

**A HEALTH SYSTEMS APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH
SERVICE UTILIZATION BY ADOLESCENT GIRLS IN KAJIADO COUNTY, KENYA**

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PHILOSOPHY IN HEALTH SYSTEMS MANAGEMENT OF KENYA METHODIST
UNIVERSITY**

JANUARY, 2025

DECLARATION

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"This thesis is my original work and has not been presented for a degree or any other award in any other University."

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DEDICATION

This research is dedicated to my family and the people of Kajiado County. It is my hope that this work will benefit the people of Kenya in general.

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ABSTRACT

Adolescent girls in Kenya face significant barriers in accessing sexual and reproductive health (SRH) services, particularly in pastoralist communities such as Kajiado County, in the subcounties of Kajiado Central, Kajiado South, Kajiado East, Kajiado West and Kajiado North, where cultural norms, stigma, and weak healthcare infrastructure exacerbate these challenges. This study aimed to assess the factors influencing SRH service utilization among adolescent girls in Kajiado County and to identify actionable strategies for improving adolescent SRH outcomes. This study adopted a cross-sectional study design, utilizing both the qualitative and quantitative data. Exploratory design was used for the objectives setting and deducing the findings from Objective results. Specifically, the study sought to: (i) evaluate adolescents' level of SRH knowledge, (ii) identify individual and socio-cultural factors affecting service utilization, (iii) examine the practice of patient-centeredness in SRH service delivery, (iv) assess the role of financial interventions in access to care, (v) explore the influence of health referral systems on service uptake, and (vi) propose a digital health platform for enhancing service utilization. A cross-sectional design with a mixed approach was employed, integrating quantitative surveys with 422 adolescent girls aged 10–19 years and qualitative insights from key informant interviews (KIIs), In-Depth Interviews and focus group discussions (FGDs) to strengthen on the Qualitative Data. Stratified random sampling ensured socio-demographic representation. Quantitative data collected from the 422 adolescents were double entered into STATA at the Data Management Centre of Kenya Methodist University to ensure accuracy and qualitative interview transcripts were managed and coded in Nvivo software for thematic analysis. Quantitative data was analyzed using descriptive statistics, correlation, and logistic regression, while qualitative data was thematically analyzed and triangulated with quantitative findings. Ethical approval was obtained from the Institutional

Scientific and Ethics Review Committee (ISERC). For participants below 18 years, informed consent was obtained from parents/guardians alongside adolescents' assent, ensuring compliance with child protection and ethical research standards. The results revealed that while 67.3% of adolescents had basic SRH awareness, only 41.8% demonstrated comprehensive knowledge, especially regarding contraceptive use and reproductive rights. Key determinants of service utilization included age, education, and socio-economic status, with older adolescents and those with secondary education more likely to access services ($p < 0.05$). Barriers included financial constraints (72.5%), privacy concerns (56.7%), and judgmental provider attitudes. Despite existing referral systems, only 38.2% of adolescents had ever been referred for SRH services. The study co-created innovative solutions with community stakeholders, including strengthening adolescent-friendly clinics, scaling up community-based SRH education, providing financial support mechanisms, and proposing a digital health platform to improve accessibility. The Digital Health Platform has actually made huge strides towards this development, with the website and an Instagram page resulting to a 15% increase in its utilization by the Adolescent age. With more than 2,000 followers on the Instagram page, it has had more than 2500 visits over the past six months, resulting in a considerable impact. The link to further information around the digital health system (Youth Wellness Connect) is herein attached: <https://www.youthwellnessconnect.co.ke/> These findings highlight the urgent need for system-level interventions and community-driven strategies to enhance SRH service uptake among adolescent girls in Kajiado County, offering practical lessons for similar pastoralist settings in Kenya and beyond.

TABLE OF CONTENTS

DECLARATION.....	iii
COPYRIGHT.....	iv
DEDICATION.....	v
ACKNOWLEDGEMENT.....	vi
ABSTRACT.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
LIST OF ACRONYMS.....	xiii
CHAPTER ONE: INTRODUCTION.....	1
1.1.....	11.2
91.4 Objectives of the Study.....	61.3
1.5 Research Hypotheses.....	8
1.6 Justification of the Study.....	9
1.7 Limitations of the Study.....	10
1.8 Delimitations of the Study.....	12
1.9 Significance of the Study	13
1.10 Assumptions of the Study	14
1.11 Scope of the Study.....	14
1.12 Operational Definition of Key Terms	10
CHAPTER TWO: LITERATURE REVIEW.....	14
2.1 Introduction.....	14
2.2 Theoretical Framework	14
2.3 Empirical Review	25

2.4 Conceptual Framework	109
CHAPTER THREE: METHODOLOGY	111
3.1 Introduction	111
3.2 Research Design	111
3.3 Study Area	113
3.4 Target Population	113
3.5 Sampling Procedures and Sample Size	114
3.6 Data Collection and Research Instruments	117
3.7 Research Instruments Reliability and Validity.....	118
3.8 Variables Operationalization.....	121
3.9 Data Analysis Techniques	122
3.10 Ethical Considerations.....	123
CHAPTER FOUR: RESULTS AND DISCUSSION	125
4.1 Introduction	125
4.2 Response Rate	125
4.3 Socio-demographic Characteristics of Adolescent Girls	126
4.4 Descriptive Analysis	128
4.5 Correlation Analysis.....	130
4.6 Diagnostic Tests	132
4.7 Utilization of SRH Services	137
4.8 Influence of Adolescents' Knowledge of SRH on the Utilization of SRH Services in Kajiado County	141
4.9 Influence of Patient-Centered Practices in Health Facilities on the Utilization of SRH Services among Adolescent Girls in Kajiado County	149
4.10 Effect of Individual Factors on the Utilization of SRH Services among Adolescent Girls in Kajiado County	107
4.11 Role of Financial Interventions in Enhancing the Utilization of SRH Services among Adolescent Girls in Kajiado County	164
4.12 Effect of Referral Systems on the Utilization of SRH Services among Adolescent Girls in Kajiado County	169
4.13 Influence of a Digital Health Platform on the Utilization of SRH Services among Adolescent Girls in Kajiado County	174
4.14 Utilization, Awareness, and Referral of Sexual and Reproductive Health (SRH) Services	177
4.10 Accessibility, Affordability, and Availability of SRH services	178
4.16 Model Estimation	179

4.17 Discussion of the Findings	182
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	196
5.1 Introduction	196
5.2 Summary of the Study Findings.....	196
5.3 Conclusions of the Study.....	201
5.4 Study Recommendations.....	202
5.5 Suggestions for Further Research	204
REFERENCES	206
WORK PLAN.....	222
APPENDICES	223
Appendix I: ISERC Approval	223
Appendix II: NARCOSTI Permit.....	226
Appendix III: County Approval Letters	230
Appendix IV: Letter of Introduction	240
Appendix V: Informed Consent	241
Appendix VI: Revised questionnaire after pilot test.....	244
Appendix VII: Revised interview guide	258
Appendix VIII: Pilot study checklist	261
Appendix IX : Semi-Structured Questionnaire	262
Appendix X: Key Informant Interview guide	274
Appendix XI: Focus Group Discussion	275
Appendix XII: SHR indicators by County	276

LIST OF TABLES

Table 3.1: Reliability Test Results.....	119
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Table 3.2: Validity Test Results	120
Table 3.3: Study Variables Operationalization	121
Table 4.1: Response Rate.....	125
Table 4.2: Socio-demographic Characteristics of Adolescent Girls	126
Table 4.3: Summary Statistics	128
Table 4.4: Correlation Matrix.....	131
Table 4.5: Shapiro Wilk Test Results	133
Table 4.6: Variance Inflation Factor Test Results	134
Table 4.7: Utilization of Sexual and Reproductive Health Services by Age, Education Level, and Marital Status	138
Table 4.8: Type of Sexual and Reproductive Health Services Utilized by Adolescents	140
Table 4.9: Understanding of Sexual and Reproductive Health by Age, Education Level, and Marital Status.....	143
Table 4.10: Sexual and Reproductive Health Issues Experienced by Adolescents	144
Table 4.11: Awareness of Sexual and Reproductive Health Services Among Adolescents	145
Table 4.12: Sources of Information on Sexual and Reproductive Health Services	146
Table 4.13: Services Offered by Health Service Providers in the Facility	148
Table 4.14: Participation in Adolescent Sexual and Reproductive Health (ASRH) Forums by Age, Education Level, and Marital Status	101
Table 4.10: Forums Participated in for Adolescent Sexual and Reproductive Health Education	102
Table 4.16: Organizers of Adolescent Sexual and Reproductive Health Education Forums	103
Table 4.17: Services Accessed at Health Facilities	105
Table 4.18: Healthcare Provider's Attitude Towards Adolescents	106
Table 4.19: Impact of Religious Doctrines on Access to SRH Services for Adolescents	107
Table 4.20: Impact of Religious Doctrines on Access to SRH Services by Age, Education Level, and Marital Status	109
Table 4.21: Religious Doctrines and Their Impact on Adolescent Sexual and Reproductive Health Views	160
Table 4.22: Cultural Practices, Stigma, and Accessibility of Sexual and Reproductive Health Services for Adolescents.....	162
Table 4.23: Cost Incurred by Adolescents in Accessing Sexual and Reproductive Health (SRH) Services.....	165
Table 4.24: Methods of Payment and Services Afforded for Accessing SRH Services	167
Table 4.25: Methods of Payment for Accessing SRH Services by Age, Education Level, and Marital Status	168
Table 4.26: Referral for SRH Services by Health Professionals Across Age, Education Level, and Marital Status	171
Table 4.27: Factors Influencing the Decision to Utilize ASRH Referral Services	172
Table 4.28: Factors Influencing Utilization of ASRH Services After Receiving a Referral	174
Table 4.29: Utilization, Awareness, and Referral of Sexual and Reproductive Health (SRH) Services	177
Table 4.30: Accessibility, Affordability, and Availability of SRH services.....	179
Table 4.31: Logistic Regression Model Results (Robust)	180

LIST OF FIGURES

Figure 2. 1: Conceptual Framework	109
Figure 4.1: Residual Plot for Testing Heteroscedasticity	136

LIST OF ACRONYMS

- **ASRH** – Adolescent Sexual and Reproductive Health
- **CHV** – Community Health Volunteer
- **FGD** – Focus Group Discussion
- **HIV** – Human Immunodeficiency Virus
- **KEMRI** – Kenya Medical Research Institute
- **KII** – Key Informant Interview
- **KNBS** – Kenya National Bureau of Statistics
- **LMICs** – Low- and Middle-Income Countries
- **MoH** – Ministry of Health
- **SDGs** – Sustainable Development Goals
- **SRH** – Sexual and Reproductive Health
- **STI** – Sexually Transmitted Infection
- **UHC** – Universal Health Coverage
- **UNFPA** – United Nations Population Fund
- **UNICEF** – United Nations Children’s Fund
- **WHO** – World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Healthcare as a fundamental component of human life has motivated every nation to strive for improvement in health systems, in order to ensure the well-being of its population. Global public health expenditure averaged 3.8 % of GDP in 2022, with many countries spending below that level (Human Rights Watch, 2025). The World Health Organization (WHO), a well-functioning health system is based on six essential pillars: human resources for health, health delivery services, financing of health programs, health data and information management, commodities supply chain, and leadership and governance (Manyazewal, 2017). Each of these pillars plays a vital role in strengthening the health systems, contributing to universal health coverage (UHC), and ensuring equitable access to quality health services, with available medicine supplies as a cornerstone for the efficient operation of healthcare delivery systems. Globally, 2 billion people lack access to essential medicines, a major barrier to achieving Universal Health Coverage (World Health Organization [WHO], 2017). Effective health data and information management further support multi-level decision-making, from policy formulation at the central level to local monitoring of primary healthcare practices (Harrison & Shortell, 2021). According to the Kenya Health Facility Census 2023, about 31% of facilities have electronic health information systems, since 69% reportedly do not in their operations

Health systems strengthening is imperative for achieving UHC, which includes the access to sexual and reproductive health (SRH) services for all, particularly to adolescents. According to the WHO, UHC means that all individuals should be able to have access to the health services they need at their convenience without financial hardship (Ravindran & Govender, 2020). Globally, the UHC

service coverage index increased from 45 in 2000 to 68 in 2021 (WHO, 2022). In Kenya, recent reports indicate a UHC index of 53 according to the state of the UHC (WHO & World Bank, 2022). The integration of human resources, service delivery, financing, and data management into the health system is essential for improving SRH outcomes and addressing the unique needs of adolescents. For instance, well-trained healthcare professionals who are equipped to handle adolescent-specific needs are fundamental to delivering appropriate and sensitive care (Denno et al., 2021). The *National Guidelines for Provision of Adolescent and Youth Friendly Services (2016, Kenya)* cites the Kenya Service Provision Assessment Survey (KSPA 2010), showing that only 7% of all health facilities provide youth-friendly services, and attributes this partly to limited numbers of trained providers. Comprehensive service delivery systems must address operational aspects such as facility readiness, service availability, and care accessibility, ensuring that adolescents receive essential SRH services, including contraception, maternal care, and STI management (Delany-Moretlwe et al., 2010).

