. Also, youth seek treatment based on actual or perceived quality of care, health care provider's perceived behaviour, timely and accurate diagnosis, and non-judgemental attitude of providers (47).

A population-based survey using the NDHS shows that 64% of male youth and 48% of female youth sought treatment for STIs (37). Among the youths that sought STIs treatment, 60% of females used the formal sources (government clinic) while 54% of males had sought treatment from informal sources e.g., a traditional healer (37). Another survey shows that a large proportion of youth 61% of male and 57% female with symptoms of STIs seek treatment in the private and informal sector (68) as seen in fig. 9.

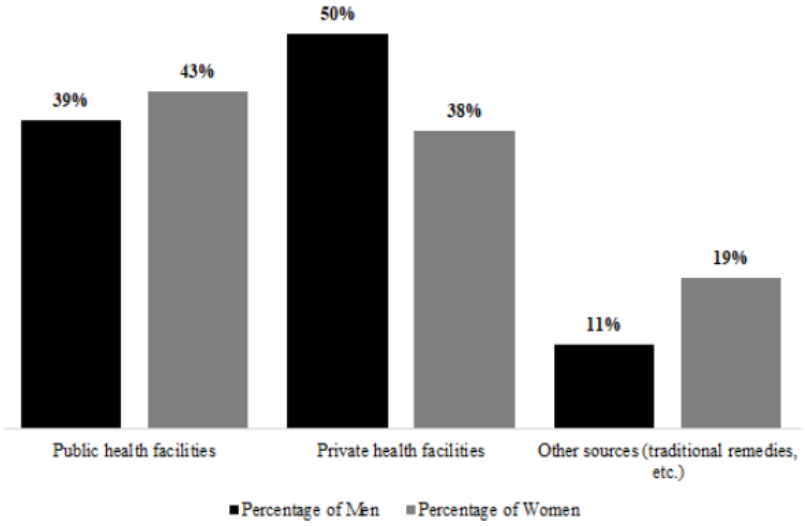

Fig. 9: STIs treatments seeking behaviour by facility ownership (48)

Source: Ebong US, Makinde OA. Determinants of treatment seeking behaviour for sexually transmitted infections in Nigeria 2021 (48).

The survey from the NDHS shows that female youth in Nigeria has a lower odd (odds ratio, 0.6) of seeking STIs treatment than male youth (37). However, this may be due to asymptomatic infection or poor knowledge of the female youth in differentiating between normal and abnormal vaginal discharge. The poor knowledge on STIs influences care seeking behaviour.

Also, economic status has a positive association with seeking treatment from a formal source (2.4–4.2) rather than an informal source (37). Cost of treatment determines if youth will seek care from a formal source as informal sources of care are mostly cheaper than the formal source of care. Also, females aged 22–24-year-olds are 2.5 times more likely to seek care from formal health source than those aged 15–18 years (37). The association between care seeking and age is due to increased in knowledge and financial capacity to seek for the treatment of infection.

Due to perceived confidentiality, convenience and accessibility, youth in the southwest Nigeria seek care from the private sector. Youth believes that the private health sector is less judgemental and less stigmatizing (68). However, the fee for service is higher in the private sector than in the public health service. The cost of healthcare may prevent the infected from completing the treatment regimen, which may lead to drug (antibiotics) resistance and increased prevalence of STIs. Also, youths in this region self-medicate which can lead to antimicrobial drug resistance and increase transmission of infection.

Most youth in the southwest Nigeria seek STIs treatment from the public formal sector quite late in the development of disease (68). They seek quality care after treatment from patent medicine stores, street drug vendors, pharmacy stores, traditional healers, and/or by unqualified practitioners has failed (68). Another study shows that the seeking of STIs treatment from traditional healers and religious home is due to sociocultural beliefs in the potency of those remedies and low cost of service (48). However, the delay in seeking quality care increases the risk of STIs transmission.

Also, asymptomatic STIs prevent the infected from seeking care as there are no symptoms of infection that necessitate treatment. The presence and severity of symptoms e.g., bad vagina odour motivates and prompt youths to seek treatment (48). Asymptomatic infection, delay in seeking treatment at the onset of symptoms and the non-use of condom lead to the spread of infection to other sexual networks increasing the prevalence of disease.

4.3 Global Strategy on the Control of STIs

The burden of STIs (Gonorrhoea, Syphilis, Chlamydia and Trichomoniasis) can be reduced through primary, secondary, and tertiary preventive measures (69). The primary preventive measures promote behavioural change through abstinence, faithful sexual relationships, correct

and consistent use of condoms. The secondary preventive measures are geared towards encouraging STIs care seeking behaviour among youth, increased effort into case finding, prompt and effective treatment of infection. Tertiary preventive measures include limiting the health implication arising from long-term untreated infection. It includes limiting disability and providing rehabilitation including psychosocial support (69).

There are documented strategies to reduce the burden of STIs. These involves the use of public health approach which will include preventing, promoting, and ensuring improved quality of life of the youths. The aim of these strategies is to ensure access to STIs-related services for everyone including the youth using a standardized interventions and services with limited resources.

4.3.1 Strategy on the Prevention of STIs in Youths

The primary prevention is aimed at preventing the occurrence of infection. This can be achieved through behavioural change communication (BCC). The use of school educational programmes, public campaigns and outreaches can be used to communicate on sexual and reproductive health to the youth. Primary prevention of STIs also include the promotion and use of safer sex practices among the youth as it reduces exposure to infection. Safer sex can be achieved by using condoms and having one faithful sexual partner (70). The burden of STIs among the youth can be reduced by increasing awareness on sexual health and STIs, implementing an expanded comprehensive STIs activities (71).

Also, preventive counselling is not limited to preventing occurrence of infection but also involve preventing re-occurrence of infection. Health care providers are to give intensive behavioural counselling to youth after STIs diagnosis. The counselling should be client centred and geared towards discussing the youth's risk, the situation in which the risk occurs and discussing risk reduction in the youth (72). Behavioural counselling can be achieved through one-on-one STI prevention counselling with the youth, use of videos and large group presentations on STIs and reduction of disease transmission (72).

4.3.2 Strategy on Screening and Diagnosis of STIs in Youths

Secondary prevention are control measures aimed at the use of treatment to break the transmission of infection. The prompt treating of infection reduce further transmission of infection and prevent complications due to untreated infection. Secondary prevention may be difficult as it is determined by the health seeking behaviour of youth, stigma and discrimination associated with STIs must be dispelled as this will encourage youth to seek care (70). Also, asymptomatic episode of STIs can serve as a barrier to seeking care and avenue for screening for asymptomatic infections should also be made available to youth.

Secondary prevention can be achieved by ensuring STIs testing, and treatment are accessible and affordable to youth. The use of point-of-care (POC) for STIs testing has been used to improve access to STI screening (73). POC is used to detect and prevent antibiotic resistant infections through molecular detection of key mutations and immediate treatment of specific pathogen. POC molecular testing for gonorrhoeae and Chlamydia has a high sensitivity (97.4–98.7%) and specificity (99.4–99.9%) (73). The traditional way of STIs testing can be decentralized through POC self testing as POC has a fast turn around time, low cost, accurate result, ease to use and user-friendly (74).

In a survey of sexually active female youths aged 14–22 years old, samples were collected through self obtained vaginal swabs, and all participants correctly performed the POC test. 99% interpreted the results correctly as the results correspond with the physician performed tests in 95.7% of cases (74). Another study by Huppert et al in United States also shows that female youth are comfortable using the self collected POC as against clinician collected samples (74). 93% of female youth in this study were willing to test themselves from home and 99% were able to perform the test and interpret the results correctly (75).