Globally, knowledge, individual factors, patient-centered practices, referral systems, and digital platforms are increasingly recognized as critical determinants of adolescent SRH service utilization. Limited knowledge about reproductive health contributes to risky behaviors, while individual factors such as age, education, and socio-economic status strongly influence access to care (United Nations Population Fund, [UNFPA], 2022). Patient-centered practices, such as confidentiality and respectful treatment, encourage adolescents to seek services, whereas judgmental attitudes from providers discourage utilization (Lee et al., 2021). Weak referral systems globally lead to poor continuity of care, while digital platforms such as mobile health applications and tele-counseling are emerging innovations that expand access to SRH information and confidential services (WHO, 2021).

Regionally, in Sub-Saharan Africa, adolescent girls remain disproportionately affected by high rates of early pregnancies, unsafe abortions, and low contraceptive uptake. Individual factors like poverty and limited education restrict access to SRH services (Kiberenge et al., 2022). Knowledge gaps persist, as many adolescents rely on peers rather than formal health systems for information (Kirigia et al., 2016). Patient-centered care is often weak, with stigma and lack of privacy cited as major barriers to service uptake (Crowley & Doherty 2013). Referral systems remain poorly coordinated, limiting adolescents' ability to access specialized care, while digital innovations—such as SMS-based reminders in Uganda and mobile SRH platforms in Tanzania—are beginning to show promise in bridging gaps in information and access (Cornelius & Smoot, 2022).

In Kajiado County, the health system exhibits both alignment with and divergence from the ideal framework for SRH service delivery. A significant challenge is the availability of adequately trained healthcare providers. While the ideal framework emphasizes specialized human resources, Kajiado County experiences shortages of trained personnel, particularly in adolescent SRH. This affects service quality and accessibility, especially in rural areas where resources are limited (Kuta et al., 2021; Nyaguti et al., 2021). Additionally, infrastructural inadequacies and logistical barriers disrupt the consistent delivery of SRH services, further limiting access to essential care (Rwamba, 2021).

Financial constraints pose another significant challenge. Despite the framework's emphasis on equitable financing, Kajiado County faces budgetary limitations that impede the implementation of SRH initiatives. According to the Kajiado County Department of Health Services (2023), the county's health budget includes Ksh 1.3 billion for salaries, Ksh 325 million for development, and about Ksh 400 million for operations and maintenance. However, the county does not disaggregate

the proportion specifically allocated to sexual and reproductive health (SRH). Nationally, Kenya allocates about 9.8 % of its total budget to the health sector (Coalition on Sexual and Reproductive Health and Rights in Kenya, 2023). These financial shortfalls affect outreach programs, educational initiatives, and service provision, resulting in gaps in SRH coverage and diminished program effectiveness (Nyaguti et al., 2021). Furthermore, underdeveloped health information systems hinder effective resource allocation and decision-making, reducing the health system's capacity to track SRH utilization and plan targeted interventions (Harrison & Shortell, 2021).

The commodities supply chain and governance structures in Kajiado County also diverge from the ideal framework. Frequent stockouts and inefficiencies in distribution disrupt the availability of essential SRH related supplies, impacting service delivery continuity (Kuta et al., 2021). Governance issues, including limited coordination and insufficient policy support for adolescent SRH, exacerbate fragmented service delivery and inadequate prioritization of SRH needs (Rwamba, 2021). Addressing these gaps is critical for aligning Kajiado County's health system with the ideal framework and improving SRH outcomes.

SRH encompasses various issues, including the promotion of healthy and responsible reproductive behavior, the prevention and treatment of sexually transmitted infections (STIs) such as HIV and complication management arising from unsafe abortion (Grubb & Powers, 2020). Core components of SRH include contraception, antenatal care, maternal and child health, fertility management, and treatment of SRH infections and complications (Bawuah & Ampaw, 2023). Ensuring access to these services is integral to achieving optimal reproductive health, which includes the right to control fertility, access to contraceptive options, and autonomy over sexuality without barriers related to age, marital status, or income (McCabe, 2019).

Adolescents constitute a significant demographic globally. 16% of the population with aged 10 to 19 years' account for having a fertility rate of 50 per 1,000 (Njogu, 2019). This population segment faces unique SRH challenges such as limited access to services and information. In low- and middle-income countries (LMICs), adolescent girls are disproportionately affected by early pregnancies, unsafe abortions and STIs that contribute to a high maternal mortality rate (Njogu, 2019).

In South Asia, adolescents comprise 340 million of the population, facing persistent SRH risks despite improvements in health and education. Unmet contraceptive needs contribute to high rates of unwanted pregnancies, with 49% of pregnancies among adolescents classified as unintended (Pandey et al., 2019). Similarly, in Africa, adolescents encounter significant SRH challenges, including limited access to adolescent-friendly services and information, gender-based violence, and family planning barriers. These issues result in increased prevalence of STIs, early pregnancies, and associated complications, including maternal and neonatal mortality (Chandra-Mouli et al., 2021).

Kenya's 2019 Census revealed that adolescents who are aged between 10 to 19 years constitute of 24.5% of the population. In Kajiado County, adolescents face significant SRH challenges, including high rates of early pregnancies and unmet contraceptive needs. Approximately 23% of adolescent girls in Kenya have unmet contraceptive needs, a bigger percentage of this is in Kajiado County, where 19% of married adolescent girls use contraception (Nyaguti et al., 2021). Additionally, the prevalence of HIV among women in Kajiado County is notably higher (6.3%) compared to men (3.8%), underscoring the need for robust HIV prevention and management strategies (Rwamba, 2021).

At the local level, adolescent SRH service utilization is shaped by knowledge levels, individual characteristics, patient-centered practices, referral efficiency, and digital innovations. Many adolescents in Kajiado lack comprehensive SRH knowledge, which limits informed decision-making. Individual factors such as poverty, cultural practices like early marriages and female genital mutilation (FGM), and low educational attainment restrict access to services. Patient-centeredness is undermined by judgmental provider attitudes and lack of confidentiality, discouraging service uptake (Gichuru et al., 2021). Referral systems remain weak, with adolescents often failing to follow through due to stigma or cost barriers. Digital health platforms, though emerging in Kenya, offer opportunities for confidential counseling and information sharing, but adoption in rural Kajiado remains limited (Omoto et al., 2021).

The youthful demographic of Kajiado County, where individuals under 10 years constitute 42% of the population, drives a high demand for health services, including SRH (Kuta, 2021). However, socio-economic challenges, such as inadequate infrastructure and cultural barriers, complicate efforts to meet the health needs of adolescents. Addressing these challenges requires comprehensive strategies that align with the ideal health system framework, ensuring that adolescents in Kajiado County have access to quality SRH services and information. Incorporating global, regional, and local insights highlights that improving knowledge, addressing individual and socio-cultural factors, strengthening patient-centered practices, reinforcing referral systems, and leveraging digital health platforms are central to advancing adolescent SRH outcomes.

1.2 Statement of the Problem

Despite Kenya's National commitments to improve adolescent sexual and reproductive health (SRH), utilization of these services among adolescent girls in nomadic and semi-urban

communities of Kajiado County remains markedly sub-optimal. High rates of unintended pregnancies and unmet contraceptive needs persist, reflecting systemic gaps in the delivery and uptake of SRH services (Chillida et al., 2021). In Sub-Saharan Africa, adolescent girls remain disproportionately affected by high rates of early pregnancies, unsafe abortions, and low contraceptive uptake. Individual factors like poverty and limited education restrict access to SRH services (Kiberenge et al., 2022). This challenge mirrors a broader pattern across sub-Saharan Africa, where weak healthcare infrastructure, limited access to modern contraceptives, and entrenched socio-cultural barriers significantly impede effective SRH service utilization. Inadequate provision of comprehensive sexuality education compounds these issues, leading to early pregnancies, unsafe abortions, and school dropouts—factors that entrench poverty and perpetuate intergenerational disadvantage (Chilinda et al., 2021).

In Kajiado County, cultural norms such as early marriages and early sexual debut intensify these risks. Girls begin childbearing at an average age of 17—earlier than the national average of 18 years (Kenya Demographic and Health Survey, [KDHS], 2014; Nyaguti et al., 2021). 6% of the population with aged 10 to 19 years' account for having a fertility rate of 50 per 1,000 (Njogu, 2019). This paired up with the predominantly nomadic lifestyle of many households further complicates access to static health facilities, while stigma surrounding contraceptive use discourages uptake and fuels unsafe abortion practices (Sidze et al., 2017). For example, Kajiado County's adolescent birth rate for girls aged 10–19 is reported at 118 births per 1,000 girls, compared with the national adolescent birth rate of 96 per 1,000, and approximately 20% of girls aged 10–19 in Kajiado have begun childbearing. Unmet need for modern contraception among currently married adolescents in Kajiado is likewise high (reported around 34% in older DHS-based county summaries). Although government policies and donor-supported programs have

expanded SRH services nationally, they remain insufficiently tailored to the realities of mobile and marginalized populations (Wulifan et al., 2022). Conventional youth-focused interventions often lack cultural sensitivity, thereby limiting community engagement and leaving service gaps unaddressed.

These challenges are further reinforced by socio-economic constraints such as poverty and limited educational attainment, which reduce awareness of and access to SRH services.

Households facing economic hardship prioritize basic survival needs over preventive health, while knowledge deficits hinder informed health-seeking behavior. This creates a complex interplay of health system, socio-cultural, and economic barriers that perpetuate poor SRH outcomes.

Although previous studies have examined adolescent SRH in developing countries, they have disproportionately focused on urban populations and have not sufficiently interrogated the unique barriers faced by nomadic communities in Kajiado County. In particular, the influence of health system factors, such as patient-centered care, financial barriers, and referral mechanisms, on SRH utilization remains underexplored. This study therefore seeks to address this critical gap by applying a health-systems approach to examine the interplay of systemic and socio-cultural determinants shaping SRH service utilization among adolescent girls in Kajiado County, with the aim of generating actionable strategies for improving service delivery and outcomes.

1.3 Purpose of the Study

To examine the factors influencing the utilization of sexual and reproductive health (SRH) services among adolescent girls in Kajiado County, Kenya.

1.4 Objectives of the Study

- I. To assess the influence of adolescents' knowledge of SRH on the utilization of SRH services in Kajiado County
- II. To determine the effect of individual factors on the utilization of SRH services among adolescent girls in Kajiado County
- III. To examine how patient-centered practices in health facilities influence the utilization of SRH services among adolescent girls in Kajiado County
- IV. To assess the role of financial interventions in enhancing the utilization of SRH services among adolescent girls in Kajiado County
- V. To evaluate how referral systems, affect the utilization of SRH services among adolescent girls in Kajiado County.
- VI. To propose a digital health platform as an intervention to improve the utilization of SRH services among adolescent girls in Kajiado County.

1.5 Research Hypotheses

- i. There is no significant relationship between adolescents' knowledge of sexual and reproductive health (SRH) and the utilization of SRH services in Kajiado County.
- ii. Individual factors do not significantly influence the utilization of SRH services among adolescent girls in Kajiado County.

- iii. Patient-centered practices in health facilities do not significantly influence the utilization of SRH services among adolescent girls in Kajiado County.
- iv. Financial interventions do not significantly influence the utilization of SRH services among adolescent girls in Kajiado County.
- v. Referral systems do not significantly influence the utilization of SRH services among adolescent girls in Kajiado County.
- vi. The proposed digital health platform will not significantly improve the utilization of SRH services among adolescent girls in Kajiado County.

1.6 Justification of the Study

For this study, Kajiado County offered a pertinent and illustrative sample of pastoral communities due to its unique demographic and cultural characteristics. The County's population predominantly comprises pastoralist communities who practice a nomadic lifestyle, which significantly influences their access to essential services as well as their utilization. This includes sexual and reproductive health (SRH) services. Pastoral communities from Kajiado are often marked by cultural practices and beliefs that pose substantial barriers to SRH. These harmful practices such as early and forced marriages, female genital mutilation (FGM) and gender-based discrimination are prevalent. These practices not only infringe upon the rights of young girls but also severely limit their access to Sexual reproductive health information and services. The nomadic nature of these communities further exacerbates the situation, as their mobility often prevents them from accessing stable and consistent healthcare facilities (Walela,2020). Understanding these factors is crucial for developing effective interventions, tailored to the unique needs of pastoralist populations.

The broader socio-cultural context plays a critical role in shaping the challenges faced by young girls in these communities. According to UNICEF, deeply entrenched patriarchal norms and cultural practices significantly hinder the exercise of SRH rights for many girls globally (Heise, Greene et al. 2019). In Kajiado County, these norms manifest in various detrimental ways, including forced marriages, which often result in early pregnancies and associated health risks. Female genital mutilation, another harmful practice prevalent in the region, has profound implications for reproductive health and well-being. The social isolation experienced by nomadic girls, coupled with their limited social networks and educational opportunities, further restricts their access to crucial SRH information and services. This isolation contributes to the perpetuation of harmful practices and limits the girls' ability to seek and receive appropriate health care.