The health outcome of the youth can be improved by increasing the capacity of the health workforce and health care delivery system to screen, diagnose and treat STIs. The health system should be able to provide all-inclusive care and treatment for youth (71). Also important is the documentation of STIs related assessment and intervention in youth. This data can be used to measure, monitor, and evaluate progress towards ending STIs in youth (71).

4.3.3 Strategy on Treatment of STIs in Youths

When youth infected with STIs (Gonorrhoea, Syphilis, Chlamydia and Trichomoniasis) is being treated, it is important for health provider to not only treat the patient but also screen for other STIs. The health provider should also give prevention counselling in an empathetic and non-judgemental manner in other to discuss risk reduction in youth (71). Immediately diagnosis has been made, the provider should seek sexual history of the patient and provide comprehensive case management intervention.

Comprehensive case management of STIs involve partner notification strategies. These strategies include health care provider's referral, direct patient referral and Expedited Partner Therapy (EPT) (76). Although direct patient referral has been the most common used strategy for eliciting partners for STIs treatment in Sub-Sahara Africa, success of this strategy has been minimal (76).

Direct patient referral involves the index patient notifying the partner/partners of the need to seek evaluation using a notification slip from the health facility (72). In provider's referral, the health care provider contacts the partner/partners of the index patient within a specified time frame. EPT is a clinical practise of treating the sexual partner of the infected who are unlikely to seek care by gives medication to the infected for the partner to use without the partner being examined by the health care provider. This is a harm-reduction strategy use to break the transmission of infection (72). It is important that partner management services be always available as this will prevent re-infection and reduce burden of disease.

In a study evaluating STIs comprehensive case management in Sub-Sahara Africa, the proportion of index cases (n = 4163) who were able to successfully notify their sex partner(s) about their STIs status was 53%. Among those who notified (n = 1727), only 25% had their sexual partner(s) present for clinician evaluation (95% CI 0.51-0.54: 95% CI 0.23-0.27). However, provider referral and EPT had higher proportions of partner(s) who sought clinical evaluation and treatment (n = 208, 69% and n = 44, 84%, respectively) (76)

Also, a cohort study in south Africa on the use of EPT by young women presenting at the facility for the treatment of STIs was successful in reducing the burden of STIs. There was a statistically lower STIs prevalence in women who received EPT, and successfully delivered it to their partners compared to those who didn't receive EPT as shown in the tables below (77).

Table 5: comparison of STIs detection rate among 51 young women with STIs, 6weeks after an EPT intervention (77).

Pathogen	Overall (N = 51) % (n/N)	EPT issued (N = 46) % (n/N)	No EPT issued (N = 5) % (n/N)	p-value
C. trachomatis	3.9 (2/51)	2.2 (1/46)	20.0 (1/5)	0.188
T. vaginalis	2.0 (1/51)	0	20.0 (1/5)	0.098
C. trachomatis or *T. vaginalis* [a]	5.9 (3/51)	2.2 (1/46)	40.0 (2/5)	0.023

[a] No *N. gonorrhoeae* cases were detected at 6-week follow-up

Source: NJ Garrett et al. Beyond syndromic management: Opportunities for diagnosis-based treatment of sexually transmitted infections in low- and middle-income countries. 2018.

Table 6: STIs detection after point of care testing, immediate treatment and EPT intervention (77).

Pathogen (N = 77) [a]	Baseline N (%)	Week 6 N (%)	Week 12 N (%)	p-value
C. trachomatis (CT)	35 (45.5)	4 (5.2)	2 (2.6)	<0.001
N. gonorrhoeae (NG)	10 (13.0)	0 (0)	1 (1.3)	0.041
T. vaginalis (TV)	5 (6.5)	2 (2.6)	0 (0)	0.013
Any of CT, NG or TV	46 (59.7)	6 (7.8)	3 (3.9)	<0.001
Bacterial vaginosis	40 (52.0)	26 (33.8)	19 (24.7)	<0.001
Nugent Scores mean (IQR)	6.2 (5–7)	5.2 (3–8)	4.8 (3–6)	<0.001
Candidiasis	14 (18.2)	7 (9.1)	12 (15.6)	0.668

[a] Women with STIs or BV were included if they attended all follow up visits.

Source: NJ Garrett et al. Beyond syndromic management: Opportunities for diagnosis-based treatment of sexually transmitted infections in low- and middle-income countries. 2018.

In the study, the young women reported the provision of EPT improved their confidence and allow them to communicate effectively about their sexual health with their partners. This include being able to negotiate sex, improved condom use, and being able to decide continuing the relationship with their partners after treatment or leaving their partners (77). The male partners of the young women in this study found EPT helpful as there was no need visiting the clinic or time spent in getting treated. Also, none of the women reported intimate partner violence because of EPT (77).

EPT intervention was effective in the control of STIs as it increases partner's treatment thereby preventing reinfection, break the transmission of disease and reduce the burden of infection (76). EPT was also reported successful in Uganda in which 74% of partners of index cases were treated using EPT as against 34% of partners of index cases who received treatment through direct patient referral (78) There has also been various reported success of EPT in high-income countries like United States and United Kingdom.

Due to the global epidemic of STIs, there are new strategies emerging for prevention of curable STIs through timely diagnosis and treatment. These strategies are summarized in the table 7 below (79).

Table 7: Summary of new intervention opportunities for the prevention of bacterial STIs (79).

Intervention	**Potential impact**	**Key evidence**
Point-of-care testing	Increased access and frequency of testing, improved return of results and initiation of treatment	A cross-sectional cohort, (n=705) found improved case finding and management of STIs in Rwandan women with or without symptoms with addition of point-of-care STI testing to risk screening algorithm
Expedited partner therapy	Secondary prevention through decreased reinfection	Two large RCT (n=1787) and (n=931) in the USA demonstrated a reduced risk of reinfection with patient-delivered partner treatment compared to referral
Periodic presumptive treatment	Secondary prevention through increased treatment of asymptomatic infections, potentially some primary prevention benefit with early dosing	A randomized, double-blind trial among Kenyan female sex workers (n=341) found a reduced incidence of *N. gonorrhoeae*, *C. trachomatis*, and *T. vaginalis* with a single monthly azithromycin dose
Doxycycline post-exposure prophylaxis	Primary prevention of *C. trachomatis* and *T. pallidum*, less for *N. gonorrhoeae* expected	A pilot (n=30) of daily doxycycline in HIV+ MSM in USA followed by an RCT (n=232) of PrEP taking MSM in France, which found significant reduction of STIs

Intervention	Potential impact	Key evidence
	given widespread resistance to tetracyclines globally	(*C. trachomatis* and *T. pallidum*) with single dose doxycycline as post-exposure prophylaxis
STI vaccination	Primary prevention, with candidates in preclinical and clinical development	One retrospective case-control study (n=14730) found 31% reduction in gonorrhoea following *Neisseria meningitidis B* vaccine

Source: Jenell Stewart et al. Sexually transmitted infections among African women: an underrecognized epidemic and an opportunity for combination STI/HIV prevention. 2020 (79).

Chapter 5: Discussion of Findings

The findings from this study shows that various factors are responsible for the increasing incidence of STIs and poor utilisation of STIs related services by youth in southwest Nigeria. While some factors are individual related, others are due to sociocultural and health system factors influencing the increasing burden of STIs infection among the youths.

5.1 Underlying factors influencing STI transmission and access to STIs-related services

Study findings show that socioeconomic factors such as income, education, place of residence, social status and class influences the risk of STIs transmission. 70% of Nigeria population including those in the southwest live below the international poverty line of US$1.90 per day (21). The low socioeconomic status influences some determinants that expose youth to STIs transmission. Socioeconomic status of the family influences access to education, financial resources, place of residence of the youth.

Low socioeconomic status caused by high unemployment rate in the country prompt youth to engage in informal labour and commercial sex to meet the needs of the household. It also increases the sexual and social network of the youth, the age of sexual debuts and access to education which all have a statistically significant association with an increased risk of STIs.