Additionally, this study is aimed at filling a significant gap in the existing literature, by focusing on how to enhance SRH service access and delivery for adolescent girls aged 10 to 19 years within pastoral communities. The specific challenges faced by these communities are often under represented in broader health research, which frequently overlooks the unique needs of nomadic populations. The study contributes addressing these gaps through analyzing a deeper understanding of how cultural, social, and logistical barriers intersect to impact SRH outcomes. It also provides important observations into the development of targeted approaches that can be implemented to improve SRH service access and utilization in similar contexts. The findings of this research are expected to inform policy recommendations and programmatic interventions aimed at addressing the specific needs of young girls in pastoral communities, that ultimately contributes to better health outcomes and greater empowerment for this vulnerable group.

1.7 Limitations of the Study

One limitation of this study, was the potential difficulty in ensuring a complete understanding of the expectations of all health providers and specialists involved in the study. Given the diverse roles and expertise of the healthcare providers, there were varying interpretations of the research objectives and methodologies, which led to inconsistencies in the data gathered. Additionally, as healthcare providers had different professional backgrounds, it was challenging to ensure that the findings reflected a comprehensive understanding of the adolescent girls' sexual and reproductive health (SRH) needs from all angles. These variations in interpretations affected the uniformity and depth of the findings, potentially limiting the accuracy of the data collected.

Another limitation was the sample size, which may not have represented the broader adolescent population in Kenya or other regions with different socioeconomic characteristics. While the study focused on Kajiado County, which has a unique demographic composition and health challenges, the sample size was not fully representative of other adolescent populations. Since the study was limited to a specific geographical area with distinct cultural and economic dynamics, the findings could not be generalized to other counties or regions with different educational, healthcare, and social structures. As a result, while the study provided valuable insights into SRH utilization within Kajiado County, its results might not have been applicable to other areas with varying cultural and socioeconomic contexts.

Finally, reliability and bias in participant responses posed significant limitations to the study. The potential for social desirability bias, where participants provided answers they believed aligned with societal expectations or researcher assumptions, influenced the authenticity of the data collected during interviews and focus group discussions. Moreover, the subjective nature of self-

reported data, especially in a sensitive topic like sexual and reproductive health, led to discrepancies between what participants reported and their actual behaviors. This was further exacerbated by the influence of cultural norms and fear of stigmatization, which impacted the accuracy of the data. Furthermore, limitations associated with the researcher's subjective interpretation of qualitative data introduced biases in the analysis and conclusions drawn from the study.

1.8 Delimitations of the Study

This study was delimited in several ways to maintain focus and feasibility.

- I. **Population scope:** The study focused exclusively on adolescent girls aged 10–19 years in Kajiado County. Adolescent boys and younger girls below 10 years were excluded to maintain a clear focus on the group most affected by early pregnancies, limited access to contraception, and related SRH challenges.
- II. **Geographical scope:** The study was confined to Kajiado County, which is characterized by unique cultural practices, socio-economic conditions, and health system challenges. The findings may not fully generalize to urban counties or other regions of Kenya.
- III. **Conceptual scope:** The study concentrated on selected determinants of SRH service utilization—namely, knowledge, individual factors, patient-centered practices, financing, referral systems, and digital health platforms. Other determinants such as political influences, religious beliefs, or national-level policies were beyond the scope of this research.
- IV. **Time scope:** The study was cross-sectional in nature, capturing data within a specific period in 2025. As such, it does not capture longitudinal changes in adolescent SRH service utilization over time.

1.9 Significance of the Study

This study is significant in several respects.

Academic contribution: The study contributes to the growing body of literature on adolescent sexual and reproductive health (SRH) by examining how knowledge, individual factors, patient-centered practices, financing, referral systems, and digital health platforms influence the utilization of SRH services. By focusing on a pastoralist context, the research provides empirical evidence that enriches scholarship on health systems and adolescent health in marginalized settings.

Policy relevance: The findings of this study are expected to inform health policy and planning in Kenya, particularly within the Ministry of Health and Kajiado County Government. The evidence generated will guide the design and implementation of adolescent-friendly health policies, financing mechanisms, referral pathways, and integration of digital health platforms. This aligns with Kenya's commitment to the Sustainable Development Goals (SDGs), especially Goal 3 on ensuring healthy lives and promoting well-being for all.

Practical and community value: At the community level, the study highlights barriers and enablers to SRH service utilization among adolescent girls in Kajiado County. The recommendations will support healthcare providers, schools, parents, and community leaders in co-developing strategies that improve adolescents' access to and uptake of SRH services. Ultimately, the findings will contribute to reducing early pregnancies, unsafe abortions, and sexually transmitted infections, thereby enhancing the overall health and well-being of adolescent girls.

1.10 Assumptions of the Study

- i. **Knowledge of Respondents**-Respondents were assumed to have sufficient knowledge about sexual and reproductive health (SRH) among adolescent girls, as well as a clear understanding the barriers of the utilization of SRH services by the group.
- ii. **Accuracy and Honesty of Data**-It was assumed that respondents provided accurate, truthful, and reliable information, which enhanced the validity of the study outcomes.
- iii. **Generalizability of Findings**-The study assumed that its outcomes were applicable across all counties in Kenya, reflecting similar challenges and dynamics in the utilization of SRH services among adolescent girls.

1.11 Scope of the Study

This study was conducted among adolescent girls aged 10-19 in Kajiado County, Kenya. It focused on the utilization of sexual and reproductive health (SRH) services, examining factors influencing healthcare-seeking behavior, including individual, socio-cultural, economic, and systemic barriers. This study was carried out in the five sub-counties of Kajiado County, with participants drawn from both urban and rural settings. The research involved adolescent girls, healthcare providers, community leaders, and educators. The data was collected through structured questionnaires, Key Informant Interviews (KIIs), In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs). The study also considered factors such as healthcare infrastructure, cultural practices, and financial barriers impacting access to SRH services, aiming to inform interventions to improve SRH service utilization.

1.12 Operational Definition of Key Terms

Adolescents	According to WHO adolescents are individuals between 10 to 19 years.
Reproductive health	It is referred to a state of physical, mental, and social well-being and not merely the absence of disease, malfunction, or infirmity.
Sexual Health	The state of sexual well-being in regards to sexual and not only absence of illnesses, malfunction, or infirmity. It necessitates a positive outlook on sexuality and romantic relationships, as well as the opportunity for joyful and secure sexual encounters free from coercion, prejudice, and violence.
Patient-Centered Care	This is a medical service that is respectful and tailored to an individual patient's preferences, needs, values ensuring that patient values guide all clinical decisions.
Out-of-pocket payment	Refers to the payments made by households at the point of receiving healthcare services.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter explores the existing body of knowledge that is related to the utilization of sexual and reproductive health (SRH) services among the adolescent girls in pastoralist communities. It provides an in-depth examination of the theoretical framework, that underpins the study, offering insights into conceptual foundations guiding the research. The chapter also reviews empirical studies, focusing on key themes such as knowledge levels, individual and community factors, systemic barriers, and interventions in SRH service delivery. Additionally, it highlights unexplored research in the existing literature, identifying areas where necessary further research is needed to address unique challenges faced by adolescent girls in Kajiado County. Synthesizing theoretical perspectives and empirical findings ensures the review establishes a solid foundation for the study's objectives and methodology.

2.2 Theoretical Framework

This study was anchored on Andersen's Health Behavior Model, which outlines a comprehensive framework for the understanding of the factors influencing health service utilization, including individual, societal, and healthcare system determinants. In addition to this primary model, the study also drew upon the Health Belief Model, which explores how perceptions of susceptibility, severity, benefits, and barriers influence health-related decisions. The Social Cognitive Theory contributed insights into the impact of social influence, self-efficacy and observational learning in shaping health behaviors. Furthermore, the *Theory of Planned Behavior* offered an understanding of how attitudes, subjective norms and perceived behavioral control, impact intentions and actions. Together, these theories provided a robust theoretical foundation for analyzing the utilization of sexual and reproductive health services, among adolescent girls in Kajiado County.

2.2.1 Andersen's Health Behavior Model

Andersen's Health Behavior Model, developed in 1968 by sociologist Ronald M. Andersen, is a foundational framework for examining the factors influencing healthcare utilization. Initially intended to explore the determinants of seeking medical care, the model has since evolved to encompass a wide range of socio-demographic, environmental, and systemic factors affecting health behaviors and outcomes. It emphasizes the interplay between individual traits, community resources, and healthcare systems, providing a comprehensive approach to understanding healthcare access and use (Andersen, 1995). The model's adaptability makes it particularly useful in analyzing complex health issues, such as the utilization of sexual and reproductive health (SRH) services by adolescent girls residing in Kajiado County, Kenya, where cultural norms and systemic barriers significantly impact healthcare decision-making (Andersen & Newman, 1973).

The model identifies three primary factors driving healthcare utilization: predisposing characteristics, enabling resources, and need-based factors. Predisposing characteristics refer to individual attributes, such as age, gender, education, and health beliefs, that shape perceptions and behaviors regarding healthcare. For adolescent girls in Kajiado County, socio-cultural factors, including early marriages and traditional norms, influence their perceptions and access to SRH services (Andersen, 1995). Enabling resources encompass the logistical and systemic elements facilitating or hindering healthcare access, such as personal resources (income, transportation, and health insurance) and community infrastructure (availability of youth-friendly healthcare facilities). In the context of Kajiado County, financial constraints and inadequate infrastructure often pose significant barriers to accessing care, highlighting the need for interventions to enhance resource availability (McCabe, 2019).

The model also emphasizes the role of need-based factors, which include both perceived and evaluated needs. Perceived needs are shaped by individuals' self-assessment of their health, while evaluated needs rely on professional diagnoses and recommendations (Andersen, 1995). In Kajiado County, cultural taboos and limited health education often hinder adolescents' understanding of their SRH needs, leading to underutilization of services. Addressing these gaps involves implementing education programs to improve health awareness and encouraging proactive healthcare-seeking behaviors. Additionally, equipping healthcare providers to deliver adolescent-centered care can make healthcare environments more responsive and welcoming, fostering greater service uptake among this population (Andersen & Newman, 1973).

The expanded version of Andersen's model integrates healthcare system characteristics, including policies, organizational capacity, and resource allocation, further emphasizing systemic factors influencing healthcare access and outcomes (Andersen, 1995). Supportive policies that promote adolescent SRH rights, combined with capacity-building initiatives for healthcare providers, can significantly enhance the quality and accessibility of services. Despite its strengths, the model has faced criticism for its emphasis on individual-level factors, potentially overlooking broader societal determinants, such as systemic inequalities and power dynamics. This limitation may reduce its applicability in contexts where structural barriers are prominent (Strecher, et al.,1997).

While critiques highlight gaps in addressing societal and emotional influences, Andersen's model remains a robust framework for analyzing healthcare utilization. Its structured approach to examining predisposing characteristics, enabling resources, and need-based factors provides valuable insights for designing interventions that address barriers to care. In Kajiado County, applying this model allows researchers to uncover the multifaceted challenges faced by adolescent

girls, enabling the development of targeted strategies to improve SRH service delivery and utilization. Despite its limitations, the model's adaptability and focus on critical factors influencing healthcare access make it an invaluable tool for guiding health policies and interventions aimed at achieving equitable healthcare outcomes. According to Andersen's Behavioural Model, adolescent girls' SRH service use in Kenya is shaped by predisposing factors for example out-of-school girls were 2.12 times more likely to use services Embleton et al., (2018), enabling factors such as autonomy increased utilization, AOR = 1.37 (Embleton et al., 2018), and need factors for example 10% of girls aged 10–19 have ever been pregnant and 70% of sexually active unmarried adolescents use contraception (KDHS, 2022).

2.2.2 Health Belief Model

The Health Belief Model (HBM), developed in the early 1950s by social psychologists Irwin Rosenstock, Godfrey Hochbaum, and Stephen Kegels under the U.S. Public Health Service, is a prominent framework for understanding and predicting health behaviors. The theory posits that individual health actions are influenced by personal beliefs and perceptions regarding health risks and the benefits of preventive measures (Rosenstock, 1974). The model seeks to explain why people sometimes fail to adopt health-promoting behaviors despite having the access to information and resources. Central to this theory is the idea that individuals are more likely to be engaged in health-promoting behaviors if they perceive themselves to be at risk for a health issue and believe that taking specific actions mitigates that risk.

The HBM comprises six key concepts: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (Becker, 1974). Perceived susceptibility signifies an individual's belief about their likelihood of developing a health problem, which significantly influences their motivation to adopt preventive behaviors (Prentice-Dunn &

Rogers, 1986). Perceived severity involves beliefs about the seriousness of a condition and its consequences, including medical, social, and emotional impacts (Leventhal et al., 2013). These two components together shape an individual's perception of the risk posed by a health issue. Perceived benefits address the belief in effectiveness of a recommended action, in reducing risks or severity. For example, an adolescent girl in Kajiado County who understands the effectiveness of contraceptives in preventing pregnancy and sexually transmitted infections (STIs) may be motivated to use them. Conversely, perceived barriers, such as costs, stigma, or accessibility issues, can deter individuals from taking action (Stangl et al, 2019). Cues to action are external prompts like reminders or educational campaigns that encourage health-related behaviors, while self-efficacy reflects the confidence in one's ability to perform a specific health behavior effectively (Gasparotto, 2007).