Socioeconomic status has an influence on care seeking behaviour of the youths. It determines if, when and where health intervention is being sought. Also, youths who are still being catered for by the parent has limited resources to seek medical care leading to untreated infection and further spread of STIs. Moreover, youth who have taken the financial burden of the household due to economic hardship of the household has an increased risk of STIs.

From the above studies, female youths are more into commercial sex activities than male. This suggests an interaction between gender and commercial sex work and an increase in STIs among females. Also, female youths have limited capacity to negotiate safer sex due to power imbalance (43), they are also exposed to rape and exploitation which increases their risk of STIs.

Cultural norms that sex should be for the married prevent parents from discussing about sex and sexuality with the young adults. This leaves the youth to rely on information from the

media and peer. This can however lead to misinformation increasing the risk of STIs (49). Also, stigma and discrimination by the society around STIs leads to secrecy about the infection and may prevent care seeking. They continue their sexual activities, increasing the spread of infection.

Moreover, the believe in the potency of traditional medicine over modern medicine to cure STIs may lead to poorly treated infection. The potency of these traditional medicine has not been scientifically proven and its not clear if medicines used cured the infection and poorly treated infection increases the prevalence of STIs.

Also, sex and sexuality messaging in native dialect as suggested in the survey (46) may lead to behavioural change in youth as they acquire more information about their sexuality. The increase in knowledge will enable the youth to make conscious decisions about their sexual practise. It will also enable the youths to know when to seek care in the case of infection.

Sociocultural norms of men engaging in polygamy or having multiple sexual relationships also increases the risk of STIs especially when they do not engage in safe sex (44). This sociocultural norm harms the youth with the belief that it's a normal for a man to engage in multiple sexual relationship. This creates a power imbalance between the male and the female youth. Also, sociocultural norm put the female at disadvantaged as they are seen as promiscuous when they want to negotiate condom use with their partner (47).

The low political interest of the government in health sector and the high dependency on foreign grants negatively affect the implementation of healthcare interventions including AYFHS. Limited funds assigned to AYFHS is being geared towards family planning services and HIV/AIDS interventions for adolescents and young adults. This led to the non-prioritizing of other STIs like Gonorrhoea, Syphilis, Chlamydia and Trichomoniasis.

Also, PHCs in which the AYFHS is being integrated into is perceived as health facilities with low quality of services (51). It is also perceived to be a facility which are meant for the less privileged (51). These perceived qualities of service prevent young people from seeking care from these facilities. Also, there are no population-based awareness through media, outreaches and programs that inform the youth about the availability of AYFHS in the PHCs. Poor knowledge on the availability of services lead to poor utilization of those services. The non-

awareness program of the AYFHS may be due to the non availability of the services in the PHCs as reported in the study in Ile-Ife Osun state (54).

5.2 Proximate factors influencing STI transmission and access to STIs related service

Knowledge of STIs has a statistically significant association with age, level of education, attitude, and preventive practices towards STIs (58). Lack of knowledge and poor knowledge of STIs is age dependent as studies showed that knowledge increases with age (59). Knowledge of STIs influences care seeking behaviour and good knowledge about STIs prompt young people to seek care. However, care seeking may also be dependent on onset and severity of symptoms. It is important for female youths to be able to differentiate between normal and abnormal vaginal discharge as this will prompt them to seek care early.

Despite good knowledge on STIs, there are behavioural factors that can lead to increase in incidence of STIs. It is important to note that good knowledge do not translate into good STIs prevention practise. This is evident in the study that showed an increased prevalence of STIs among female youths with higher education as compared to those with no education (45). This buttress the fact that behavioural factors influence the risk of STIs transmission and not necessarily the level of education.