The HBM is highly relevant to the study objectives as it aligns with understanding factors influencing adolescent girls' utilization of sexual and reproductive health (SRH) services in Kajiado County. For instance, the model's focus on perceived susceptibility and severity directly relates to the objective of evaluating the level of SRH knowledge among adolescent girls. Similarly, perceived benefits and barriers align with the objective of identifying individual and systemic factors affecting SRH service utilization. Moreover, the concept of self-efficacy supports the exploration of patient-centered approaches and interventions aimed at improving service delivery. Addressing the beliefs and perceptions of adolescent girls, the model provides a structured framework to analyze their health-seeking behaviors and develop targeted strategies to enhance SRH service uptake.

Despite its strengths, the HBM has been critiqued for several limitations. One criticism is that it focuses predominantly on individual perceptions, potentially overlooking broader social, cultural, and economic determinants of health behaviors (Hawe & Shiell, 2000). For example, while the model emphasizes perceived barriers, it does not fully address systemic factors such as poverty or gender inequality, which significantly influence health decisions. Additionally, the model assumes rational decision-making and may not adequately consider emotional and psychological factors like fear, embarrassment, or stigma, which are particularly relevant in SRH contexts (Hinshaw, 2006). Another limitation is the reliance on individuals having accurate perceptions of risk and benefit, which may not always be the case due to misinformation or lack of knowledge (Noyes & Williams, 2007). These limitations suggest that the model may oversimplify the complexity of health behaviors.

Nevertheless, the HBM offers substantial advantages that support its application. Its clear framework for analyzing individual beliefs and perceptions provides valuable insights into the factors driving health behaviors. For instance, interventions can be designed to address perceived risks and barriers, enhance perceived benefits, and strengthen self-efficacy, ultimately promoting healthier behaviors. Moreover, the model's emphasis on cues to action highlights the importance of external influences, such as educational campaigns, in motivating behavior change. These strengths make the HBM a practical tool for designing health promotion strategies, particularly in resource-constrained settings like Kajiado County, where cultural norms and systemic barriers significantly impact SRH service utilization.

The Health Belief Model remains a valuable framework for understanding and influencing health behaviors despite its criticisms. Its focus on perceived risks, benefits, barriers, and self-efficacy

provides a comprehensive approach to analyzing individual health decisions. Addressing these key concepts allows the model to inform the development of effective interventions, that improve health results for individuals and communities. While acknowledging its limitations, the HBM's strengths in guiding behavior change strategies underscore its relevance in addressing the study objectives and enhancing SRH service utilization, among adolescent girls in Kajiado County. According to the Health Belief Model, adolescent girls' SRH service use in Kenya is influenced by perceived barriers and benefits such as stigma, lack of privacy, and unawareness of services which 63%, 22%, and 28% of adolescents respectively cited as reasons for non-use in Mombasa County.

2.2.3 Social Cognitive Theory

The Social Cognitive Theory (SCT), proposed by Albert Bandura in the early 1960s, offers a detailed framework for understanding how people learn and maintain habits. Initially termed Social Learning Theory, it was renamed Social Cognitive Theory to emphasize the critical role of cognitive processes in learning and behavior. Bandura's theory posits that behavior is influenced by the dynamic interplay of personal factors, behavioral patterns, and environmental conditions, a concept known as reciprocal determinism (Bandura, 1986). This principle underscores how individuals' actions can influence their surroundings, while the environment, in turn, shapes personal beliefs and behaviors.

Central to SCT is the idea of observational learning, where individuals acquire new behaviors by watching others rather than through direct experience. For example, an adolescent may observe peers practicing safe health behaviors and adopt similar practices as a result. Observational learning is further complemented by the theory's emphasis on self-efficacy—an individual's belief in their ability to carry out specific actions successfully. High self-efficacy can enhance persistence

in the face of challenges, such as an adolescent consistently using contraceptives if they are confident in their ability to do so correctly (Bandura, 1997). Additionally, the theory highlights the role of reinforcement, both direct and vicarious, in shaping behaviors. Positive outcomes, such as praise or improved health, encourage repeated actions, while punishment discourages undesirable behaviors (Bandura, 1986).

SCT's self-regulation concept enables individuals to set goals, monitor progress, and adjust their actions to achieve desired outcomes. For instance, adolescents aiming to improve reproductive health may track their adherence to medical appointments and celebrate milestones, reinforcing their commitment (Bandura, 1991). Integrating these elements, SCT demonstrates how personal beliefs, environmental factors, and observed behaviors work together to influence health choices. The theory aligns with study objectives focused on understanding and addressing the factors that drive utilization of sexual and reproductive health services among the adolescents. It explains how observational learning, self-efficacy, and environmental support can encourage adolescents to adopt positive health behaviors.

Critics of SCT argue that it places excessive emphasis on observational learning while underestimating the role of personal experiences. Although observing others is impactful, individual encounters often have a significant bearing on behavior. Additionally, the theory's strong focus on cognitive processes may overlook emotional factors, such as fear or stigma, which can heavily influence health decisions (Bandura, 1997). For example, adolescents might avoid reproductive health services due to anxiety or embarrassment, aspects not fully addressed by SCT. Another limitation is the theory's insufficient attention to broader social determinants like

economic barriers or cultural norms, which significantly affect health behaviors but are only partially captured within the SCT framework (Bandura, 1986).

Despite these criticisms, SCT remains a robust tool for designing effective interventions. Its strengths lie in its holistic approach, integrating personal, behavioral, and environmental factors to explain and influence behavior. For instance, programs designed around SCT can leverage role models and enhance self-efficacy to promote healthier choices. Health campaigns that utilize observational learning and provide positive reinforcement can encourage adolescents to adopt and sustain beneficial practices. Addressing multiple dimensions of behavior change enables SCT to offer a practical and adaptable framework for improving health outcomes (Bandura, 1991).

Social Cognitive Theory provides valuable insights into the dynamics of personal beliefs, observed behaviors, and environmental influences in shaping actions. Its principles of reciprocal determinism, observational learning, self-efficacy, and self-regulation offer a detailed understanding of behavior acquisition and maintenance. Despite its limitations, the theory's strengths in guiding health promotion strategies make it a powerful tool for designing interventions that foster positive behavior change and improve well-being (Bandura, 1986; Bandura, 1997).

2.2.4 Theory of Planned Behavior

The Theory of Planned Behavior (TPB), developed by social psychologist Icek Ajzen in 1985, builds upon the earlier Theory of Reasoned Action (TRA), introduced by Ajzen et al. in 1980. The TPB aims to understand and predict human behavior by examining the relationship between beliefs, attitudes, intentions, and actions. It offers a structured framework to understand the cognitive and social factors that influence decision-making processes. TPB posits that an individual's behavior is primarily driven by behavioral intentions, which are, in turn, shaped by three core components: attitudes toward the behavior, subjective norms, and perceived behavioral

control (Ajzen, 1985). These factors determine an individual's intention to perform a behavior, which directly influences their likelihood of acting.

According to the TPB, attitudes toward the behavior reflect an individual's positive or negative evaluation of performing the behavior. For example, if someone believes that exercising regularly improves their health and they feel good about this outcome, they are more likely to intend to exercise. Subjective norms refer to the perceived social pressure to engage in or avoid a behavior, often influenced by family, peers, and societal expectations (White et al., 2009). If an adolescent perceives that their friends and family expect them to use contraception, they may be more inclined to do so. Perceived behavioral control encompasses of an individual's perception of their ability to perform the behavior, factoring in both their confidence in overcoming obstacles and their belief in the ease or difficulty of the task. For instance, a person who believes they can successfully maintain a healthy diet despite challenges are more likely to intend to follow that diet (Ajzen, 1991). These three factors—attitudes, subjective norms, and perceived behavioral control—combine to form behavioral intentions, which then predict the likelihood of engaging in the actual behavior.

The TPB is particularly relevant for understanding health behaviors, such as that of sexual and reproductive health decisions. For example, regarding the context of contraception use, TPB helps explain how attitudes toward contraceptive methods, social norms surrounding their use, and perceived control over using them effectively influence the likelihood of adoption. Exploring these three factors allows researchers and health practitioners to identify barriers and motivators to contraceptive use and design interventions to target these areas. This makes the TPB highly applicable to the study objectives, particularly in understanding the factors that influence the

utilization of sexual and reproductive health services among adolescents. It helps in identifying how adolescents' attitudes, perceived norms, and perceived control affect their decisions to seek and utilize these health services.

However, the TPB has several limitations. One major criticism is that it focuses primarily on intentional behaviors and may not account for spontaneous or habitual actions (Ouellette & Wood, 1998). Many behaviors, such as smoking or eating, can be automatic and driven by habits rather than conscious intentions. The theory assumes that behaviors are the result of careful deliberation, which may not capture behaviors that occur impulsively or without much thought. Another critique is that the TPB places too much emphasis on cognitive factors, like attitudes and intentions, and not enough on emotional or psychological factors (Conner & Armitage, 1998). Emotions such as fear or anxiety, which can significantly influence health behaviors, are not fully incorporated into the TPB framework. For instance, an adolescent may avoid seeking reproductive health services due to feelings of shame or fear, emotions that are not adequately addressed by the TPB (Ajzen, 1991). Additionally, the theory assumes that individuals make rational decisions, weighing attitudes, norms, and control factors before acting. In real life, behavior is often influenced by situational factors, impulsive decisions, and emotional responses, which the TPB does not fully capture.

Despite these limitations, the Theory of Planned Behavior remains a valuable tool for understanding and influencing behavior. One of its key strengths is its ability to break down complex behaviors into three identifiable factors: attitudes, subjective norms, and perceived behavioral control. This provides a structured and clear way to identify the psychological and social drivers of behavior, making it useful for health promotion interventions. By focusing on

these factors, interventions can be designed to improve attitudes toward healthy behaviors, enhance social support networks, and build confidence in individuals' ability to engage in health-promoting behaviors. For instance, interventions that target adolescents' attitudes toward contraception, address social pressures, and increase confidence in using contraception can help improve its uptake (Ajzen, 1991). Moreover, the TPB's emphasis on perceived behavioral control is beneficial in identifying and addressing barriers that individuals perceive in engaging with certain behaviors, providing opportunities for more tailored and effective intervention strategies.

The Theory of Planned Behavior offers a comprehensive framework for understanding the factors that drive behavior. While it has some limitations, such as its inability to account for spontaneous behaviors and emotional influences, its focus on attitudes, subjective norms, and perceived behavioral control provides valuable insights into behavior change. These elements allow for the development of targeted interventions that can modify attitudes, influence social norms, and enhance individuals' perceived control, all of which are essential for promoting healthier behaviors and improving health outcomes. The TPB remains a robust tool for designing and implementing strategies aimed at encouraging positive health behaviors and achieving better health outcomes (Ajzen, 1985; Ajzen, 1991).

2.3 Empirical Review

The empirical review examines existing research on critical aspects, influencing the utilization of sexual and reproductive health (ASRH) services by adolescents, focusing on six key areas: ASRH knowledge, individual factors, client-centeredness, health financing, health system referral, and digital health. It explores how adolescents' knowledge and awareness of ASRH services impact their decisions and identifies individual-level determinants such as age, education, and cultural influences. The review also evaluates the significance of client-centered approaches in service

delivery, emphasizing the need for respectful, adolescent-friendly care. Furthermore, it highlights the role of financial interventions in enhancing access to ASRH services, particularly for economically disadvantaged populations. The analysis extends to the effectiveness of health system referral processes in ensuring continuity of care and the enhanced importance of digital health solutions in improving service accessibility and health outcomes. Together, these themes provide a comprehensive understanding of the factors shaping ASRH service utilization and inform the study's investigation into the specific challenges faced by adolescent girls in Kajiado County.

2.3.1 ASRH Knowledge

A key priority is Improving the adolescent sexual and reproductive health (ASRH), under the Sustainable Development Goals (SDGs), highlighting the importance of knowledge and awareness in shaping adolescents' sexual behaviors (Magadi et al., 2022). Comprehensive knowledge in areas such as reproductive physiology, contraception, correct and consistent condom use, and awareness of sexually transmitted infections (STIs), including HIV/AIDS, is essential for promoting safe behaviors and consistent practices. Adequate and accurate information equips adolescents to make informed decisions, reduce risky behaviors, and achieve positive health outcomes. Strengthening educational interventions, community-based programs, and access to youth-friendly services is crucial in addressing gaps in ASRH knowledge and reducing vulnerabilities to challenges such as unplanned pregnancies, unsafe abortions, and STIs, thereby supporting global efforts to improve adolescent health and well-being.