Moreover, young people engage in risky sexual behaviours like engaging in unprotected sex and having multiple sexual partners. The rate of having multiple sexual partners and having unprotected sex with a non-regular sexual partner is more in male as compared to female (26). Other surveys report an increase in the number of female youths without the use of condom, female youths having more concern with unwanted pregnancy against STIs (5). This makes them engage in activities that prevent pregnancy but can't protect against STIs. These studies showed that there is indeed poor condom use and risky sexual activities among both the male and the female youths.

Also, the social and sexual network of young people has an influence on the type of sexual activities they engage in. The social network of youths can influence the use of alcohol and other substances which are part of risky behaviours that increase the risk of STIs transmission. The pattern of relationship of youths including the structure and content of their network influence the ability to engage in risky behaviours (65). Youth's network also influences their

sexual behaviours, it serves as source of information about sexual practices, and sex partners (65).

5.3 Prevention, Diagnosis and Treatment of STIs in Youths

Primary, Secondary and Tertiary preventive measures are strategies used to reduce the burden of STIs. This includes behavioural change, prompt and effective treatment of infection and limiting disability caused by long-term untreated infections (74).

Prevention: Prevention of STIs can be achieved through BCC by teaching on abstinence, faithful sexual relationship, and consistent use of condom. These can be achieved using school educational programmes, public campaigns, and outreaches to communicate with the youth on sexual health.

Diagnosis: Diagnosis can be made through encouraging care seeking behaviour, increased effort in case finding, and creating avenue for screening for asymptomatic infection. The use of POC which is a self testing instrument has been tested in different survey using different context (74) and has shown to be effective in diagnosing STIs. It is cost effective, easy to use and has a fast turn around time.

Treatment: Prompt and effective treatment of infection will reduce the spread of STIs. Immediately diagnosis has been made, it is important to discuss risk reduction with client. Risk reduction can be achieved through comprehensive case management which include partner notification and EPT. Various treatment intervention used in treatment of STIs include POC, EPT, periodic presumptive treatment, Doxycycline post exposure prophylaxis and STI vaccination for primary prevention of gonorrhoea (77). However, through various studies, POC and EPT has shown to be successful in risk reduction of STIs in different setting and context.

Chapter 6: Conclusions and Recommendations

6.1 Conclusions

This study has revealed that increasing prevalence of STIs among the youth is not due to one factor only, but a combination of factors. Individual, community, and health system factors drives the transmission of STIs among youth. Also, these factors influence access and utilization of STIs services by the young people. Awareness of non-HIV STIs is limited and the knowledge about the availability of AYFHS is poor. There is a huge need for population-based sensitization using the media, programmes, and outreaches to sensitize the youths on STIs, its implications, and available interventions.

Behavioural communication change programmes are essential for the prevention of STIs. However, there is a need to consult extensively with the youths and involve them in the designs, implementation, and evaluation of a youth focused interventions. BCC education and counselling can reduce risky behaviours and improve youth's ability to recognize symptoms of STIs. This can also increase the likelihood of seeking care and encourage the sexual partner to do so. Unfortunately, lack of public awareness, lack of training among health workers, and long-standing, widespread stigma around STIs remain barriers to greater and more effective use of these interventions.

There is limited generated data in the southwest Nigeria due to under-reporting of STIs especially among young persons. This has contributed to a limited access to treatment, inadequate diagnostic facilities, asymptomatic infections, and the stigma associated with STI. There is a need for a shift in the provision of mainly contraceptive intervention by the AYFHS centres to the provision of the essential minimum package as stipulated in the national guideline for the integration of AYFHS.

Stigma and discrimination, cost of treatment, out of pocket spending, long waiting time, are identified factors that influence uptake of screening and treatment. In addition to these, health workers attitudes and perceived quality of care also influence uptake of services. Therefore, there is a need for improving the capacity of healthcare workers through training on the provision of adolescent and youth centred interventions.

Also, the syndromic approach in the management of STIs is simple and does not involve the expensive or unavailable diagnostic tests but can lead to overtreatment and missed treatment for STIs that are asymptomatic. It is therefore important that healthcare providers be trained in the provision of POC and EPT as these has been effective in treatment of STIs in another context similar to the southwest Nigeria. POC and EPT is cost effective, user friendly and reduce contact time with the health facility.