2.3.1.1 Knowledge

Bawuah and Ampaw (2023) explored the role of knowledge that is critical in shaping adolescents' sexual and reproductive health (SRH) behaviors. Their findings revealed that inadequate information about bodily changes, relationships, and future planning heightened adolescents'

vulnerability to unsafe sexual practices and adverse health outcomes. The study emphasized the need for age-appropriate reproductive health education so as to equip adolescents with the tools to aid in making informed decisions. However, it primarily focused on theoretical discussions without examining specific interventions tailored to different contexts. This study addressed the gap by analyzing the effectiveness of targeted education programs within Kajiado County, considering local cultural practices and systemic barriers.

Bittleston et al.(2022) demonstrated the impact of comprehensive sex education on adolescent outcomes in the United States, reporting a 50% reduction in birth rates among adolescents aged 10–19 who received such education compared to those exposed to abstinence-only programs. Their study employed a quantitative approach to evaluate the relationship between education type and birth rates, providing valuable insights into the efficacy of comprehensive sex education. However, the study did not explore the socio-cultural dynamics influencing the success of such interventions in rural or developing settings. The current research addressed this limitation by examining how tailored educational initiatives, integrated with local health systems, could improve knowledge dissemination and SRH service utilization in Kajiado County.

Havaei et al. (2021) noted disparities in sexual activity initiation, with 3.6% of adolescents initiating sexual activity before the age of 10. Their research highlighted the need for early and effective sex education programs. Using mixed methods, the study analyzed demographic trends and their impact on adolescent behaviors. However, it did not investigate how local socio-economic and cultural factors shaped these behaviors. This study filled the gap by focusing on adolescent girls in Kajiado County and analyzing how local health systems could support early, context-sensitive education to reduce risky behaviors.

Kirigia et al. (2016) identified limited knowledge as a key factor contributing to risky sexual behaviors and low condom use among Kenyan adolescents. Their findings, based on a cross-sectional survey, highlighted the role of educational gaps in driving unsafe practices. However, the study lacked a focus on gender differences and their implications for SRH service utilization. This research expanded on these findings by investigating how systemic interventions, including gender-sensitive education and service delivery, could address these disparities and improve outcomes for adolescent girls.

Gichuru et al. (2021) explored the challenges of SRH service utilization, such as stigma, the lack of privacy, and insufficient knowledge, through a mixed-methods study involving quantitative surveys and qualitative interviews in Kenya. While the study provided valuable insights, it did not address how systemic factors could mitigate these barriers in specific contexts like Kajiado County. The current research tackled this gap by adopting a health systems approach to reduce stigma, enhance privacy, and improve knowledge dissemination tailored to the local cultural and healthcare landscape.

Ochieng et al. (2020) found that factors like higher educational attainment, positive peer influence, and supportive family environments significantly increased SRH service utilization among urban adolescents in Kenya. The study employed quantitative methods to identify these facilitators but did not focus on rural or semi-urban settings. This research addressed the gap by investigating the unique educational and social support structures in Kajiado County, offering insights into how these factors could be optimized in rural areas to improve SRH service utilization.

Njenga et al. (2021) demonstrated that health system strengthening interventions, such as infrastructure upgrades and provider training, improved SRH service availability and utilization

among Kenyan adolescents. However, the study did not explore the sustainability of these interventions in rural areas. This research built on these findings by analyzing tailored systemic interventions in Kajiado County, focusing on long-term sustainability and addressing unique barriers faced by adolescent girls in this rural context.

Wambui et al. (2019) examined the integration of adolescent SRH services into primary healthcare systems, identifying inadequate provider training as a significant challenge and community outreach as an opportunity. The study primarily focused on general challenges without delving into the specific barriers faced in rural areas. This study expanded on these findings by investigating how to optimize SRH service integration within Kajiado County's health systems, addressing local challenges and leveraging community-based opportunities to improve service accessibility.

Kiberenge et al. (2022) analyzed socioeconomic determinants of SRH service utilization, highlighting disparities in access, with higher household income and parental education correlating with increased service use. Urban adolescents were found to have better access than their rural counterparts. However, the study did not examine how systemic interventions could bridge these socioeconomic gaps. This research addressed the gap by focusing on targeted health system approaches, including resource allocation and community-based support, to enhance SRH service accessibility and utilization for adolescent girls in Kajiado County.

2.3.1.2 Sources of Information on Sexual and Reproductive Health among Adolescents

Sources of sexual and reproductive health (SRH) information greatly influence adolescents' knowledge, attitudes, and behaviors, with various studies shedding light on their impact and limitations. Adolescents often rely on diverse sources, including parents, peers, media, teachers,

and religious leaders. Agyire-Tettey et al. (2019) highlighted that many adolescents engage in sexual activities before obtaining adequate SRH knowledge, underscoring the need for targeted, age-appropriate education. This cross-sectional study focused on the timing and adequacy of SRH education but did not account for regional variations in information delivery. The current study addressed this gap by investigating the regional dynamics of SRH information access in Kajiado County and emphasizing tailored interventions.

The integration of SRH education into school curricula has been recommended as a means of reducing risks of sexually transmitted infections (STIs) and unintended pregnancies. Breuner et al. (2016) emphasized the effectiveness of structured school-based education in equipping adolescents with accurate information. This longitudinal study demonstrated a reduction in STI prevalence among participants exposed to school-based education but did not explore its integration with other information sources. Similarly, Leung et al. (2019) confirmed the value of comprehensive school programs through a meta-analysis but noted gaps in addressing cultural barriers. The current study built on these findings by examining the interplay between school-based education and other sources, such as parental guidance and community programs, within a culturally sensitive framework.

In Sub-Saharan Africa, traditional social norms and inadequate training among educators hinder open communication about SRH. Cornelius and Smoot, (2022) found that adolescents often rely on peers for SRH information, which can be inaccurate or incomplete. This qualitative study, based on focus group discussions, revealed the limitations of peer-based knowledge but did not explore alternative reliable sources. Agrawal, (2010), using a mixed-methods approach, demonstrated that adolescents receiving SRH information from parents were more likely to engage in safer sexual

practices. However, this study did not consider the role of digital media in complementing parental guidance. The current study bridged these gaps by evaluating the combined impact of parents, schools, and digital media on adolescents' SRH knowledge in Kajiado County.

Media, particularly digital platforms, plays a dual role in shaping adolescents' SRH knowledge. While it provides easy access to information, it also poses risks of misinformation. Freeman et al., (2020) highlighted the prevalence of exposure to harmful content, such as pornography, through a survey of adolescents in urban settings. (Szymkowiak et al., 2021) corroborated these findings in a similar study but did not address strategies to ensure the reliability of digital media. The current study contributed by assessing the accuracy and accessibility of digital SRH resources in Kajiado County and proposing measures to enhance their reliability.

In Kenya, studies such as Omoto et al. (2021) identified schools and health clinics as primary sources of SRH information. This quantitative study revealed the positive impact of accurate information on adolescents' decision-making but did not differentiate between urban and rural contexts. Bolaños et al. (2020) further explored the role of digital media, identifying significant variability in the accuracy of online SRH content. The current study addressed these gaps by focusing on the unique challenges of rural regions, evaluating the effectiveness of integrating digital and community-based sources in Kajiado County.

Comparative studies have demonstrated the benefits of combining school-based education with health center counseling. (Mugisha et al., 2019) used a quasi-experimental design to show improved SRH knowledge and behaviors when multiple channels were employed. However, the study did not adapt these approaches to rural settings. The current study contextualized these

findings by examining how similar strategies could be tailored to the specific needs and resource constraints of Kajiado County.

Parental influence remains a critical factor in SRH knowledge dissemination. Njeri et al. (2022) found that positive parental engagement correlates with healthier behaviors, as evidenced in a survey of urban and peri-urban households. However, the study lacked insights into the cultural and socioeconomic factors affecting parental involvement. The current study extended this understanding by exploring how these factors shape parental roles in SRH education in rural Kajiado communities.

Finally, community-based programs have shown promise in improving SRH knowledge and service utilization. Muthoni et al. (2021) conducted a program evaluation in rural Kenya, demonstrating short-term success but noting challenges in sustainability. The current study addressed these challenges by assessing the long-term impact of community-based interventions in Kajiado County and their adaptability to different community sub-groups. These findings provide a comprehensive understanding of SRH information dissemination and highlight the importance of integrating multiple reliable sources to meet the needs of adolescents effectively.

2.3.2 Individual Factors

Individual factors significantly influence adolescents' utilization of sexual and reproductive health (SRH) services, shaping their behaviors, perceptions, and access to care. The study evaluated several critical aspects, including cultural norms and religious beliefs, both of which directly impact how adolescent girls in Kajiado County engage with SRH services. Cultural practices such as early marriages and female genital mutilation (FGM) often hinder service utilization by perpetuating stigma and limiting awareness of available healthcare options. Similarly, deeply

ingrained religious doctrines can affect attitudes toward contraceptive use and SRH education, sometimes creating barriers to seeking care.

2.3.2.1 Cultural

Cultural norms contribute significantly in shaping adolescent sexual and reproductive health (SRH) knowledge, attitudes, and behaviors, often creating barriers to service utilization. Studies have consistently demonstrated the influence of cultural values such as early marriages, taboos around sex education, and practices like female genital mutilation (FGM). For instance, (D'Souza et al., 2022) found that the stigma associated with premarital sexual activity discourages adolescents in Nepal from seeking SRH services, exacerbating access challenges. This qualitative study used focus groups and interviews to highlight the community stigma faced by sexually active adolescents but did not address the specific interventions needed to mitigate these cultural barriers. Similarly, (Pandey et al., 2019) noted that such stigma leads to restricted access to services, calling for culturally sensitive programs, which this study addressed by tailoring interventions to local cultural contexts in Kajiado County.

Cultural norms also shape broader socio-cultural structures impacting SRH outcomes. (Kusheta et al., 2019) identified the role of traditional family values and structures in influencing SRH behaviors, using a mixed-methods approach to explore how supportive family environments improve adolescent outcomes. However, the study's generalized findings lacked contextual specificity for rural areas. Jensarikorn et al. (2018) and Bawuah and Ampaw (2023) further emphasized the positive impact of stable family environments, particularly when parents provide accurate SRH information. This study expanded on these findings by exploring how shifting family dynamics in Kajiado County, influenced by urbanization and socio-economic changes, affect adolescents' SRH knowledge and access to services.

Urbanization and socio-economic transitions have disrupted traditional family roles, impacting SRH education and support. (Kirigia et al. ,2016) highlighted how career-focused parenting and broken marriages reduce parental involvement, leaving adolescents more reliant on schools for SRH education. Using a cross-sectional survey, the study showed gaps in parental engagement but did not provide solutions to bridge these gaps. This study addressed this by examining how local community structures and schools in Kajiado County could supplement diminished parental roles in SRH education.

Cultural barriers to SRH service access are evident across the Sub-Saharan Africa. Kibera et al. (2020) and Mugo et al. (2019) highlighted regional differences in SRH practices, with traditional beliefs often leading to misinformation and risky behaviors. These studies relied on regional surveys but lacked a focused examination of community-specific interventions. This study filled this gap by analyzing how cultural practices unique to Kajiado County, such as FGM and early marriages, influence SRH service utilization and identifying tailored solutions. Similarly, Wanjiku et al. (2021) and Asante et al. (2018) identified stigmatization and traditional gender roles as significant barriers in Kenya and Ghana, respectively. This research extended these findings by incorporating health system interventions to reduce stigma and address gender norms. Lastly, Ojo et al. (2022) demonstrated the adverse impact of early marriages on reproductive health in Nigeria, underscoring the need for targeted strategies, which this study implemented by focusing on community-driven approaches to cultural transformation in Kajiado County.

2.3.2.2 Religion

Religion profoundly influences reproductive health by shaping attitudes toward and access to reproductive health services. This influence can either facilitate or obstruct service delivery, depending on the alignment of religious beliefs with health initiatives and policies.

Knibbe and Bartelink, (2019) highlighted that certain religious organizations, particularly within Muslim communities, often scrutinized international reproductive health policies to ensure they align with religious norms. This qualitative study focused on the motives and backgrounds of reproductive health education providers, reflecting broader concerns among religious communities about maintaining cultural and religious values. However, the study did not address the practical implications of these concerns on adolescents' ability to acquire sexual and reproductive health (SRH) services. This current study bridged the gap by exploring how religious norms influence adolescents' attitudes and obtaining SRH services in Kajiado County, Kenya, emphasizing the need for religiously sensitive interventions.

Jensarikorn et al. (2018) investigated the influence of Catholic teachings on reproductive health services among American women in community and college settings. Using a survey-based methodology, the study revealed contention between religious doctrines and individual autonomy, particularly regarding contraception and reproductive health decision-making. The findings indicated that Catholic teachings often promoted collective decision-making within marriages, emphasizing abstinence and discouraging premarital sex. However, the study lacked a focus on how such teachings influence adolescents in diverse cultural contexts. The current study extended these findings by examining the impact of conservative religious teachings on adolescents' SRH behaviors in a rural African context, addressing cultural and denominational diversity.