Moreover, in other to maintain quality of care, periodic assessment of health workers' performance is important. Periodic capacity development, regular coordination meetings, monitoring and evaluations and active participation of the youth's stakeholders will remove barriers in the implementation of AYFHS.

Finally, there is a need to allocate of more national resources to AYFHS. More funds need to be assigned into STIs intervention and not only limited to HIV/AIDS services.

6.2 Recommendations

The findings from this study show that access to STIs services among the young is low. Knowledge of the youth on non-HIV STIs is poor which prevent them from seeking care in the case of asymptomatic infection. Also, young people are not aware about AYFHS, and they engage in risky behaviours that exposes them to STIs. The target audience for recommendation in this study is the Federal Government, the Ministry of Health, and the southwestern State Government. The following recommendations are formulated to contribute to strengthening STI-related interventions in the southwestern Nigeria and the country at large.

6.2.1 The Federal Government

1. Show political will to invest, scale up and sustain appropriate STIs control measures
2. Integrate comprehensive sexuality education into the school curriculum. This will improve the knowledge of the youth on sex and sexuality.

6.2.2 The Ministry of Health

1. Conduct trainings for health workers on improved AYFHS and STIs control programming. The training should also include the use of POC and EPT in addition to the STIs syndromic management manual already in use.
2. Conduct media campaigns on non-HIV STIs using websites, talk shows on radios and television, social medias (Twitter and Facebook), billboards, workshops, outreaches etc. It is important to also have the media campaigns in the local dialects or languages.
3. Integrate STIs intervention and AYFHS into all healthcare facilities for adequate coverage and to prevent stigmatization. Also, development of strategies to identify asymptomatic individuals through outreaches, screening, testing, and case finding.
4. Development and investment in surveillance system for the curable STIs (Gonorrhoea, Syphilis, Chlamydia and Trichomoniasis) to be captured in the National Health Management Information System. This will enable data driven decisions on STIs.
5. Production of Information, Education and Communication materials on STIs control to health facilities.

6.2.3 The State Governments

1. Ensure the LGA provide sufficient funds needed for the implementation of AYFHS at the PHCs
2. Designate a youth focal health officer to manage and supervise AYFHS in every PHCs. Also conduct regular monitoring and evaluation of these centres to ensure good quality of services and an improved reporting system.
3. Engage private sectors, non-governmental organizations and in circuits of traditional healers to dialogue about the control of STIs.

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Annex 1: Combination of keywords used in literature search

AND				
OR	DETERMINANTS	SEXUALLY TRANSMITTED INFECTION	YOUTH	SOUTHWEST NIGERIA
	FACTORS	SEXUAL AND REPRODUCTIVE HEALTH	YOUNG PEOPLE	NIGERIA
	DRIVERS	CURABLE STIs	ADOLESCENTS	SUB SAHARA AFRICA
	INCIDENCE	GONORRHOEA		GLOBAL
	PREDICTORS	SYPHILIS		OYO STATE
	SEXUAL BEHAVIOUR	CHLAMYDIA		OGUN STATE
	SOCIOECONOMIC	TRICHOMONIASIS		LAGOS STATE
	DEMOGRAPHY	STIs		OSUN STATE
	CULTURE			ONDO STATE
	RISKY BEHAVIOUR			EKITI STATE
	GOVERNMENT POLICIES			
	HEALTH WORKERS			
	HEALTH SYSTEM			
	HEALTH SEEKING			
	MANAGEMENT			

	KNOWLEDGE			
	TREATMENT			
	GEOGRAPHICAL LOCATION			
	PREVALENCE			
	INTERVENTIONS			
	ADOLESCENTS AND YOUTH FRIENDLY SERVICES			
	PROGRAMMES			
	INITIATIVES			
	COMMERCIAL SEX			
	NETWORKS			
	SUBSTANCE USE			