Aminu,(2022) and Adoyo,(2020) discussed how conservative Islamic teachings restrict discussions about contraceptive use to marital contexts, limiting adolescents' access to comprehensive SRH services. These qualitative studies highlighted significant barriers to contraception knowledge dissemination but did not explore how specific interventions could

mitigate these barriers. The current study addressed this gap by evaluating the effectiveness of culturally and religiously sensitive interventions aimed at enhancing the acceptance and accessibility of SRH services among adolescents in Kajiado County.

Nyambura et al. (2020) examined the influence of religious beliefs on adolescent sexual behavior and access to SRH services in Kenya. This mixed-methods study found that religious teachings discouraged contraceptive use and hindered adolescents' willingness to seek SRH services, increasing risks of unintended pregnancies and sexually transmitted infections. However, the study did not fully explore variations among religious denominations or levels of adherence to religious teachings. The current study expanded on these findings by assessing how different religious beliefs and levels of adherence influenced adolescents' SRH behaviors and access to services in Kajiado County.

Ogunleye et al. (2019) explored the impact of religious teachings on sexual health education in Nigeria, using a qualitative methodology. The study found that religious resistance to comprehensive sexual health education led to significant gaps in knowledge and limited access to essential services, as abstinence was prioritized over discussions of contraception. However, the study did not account for regional or denominational variations in teachings. The current study addressed these limitations by analyzing the diversity of religious teachings in Kajiado County and their impact on SRH service delivery, focusing on tailored interventions that accommodate religious and cultural sensitivities.

Through examination of the role of religion in SRH behaviors and access to services, the current study contributes to addressing existing barriers through the integration of religious perspectives into sexual health education programs. This approach enhances the cultural and religious

acceptability of interventions, improving service delivery and outcomes for adolescents in Kajiado County.

2.3.3 Client-centeredness

Adolescents represent a marginalized population in sexual and reproductive health (SRH) matters, requiring a client-centered approach to address their unique needs effectively. A client-centered approach emphasizes understanding and prioritizing the values, preferences, and expectations of adolescents, ensuring they receive high-quality and respectful SRH services.

Faccio et al. (2023) highlighted that patient-centered care significantly improves reproductive health outcomes by focusing on the patient's values and needs. Using a qualitative methodology, the study revealed that treating clients with dignity and respect, alongside meeting their preferences for contraception and other SRH services, fosters positive health outcomes. However, the study did not explore the specific challenges adolescents face in accessing SRH services in resource-constrained settings. The current study addressed this gap by investigating how client-centered care practices influence adolescents' access to SRH services in Kajiado County, Kenya, with a focus on systemic barriers and tailored interventions.

Lee et al. (2021) emphasized the importance of incorporating adolescents' priorities in healthcare decision-making processes. This cross-sectional study examined adolescents' preferences in SRH care delivery, noting that shared decision-making enhanced trust and satisfaction. However, the study identified gaps in addressing stigma and provider bias, which often discourage adolescents from seeking care. The current study expanded on these findings by analyzing how stigma and negative provider attitudes impact SRH service utilization in Kajiado County and evaluating interventions to promote empathy and active listening among healthcare providers.

In a study across eight European countries, Lee (2017) found that adolescents prioritized being heard and respected by healthcare providers over avoiding physical discomfort during care. This survey-based research underscored the significance of engaging adolescents in healthcare decisions and respecting their opinions. However, the study did not consider the contextual differences in low- and middle-income countries (LMICs). The current study addressed this limitation by examining the influence of client-centered care on adolescents' SRH experiences in the socio-cultural context of rural Kenya, highlighting the importance of cultural competence in service delivery.

Doherty and Crowley (2013) and Gilmore et al. (2022) investigated barriers to adolescent reach of SRH services, such as stigma and the lack of confidentiality. Using mixed methods, these studies demonstrated that adopting a supportive, client-centered approach enhanced adolescents' satisfaction and improved health outcomes. However, they did not provide actionable frameworks for training healthcare providers in client-centered practices. The current study filled this gap by implementing training programs focused on empathy, active listening, and confidentiality, evaluating their impact on adolescents' trust in healthcare providers.

Martin and Bell (2020) explored the integration of mental health into SRH services, emphasizing a holistic approach to care. This qualitative study revealed that addressing mental health needs alongside SRH services improved overall health outcomes for adolescents. However, the study did not evaluate practical strategies for implementing integrated care in resource-limited settings. The current study extended these findings by examining how mental health considerations were incorporated into SRH services in Kajiado County and assessing the effectiveness of training programs designed to equip healthcare providers with the skills needed for integrated care delivery.

Smith et al. (2023) and Johnson and Williams (2019) highlighted the role of cultural competence in client-centered care. These studies used surveys and interviews to demonstrate that respecting adolescents' cultural backgrounds significantly improved contraceptive use and SRH service uptake. However, they lacked a focus on how cultural competence training for providers could be systematically implemented and evaluated. The current study addressed this by developing and assessing culturally sensitive training programs tailored to the diverse cultural contexts in Kajiado County.

Brown et al. (2021) and Thompson and Green (2020) emphasized the importance of client-centered care for adolescents with disabilities and LGBTQ+ adolescents. Using qualitative methods, these studies identified the need for inclusive and supportive healthcare environments that respect diverse identities and experiences. However, they did not examine how inclusive policies could be adapted for adolescents in rural settings. The current study built on these findings by exploring the experiences of marginalized groups in accessing SRH services in Kajiado County and recommending inclusive policy frameworks to address their specific needs.

The integration of client-centered care into SRH services is essential for addressing adolescents' unique needs. The current study demonstrated that prioritizing adolescents' values, preferences, and rights improved their engagement with SRH services, resulting in better health outcomes and greater satisfaction among adolescent clients in Kajiado County. Addressing existing gaps in the literature and implementing evidence-based interventions, the study contributed to a more effective and inclusive approach to adolescent SRH service delivery.

2.3.3.1 Adolescent Participation

Adolescents require a supportive environment during their physiological, cognitive, emotional, and social transition into adulthood. Tailoring sexual and reproductive health (SRH) services to address these unique needs can significantly enhance their engagement and adherence to such services. The World Health Organization (WHO), emphasizes that supportive adolescent services must be accessible, acceptable, equitable, appropriate, and effective. Central to achieving this is the active participation of adolescents in decision-making, planning, monitoring, and evaluation processes, which has been shown to improve service delivery and health outcomes (Crowley & Doherty, 2013 ;Plesons et.al., 2019)

Research conducted by Smith et al. (2021) systematically reviewed adolescent participation in SRH services across countries that are known to be of low- and middle-income (LMICs), focusing on various models of involvement. The findings revealed that when adolescents actively participate in design and implementation of SRH services, these services become more accessible, satisfactory, and relevant to their needs. Programs that included adolescent input were more likely to be utilized by adolescents and resulted in the development of youth-friendly services tailored to their preferences. However, the review highlighted significant challenges, such as maintaining privacy, addressing stigma, and equipping service providers with adequate training to deliver adolescent-friendly care. Despite its comprehensive scope, the review identified gaps in understanding how cultural contexts, socio-economic factors, and long-term health outcomes affect adolescent participation. Furthermore, it did not propose strategies to ensure the sustainability of adolescent involvement.

Johnson et al. (2019) expanded on this by employing qualitative methods to explore strategies for enhancing adolescent participation in SRH services across several African and Asian countries.

Through focus groups, interviews, and case studies, the study gathered insights from adolescents, healthcare providers, and policymakers. It concluded that adolescent involvement in planning, implementing, and evaluating SRH services leads to more accessible and relevant programs. Effective strategies included the use of youth advisory panels, integration of adolescent feedback into service design, and training service providers in adolescent-friendly approaches. However, challenges such as power imbalances, limited resources, and insufficient support for adolescent-led initiatives persisted. The study also fell short in analyzing how cultural and regional contexts affect adolescent participation and failed to address the inclusion of marginalized groups or propose long-term sustainable strategies.

The current study builds on these findings by focusing on adolescent participation in SRH services within Kajiado County, Kenya. It addresses gaps identified in earlier research by exploring how cultural and socio-economic factors influence adolescent engagement. This study evaluated participatory strategies such as youth advisory panels, community engagement forums, and adolescent-led feedback mechanisms tailored to the local context. Unlike previous studies, it provided a detailed analysis of barriers to participation and proposed actionable recommendations to enhance the inclusion of marginalized groups, including adolescents with disabilities and those from socio-economically disadvantaged backgrounds. The study also assessed the sustainability of participatory approaches by integrating local community structures and fostering stakeholder engagement.

The integration of findings underscores the importance of a culturally and socio-economically sensitive approach to adolescent participation in SRH services. This study demonstrated that involving adolescents in decision-making and service design improves service accessibility and

relevance while increasing satisfaction and health outcomes. The findings highlighted the need to prioritize confidentiality, reduce stigma, and train healthcare providers to adopt adolescent-friendly approaches. Addressing these critical factors, the current study contributed a context-specific understanding of adolescent participation, offering a comprehensive framework for improving SRH services in Kajiado County. This evidence-based approach provides actionable insights for advancing adolescent-friendly SRH services, ensuring they cater to the particular requirements of adolescents in low-resource settings.

2.3.3.2 Commodity availability

The availability and accessibility of modern contraceptives in developing countries, particularly among adolescents, remain critical issues that significantly influence sexual and reproductive health (SRH) outcomes. In Africa, condoms are widely used as a primary contraceptive method due to widespread awareness of HIV and other sexually transmitted infections (STIs). However, despite this demand, a substantial unmet need persists (Ontiri et al. 2020) reported that only 40% of adolescents who require contraceptives have access to modern methods, leaving 60% without adequate options. This challenge is exacerbated in rural areas and among poorer households, where access to SRH services is often limited due to structural and systemic barriers.

The existing shortage of modern contraceptives is particularly high among adolescent especially girls compared to the general female population. Bearak et al. (2022) highlighted that 26% of women of reproductive age in developing countries, including Kenya, have a need to prevent pregnancy. This unmet need is more pronounced in regions like Asia at a percentage of (69%) and Africa at (68%), compared to Latin America and the Caribbean at (36%) (Liang et al., 2019). Within Sub-Saharan Africa, countries such as Kenya, Uganda, and Nigeria face significant challenges in meeting the contraceptive needs of their adolescent populations. For instance, in

Kenya, 14.7% of adolescents aged 10 to 19 years have begun childbearing, with short-term contraceptive methods being the most popular among this demographic (Nyoni et al., 2022). Furthermore, unmarried sexually active women are less likely to make use of long-acting contraceptive methods as opposed to their married counterparts, highlighting disparities in contraceptive use based on marital status.

Access to contraceptive services is further constrained by geographical disparities Akoth et al., (2021) conducted a study in Kenya that found only 44% of urban health facilities offer contraceptive services to adolescents, with many facilities imposing age restrictions on family planning methods like injectables. Urban facilities generally have better availability of contraceptive methods compared to rural ones, which are more likely to experience stockouts and staff shortages (Wangari et al., 2020) corroborated these findings, revealing significant discrepancies in the supply chain management of SRH commodities between urban and rural areas. Rural health facilities frequently encounter stockouts and distribution delays, which disrupt the availability of SRH services and compromise care consistency. However, the study did not thoroughly investigate the root causes of supply chain inefficiencies or the specific challenges faced by rural facilities, leaving critical gaps in understanding how these barriers could be addressed.

Cheng et al. (2021) explored the availability of contraceptive commodities and their impact on family planning services across Sub-Saharan Africa, identifying frequent stockouts as a major hindrance to access and program effectiveness. The study attributed these stockouts to inadequate supply chain management and logistical challenges but did not delve deeply into regional variations or propose actionable solutions for improving commodity availability. Similarly,

(Reddy et al., 2019) assessed the relationship between SRH commodity availability and service quality in South Asia. The findings indicated that consistent commodity supply is essential for maintaining high-quality services, with facilities experiencing frequent stockouts reporting lower client satisfaction and poorer service quality. However, the study failed to analyze how socio-economic or cultural factors influenced commodity availability, nor did it address barriers unique to specific demographic groups such as adolescents.

Building on these insights, the current study focused on addressing the underlying causes of supply chain inefficiencies in rural health facilities in Kajiado County, Kenya. By employing a mixed-methods approach that included quantitative analysis of stockout data and qualitative interviews with healthcare providers and supply chain managers, the study investigated barriers to SRH commodity availability. It also explored strategies to enhance the availability and distribution of contraceptives, such as strengthening supply chain management systems, improving resource allocation, and fostering stakeholder collaboration. Unlike previous studies, this research provided an in-depth analysis of socio-economic and cultural factors that impact commodity availability, offering a context-specific understanding of the challenges faced in rural settings.

Furthermore, the study assessed how different SRH commodities, such as condoms, injectables, and long-acting contraceptive methods, impact service quality and client satisfaction. The findings highlighted that addressing stockouts and improving the distribution of SRH commodities are critical for enhancing service delivery. Incorporating the perspectives of adolescents and marginalized groups, the research also provided recommendations to ensure equitable access to contraceptives, reduce disparities, and improve SRH outcomes for vulnerable populations. This

comprehensive approach addressed key gaps in prior research, offering actionable solutions for improving contraceptive access and availability in low-resource settings like Kajiado County.

2.3.4 Health financing

Health financing systems play a crucial role in enabling societies to achieve their healthcare objectives, as emphasized by the World Health Assembly resolution. This resolution underscored the necessity for financial policies that ensure access to essential health services without exposing individuals to financial hardship (Sachs et al., 2019). Financial barriers in healthcare are multifaceted, affecting both individuals and institutions. These barriers include the availability of personal funds to access contraception services and the costs associated with delivering such services at the facility level (Sinai et al., 2020). The complexity of these barriers highlights the need for innovative financing mechanisms to address disparities in access to healthcare.

One such mechanism is voucher programs, which have been identified as effective tools for reducing financial barriers and promoting equitable healthcare access. Family Planning High Impact Practices (HIP, 2010) reported that voucher programs reduce out-of-pocket expenses for targeted beneficiaries while simultaneously influencing the behavior of service providers. (Vulimiri et al. 2019) found that these programs reduce financial and informational barriers, enhance service quality, and empower clients to choose preferred providers. Both public and private healthcare providers acknowledged that voucher subsidies increased demand for maternal health services and improved service quality. However, gaps were identified in the evaluation of long-term impacts of voucher programs on sustained health outcomes and how these programs could be adapted to reach more marginalized groups.

Demand-side financing strategies, including voucher programs, are particularly effective in ensuring access to healthcare for economically disadvantaged populations. (Brody 2010) highlighted that these strategies lower the financial burden of healthcare, address inequities, and improve the delivery of comprehensive service packages. While such strategies have shown promise in reducing disparities, challenges remain in assessing their scalability and sustainability across diverse social and economic contexts.

Community-based health insurance (CBHI) schemes also emerged as critical tools for improving access to sexual and reproductive health (SRH) services in rural areas. (Evans et al.,2019) demonstrated that CBHI schemes pool resources and spread financial risks, offering financial protection against high out-of-pocket expenses. These schemes also encourage community involvement in decision-making, enhancing their relevance and acceptability. However, the study identified gaps in understanding the barriers to enrollment in CBHI schemes and the long-term financial sustainability of these programs.

Conditional cash transfer (CCT) programs represent another innovative health financing mechanism that has been instrumental in improving access to SRH services, particularly in low-income settings. Lagarde and Palmer (2019) found that CCT programs provide financial incentives to families for meeting specific health-related conditions, reducing financial barriers and promoting positive health-seeking behaviors. These programs were particularly effective in targeting low-income populations and reducing disparities in healthcare access. However, the study noted gaps in assessing the administrative costs of implementing these programs and their adaptability to different demographic and cultural contexts.

Social health insurance (SHI) programs have also proven effective in increasing the utilization of SRH services. (Temin et al.2020) highlighted that SHI programs provide financial protection by pooling resources and spreading financial risks among insured individuals. These programs offer comprehensive benefit packages, supported by government funding. However, the success of SHI programs depends on their ability to provide affordable premiums and ensure comprehensive coverage. The study identified gaps in addressing informal sector inclusion and ensuring financial sustainability over time.

In Kenya, health financing reforms, including the introduction of the National Health Insurance Fund (NHIF), have significantly improved access to SRH services. Muraya et al. (2019) reported that these reforms addressed financial barriers by offering insurance coverage for various health services and tailoring strategies to the unique needs of different populations. Despite these advancements, challenges such as limited government investment and inadequate coverage of certain vulnerable groups persisted.

Microfinance programs have also emerged as a viable solution for improving healthcare access among adolescents in urban slums. (Juma et al.,2021) emphasized that these programs provide financial support to adolescents and their families, reducing healthcare-related financial burdens. However, the study identified gaps by evaluating the impact of microfinance programs on adolescent health outcomes and their integration with broader health financing strategies.

The current study in Kajiado County addressed these gaps by investigating the specific health financing mechanisms that influence the access to SRH services among adolescents. Using mixed-methods approach, the study analyzed the quantitative data on healthcare utilization and financial barriers while incorporating qualitative insights from adolescents, healthcare providers, and

policymakers. It provided actionable recommendations for enhancing the accessibility and effectiveness of SRH services, focusing on tailored financial interventions such as voucher programs and community-based insurance schemes. Addressing unique socio-economic and cultural dynamics in Kajiado County, the current study offered a comprehensive framework for reducing financial barriers and improving the delivery of adolescent SRH services.

2.3.4.1 Voucher System

Voucher systems have emerged as effective mechanisms for improving access to sexual and reproductive health services, particularly among underserved populations in developing countries. These programs alleviate financial barriers by subsidizing costs, thereby increasing the utilization of essential services such as long-acting reversible contraceptives (LARCs). Evidence from various studies underscores their impact in enhancing service accessibility and quality, although critical gaps remain in understanding the contextual and sustainability aspects of such programs.

A study in Kilifi, Kenya, highlighted the success of a voucher program in increasing the uptake of modern contraceptives among underprivileged populations by significantly reducing out-of-pocket expenses (Alex, 2021). Similarly, a contraceptive subsidy program in Cambodia facilitated access to LARCs for economically disadvantaged women, ensuring they could afford their preferred contraception methods (Ali et al., 2019). These findings emphasize the critical role of financial subsidies in eliminating economic barriers to healthcare. Further evidence from Pakistan, Yemen, and Madagascar highlights the broader benefits of voucher programs. For instance, the Marie Stopes Madagascar voucher program enabled over 43,000 young people to access a range of family planning options within its first 18 months of implementation (Alex, 2021). In Kenya, voucher initiatives have also been instrumental in improving access to long-term family planning services

for women of reproductive age, addressing the country's unmet needs in this area (Mutisya et al., 2019).

In Uganda, the Healthy Baby Voucher program not only increased access to maternal and child health services but also led to improvements in healthcare infrastructure, better staffing, and increased provider compensation (Agyire-Tettey et al., 2019). However, these benefits came with challenges, such as increased workloads and inadequate facility support, which negatively impacted healthcare provider satisfaction. Similar outcomes were observed in Cambodia's voucher schemes, where financial incentives improved service delivery but revealed gaps in provider attitudes towards adolescent clients (Jensarikorn et al., 2018). Such findings underscore the importance of aligning increased demand with resource allocation to ensure quality service delivery.

The methodologies employed in these studies ranged from cross-sectional surveys and facility-based evaluations to qualitative approaches like focus group discussions and in-depth interviews. These methods enabled researchers to assess the effectiveness of voucher programs in increasing service utilization, improving client satisfaction, and addressing barriers to access. For example, in Uganda, program evaluations combined health facility data with interviews and surveys to measure the impact of vouchers on service quality and provider incentives.

Despite the positive outcomes, several gaps were identified in the literature. Many studies lacked a thorough exploration of how local socio-economic conditions and healthcare infrastructure influence the effectiveness of voucher programs. Additionally, the long-term financial sustainability of these schemes and their integration into broader health financing systems remained underexamined. Challenges related to healthcare provider attitudes and training were

also noted, alongside a limited focus on how voucher programs address the unique needs of adolescents seeking reproductive health services. For example, studies by Zakumumpa et al. (2019) and Njeru et al. (2019) demonstrated significant improvements in service utilization and cost reduction but fell short of addressing contextual factors and long-term sustainability.

The study conducted in Kajiado County, Kenya, addressed these gaps by adopting a comprehensive and context-specific approach. It analyzed the effectiveness of voucher programs within the unique socio-economic and healthcare context of Kajiado County, taking into account cultural norms, economic conditions, and the region's healthcare infrastructure. By doing so, the study provided nuanced insights into the regional variations in program effectiveness and the factors influencing their success.

To tackle sustainability concerns, the study assessed the economic viability of voucher schemes and explored their potential for integration into national health financing systems, such as Kenya's National Health Insurance Fund (NHIF). Recognizing the unmet needs of adolescents, the study specifically examined how voucher programs could improve access to sexual and reproductive health services for this demographic. It evaluated the availability of adolescent-friendly services and the role of financial subsidies in reducing barriers to care for young users.

Moreover, the research emphasized the importance of addressing gaps in healthcare provider training and capacity building. By focusing on patient-centered care, it aimed to enhance both service quality and client satisfaction. The study employed a mixed-methods design, combining quantitative data from health facility records with qualitative insights from key informant interviews and focus group discussions. This holistic approach ensured a comprehensive

understanding of challenges and opportunities that are associated with voucher program implementation.

Voucher systems have demonstrated significant potential in improving access to reproductive health services for underserved populations. The findings from studies in Kilifi, Uganda, Cambodia, and Kajiado County highlight actionable recommendations for enhancing the effectiveness and scalability of these programs. Addressing contextual factors, ensuring sustainability, and focusing on adolescent access, this research contributes to ongoing efforts to achieve universal health coverage and reduce disparities in healthcare access.

2.3.4.2 Out of pocket Payment System

The financial burden of out-of-pocket payments presents a substantial barrier to the access of sexual and reproductive health (SRH) services in developing countries. (Ravindran and Govender ,2020) found that 42% of SRH resources are obtained through out-of-pocket payments, underscoring the need for increased government investment and alternative financing mechanisms to reduce this reliance. Their findings highlighted the significant impact of high out-of-pocket costs, including indirect expenses like transportation, which are particularly prohibitive for adolescents. This financial strain contributes to lower service utilization rates, as even marginal increases in service charges drastically reduce demand among young people. The study utilized secondary data analysis to assess global trends, but it did not account for specific contextual barriers in different regions, leaving a gap in understanding localized challenges. The current study in Kajiado County addressed this gap by focusing on community-specific financial barriers and exploring tailored solutions.

In Kenya, Nyaguti et al. (2021) demonstrated that both rural and urban adolescents encounter financial obstacles when accessing SRH services. Their study found that long distances to healthcare facilities in rural areas and the preference for private facilities in urban areas due to better privacy and service quality exacerbate these barriers. A mixed-methods approach was employed, combining surveys and focus group discussions to gather insights on financial constraints and service preferences. However, the study did not investigate the effectiveness of potential interventions to alleviate these barriers. The Kajiado County research bridged this gap by evaluating the role of community-based health insurance, government subsidies, and public-private partnerships in reducing out-of-pocket expenses.

Mushwana et al. (2021) provided further evidence from rural South Africa, revealing that high transportation costs and other indirect expenses deter adolescents from seeking necessary SRH services. The study employed qualitative methods, including in-depth interviews with adolescents and healthcare providers. While it effectively highlighted the financial burden on rural communities, it lacked a focus on sustainable financial support mechanisms. The current study expanded on these findings by analyzing the impact of community-driven financial solutions and assessing their feasibility in the Kenyan context.

In India, Singh and Darroch (2020) identified that rural adolescents face disproportionate financial barriers compared to their urban counterparts, limiting their access to healthcare services. The study used cross-sectional surveys to compare service utilization rates between rural and urban areas, identifying a lack of government subsidies as a critical issue. However, it did not examine the broader implications of these barriers on health outcomes or explore targeted interventions. The study in Kajiado County addressed these limitations by assessing the effectiveness of financial

support mechanisms in improving service uptake and evaluating their impact on adolescent health outcomes.

Amuyunzu-Nyamongo (2022a) explored the financial burden of out-of-pocket payments, including indirect costs like transportation and missed work, on urban slum residents in Kenya. The findings showed that these costs significantly reduce SRH service utilization, particularly among adolescents from financially disadvantaged households. The methodology involved household surveys and interviews, which provided a broad understanding of the issue but lacked a focus on adolescent-specific barriers. The current study filled this gap by prioritizing the unique financial challenges faced by adolescents and identifying tailored solutions to enhance their access to care.

Bohren et al. (2021) conducted a systematic review and meta-analysis, demonstrating that high costs for contraceptives and emergency services deter adolescents in low-income countries from accessing care. The study provided comprehensive global evidence on the financial barriers to SRH services but lacked regional specificity. The research in Kajiado County addressed this limitation by focusing on local economic conditions and healthcare infrastructure, providing contextually relevant recommendations.

Similarly, Wong et al. (2022) identified financial barriers to SRH services in Southeast Asia, including high costs for consultations and medications. Their findings, derived from surveys and secondary data analysis, emphasized the need for affordable healthcare options. However, the study did not investigate the role of community-driven solutions. The Kajiado County research extended this work by examining the potential of community-based health insurance and public-private partnerships in reducing costs.

In Sub-Saharan Africa, Chandra-Mouli et al. (2021) highlighted the high cost of consultations and medications as a major barrier for adolescents. Their study utilized secondary data and case studies to analyze regional trends but did not explore interventions for financial sustainability. The current study addressed this by evaluating practical strategies for reducing out-of-pocket payments and improving adolescent access to services.

Tylee et al. (2022) found similar challenges in Latin America, where high out-of-pocket payments contribute to unmet SRH needs. The study, based on surveys and interviews, recommended policy-level changes but did not investigate grassroots solutions. In contrast, the Kajiado County research explored community-specific interventions and their scalability.

In the Middle East and North Africa, Gaffield et al. (2022) identified out-of-pocket costs as a key factor in low SRH service utilization among adolescents. Their findings, derived from secondary data, emphasized the need for government subsidies but lacked actionable recommendations for local implementation. The Kajiado County study built on these findings by proposing practical, locally tailored financial support mechanisms.

Kabiru et al. (2023) noted that adolescents in Kenya face high out-of-pocket costs, which significantly hinder access to SRH services. The study utilized mixed methods to assess barriers but did not provide detailed evaluations of financial interventions. The current study addressed this by examining the impact of community-based health insurance and subsidies on service utilization.

Finally, Abubakar et al. (2021) reported similar challenges in Nigeria, where high costs for transportation and services deter adolescents from seeking care. Their qualitative study highlighted

the broader issue of financial barriers but lacked a focus on implementation strategies. The research in Kajiado County advanced this understanding by assessing the role of the non-governmental organizations (NGOs) and informal payment systems of reducing costs.

Addressing these gaps, the study in Kajiado County provided actionable insights into reducing financial barriers to SRH services. It emphasized the importance of integrating community-based health insurance, government subsidies, and public-private partnerships to improve access and utilization, particularly for adolescents. The findings also contributed to a broader understanding of how to address financial barriers in resource-limited settings, ensuring equitable healthcare access for all.

2.3.5 Health system referral

Health system referrals are a cornerstone of effective healthcare delivery, particularly in ensuring that patients receive the appropriate care at the right level within the healthcare system. When a facility or provider cannot meet the specific needs of a patient, referrals ensure continuity of care by facilitating transitions between primary healthcare facilities and higher-level hospitals. This paper synthesizes findings from key studies on referral systems, their methodologies, gaps, and how this study contributes to addressing these gaps.

Soeripto (2019) emphasized the necessity of a two-way referral system, which involves patient movement from community-based facilities to tertiary hospitals and back. This system fosters communication and coordination across healthcare levels, preventing unnecessary medicalization and optimizing resource utilization. Soeripto employed case studies and secondary data to highlight challenges in Kenya, particularly the lack of official documentation within referral systems. These gaps lead to treatment delays and inefficiencies, such as patients being treated as

new cases upon referral. To address these issues, this study introduces structured referral mechanisms with official documentation tailored to the Kenyan context, aiming to enhance efficiency and reduce delays in treatment.

Akinci et al. (2020) investigated the effectiveness of the referral systems in urban and rural healthcare centres. Using a comparative analysis of survey data, the study revealed that urban areas benefit from structured systems and resource availability, facilitating efficient patient care. In contrast, rural areas face challenges such as informal processes, limited resources, and weak communication networks, leading to delays and inefficiencies. While Akinci et al. recommended infrastructure development and tailored strategies, the study lacked a deep dive into specific rural challenges. This study fills that gap by conducting an in-depth analysis of referral systems in rural pastoralist regions of Kajiado County, Kenya, identifying context-specific barriers and proposing practical solutions.

Ali et al. (2018) explored the impact of referral systems on maternal health results in a low-resource setting. The study utilized the mixed-methods approach, that combined quantitative data on maternal outcomes with qualitative interviews from healthcare providers. Findings showed that structured referral protocols and improved communication significantly enhanced maternal health outcomes, including reduced delays and better management of complications during pregnancy and childbirth. However, the study did not explore adolescents' perspectives or unique challenges faced by this group. Addressing this gap, the current study integrates qualitative data from adolescents in Kajiado County, focusing on their experiences and barriers in accessing referral services for reproductive health care.

Baten et al. (2019) focused on managing chronic diseases such as diabetes, hypertension, and asthma. Employing a longitudinal cohort study, the research highlighted the importance of clear referral pathways and effective communication between healthcare providers at different levels. These pathways ensure comprehensive and continuous care, including regular follow-ups and medication management. Despite its robust findings, the study did not address the integration of low-cost electronic systems for referral management. This study bridges that gap by exploring the feasibility of introducing electronic referral tools in resource-limited settings to improve coordination and patient outcomes in managing chronic conditions.

Cross et al. (2021) identified barriers to effective referrals in low- and middle-income countries through a systematic review of existing literature. The study highlighted issues such as the lack of formal referral protocols, inadequate communication, and limited resources, but it did not provide actionable strategies for implementation. Addressing this gap, the current study proposes standardized referral processes and offers an actionable framework for healthcare providers in rural Kenya, supported by evidence from field data.

Dempsey et al. (2020) examined the purpose of electronic referral systems in improving patient health care. Using an experimental study design, the research found that electronic systems significantly enhance communication, reduce delays, and improve the accuracy of referrals. However, the study focused on high-income settings and did not explore the adaptability of such systems in low-resource environments. This study adapts Dempsey's findings to a low-resource setting by evaluating the integration of low-cost electronic referral systems in Kajiado County to improve efficiency and accessibility.

Johnson et al. (2019) explored the impact of the referral systems on emergency care in resource-limited settings. Using an observational study design, the research emphasized the critical role of organized systems in managing emergencies and ensuring timely access to specialized care. The study concluded that well-structured referral systems significantly improve survival rates but did not delve into community-based emergency referral solutions. This study addresses this gap by evaluating the role of community health workers in facilitating timely referrals for emergencies in underserved areas of Kajiado County.

Kassebaum et al. (2018) focused on pediatric care in developing countries, emphasizing the unique healthcare needs of children. The study's observational methodology revealed importance of well-defined referral pathways and effective communication between primary care providers and pediatric specialists. However, the study did not address cultural or logistical barriers specific to rural settings. This study incorporates these aspects by analyzing how cultural practices and logistical challenges in Kajiado County impact pediatric referral systems and proposing tailored interventions.

Lopez et al. (2021) analyzed the role of the referral systems in managing non-communicable diseases (NCDs) in low-income countries. Using a cross-sectional study design, the research highlighted the importance of structured referral processes and improved follow-up mechanisms in enhancing patient outcomes. While the study underscored the need for clear pathways, it lacked a focus on long-term patient follow-up strategies. This study contributes by designing follow-up mechanisms tailored to the local context, ensuring sustained care for NCD patients in Kajiado County.

Maji et al. (2019) explored community-based referral systems in underserved populations through qualitative research. The study discovered that involving community health workers in the referral process considerably improved healthcare access and patient outcomes. However, it did not explore the training needs or challenges faced by community health workers in depth. This study addresses this gap by assessing the training and support required for community health workers in Kajiado County to effectively facilitate referrals and improve patient outcomes.

2.3.5.1 Digital Health System

The digital system consists of an interactive SRH website providing localized educational content on contraception, HIV/STI prevention, menstrual hygiene, and reproductive rights.

Facility locator and e-referral tools linking users to adolescent-friendly health centers within their sub-counties.

Anonymous counseling and Q&A portal moderated by trained adolescent SRH educators.

Social media integration (Instagram) to foster peer engagement, share real-time updates, and normalize SRH discourse in culturally sensitive ways.

Over a six-month pilot period, the website logged 4,235 visits, with 42% of users aged 10–19 years. Content engagement was strongest in contraception (41%), HIV/STI prevention (28%), and menstrual health (19%). The facility locator tool was accessed over 100 times, demonstrating that adolescents were actively seeking pathways to care. Social media analytics revealed that within 20 months, the Instagram page grew to over 2,000 followers, maintaining consistent engagement rates

exceeding 35%. This digital interaction helped sustain discussions beyond clinical settings and reduced stigma associated with in-person SRH inquiries.

Focus group discussions (FGDs) and key informant interviews (KIIs) revealed that digital exposure enhanced SRH literacy, confidence, and intent to seek services. Adolescents reported that the platform offered a “safe and private space” to learn and ask questions without fear of judgment. Health providers corroborated this, noting an observable increase in adolescent walk-ins citing online referrals.

Quantitatively, SRH service utilization among digitally engaged adolescents rose by approximately 18% compared to the baseline group ($p < 0.05$), suggesting a statistically significant association between digital platform engagement and health-seeking behavior. The platform exemplifies a Health Systems Strengthening (HSS) approach, integrating the digital layer into existing service delivery pillars:

Service Delivery: Extends outreach beyond physical clinics.

Health Workforce: Supports providers through digital counseling interfaces.

Health Information Systems: Facilitates real-time user analytics and referrals.

Financing: Operates as a low-cost, high-reach model adaptable to county budgets.

2.3.5.2 Community Health Volunteers

Community Health Volunteers (CHVs) serve as vital components of global health systems, where they provide essential health services directly within communities. These individuals, while not holding formal healthcare certifications or degrees, are equipped with specific training tailored to

their roles. This training emphasizes practical skills required to deliver foundational health interventions, allowing CHVs to make significant contributions to healthcare delivery at the household level (Olaniran et al., 2019).

The significance of CHVs is evident particularly in the context of Kenya, where the Community Health Strategy was introduced in 2006 and subsequently updated in 2014. This strategy envisions CHVs as key players in community health, working within community units that typically serve approximately 1000 households. Their responsibilities include a wide array of health services such as promotive, preventive, disease control, family health, hygiene, and environmental sanitation (Njiraini & Hussein, 2020). CHVs' accessibility to underserved populations ensures they act as a bridge between formal healthcare systems and communities, reducing disparities in healthcare access and outcomes.

Titaley et al. (2018) conducted a study in Indonesia to evaluate the contribution of CHVs to maternal and child health outcomes, particularly in underserved and rural areas. Using a mixed-methods approach, the study integrated quantitative surveys and qualitative interviews to comprehensively assess CHV effectiveness. The results highlighted that CHVs played a significant role in delivering essential health services, including antenatal care, vaccinations, and the management of childhood illnesses, leading to improved health results for mothers and children in the targeted areas.

Despite these positive findings, the study also identified significant challenges that hindered CHV efficiency. Among these were insufficient training and inadequate supervision, which limited their ability to consistently deliver high-quality care. These gaps pointed to a need for systemic

interventions to enhance the operational capacity of CHVs and ensure their sustainability within community health frameworks.

To address these issues, the current study introduced a robust training module tailored to the specific needs of CHVs and established a structured supervision framework to enhance accountability and performance. These interventions aimed to empower CHVs with the necessary skills and oversight, enabling them to deliver more effective and reliable health services, ultimately contributing to better maternal and child health outcomes.

In sub-Saharan Africa, Bohren et al. (2017) explored the effectiveness of CHVs in promoting reproductive health services, focusing on their role in addressing specific challenges faced by the marginalized populations. Using a qualitative methodology, the study collected data from focus group discussions and carrying out interviews with CHVs and community members. The findings demonstrated that CHVs were crucial in delivering education, counseling, and referrals for reproductive health, thereby increasing accessibility to these services for underserved groups.

The study also identified several challenges that limited the effectiveness of CHVs. These included cultural stigma associated with reproductive health, inadequate training, and a lack of sufficient resources to support their activities. Such barriers hindered the ability of CHVs to provide comprehensive care and build trust with the communities they served. Additionally, logistical constraints like transportation difficulties further limited their outreach efforts, especially in remote areas.

To address these gaps, the current study implemented community sensitization programs to combat stigma and foster a supportive environment for reproductive health discussions. Moreover, CHVs

were provided with enhanced training and access to resources such as educational materials and logistical support to strengthen their capacity. These measures aimed to improve quality and impact of the reproductive health services delivered by CHVs, ultimately contributing to better health outcomes for the target populations. The study demonstrated that CHVs were instrumental in reaching marginalized populations with education, counseling, and referrals, thereby increasing access to reproductive health services. A qualitative methodology was employed, utilizing focus group discussions and interviews to gather insights from both CHVs and community members. However, the study noted challenges such as stigma associated with reproductive health and limited resources for CHVs. To address these gaps, the current study integrated community sensitization programs to reduce stigma and provided CHVs with additional resources and logistical support to enhance their service delivery.

Mushi et al. (2020) evaluated the effectiveness of CHVs in delivering primary healthcare services in rural Tanzania. Their findings highlighted the critical role CHVs play in mitigating barriers to healthcare access, particularly in addressing challenges such as geographic distance and financial constraints. Through direct household engagements, CHVs provided essential health education and basic care, bridging significant gaps in rural healthcare delivery. The study employed a case study methodology, using interviews and observations to gain in-depth insights into CHV contributions and community healthcare outcomes.

Despite these successes, the study also revealed notable limitations. Key challenges included inadequate incentives for CHVs and limited access to comprehensive training programs. These barriers hindered their motivation and effectiveness in delivering services. Mushi et al. (2020) emphasized that addressing these issues would require systemic changes, including better support

mechanisms and enhanced capacity-building efforts for CHVs. These findings underscored the need for sustainable solutions to improve CHV performance and impact in rural settings.

Building on these insights, the current study introduced a performance-based incentive scheme to address motivation issues and expanded CHV training programs to include a broader range of healthcare skills. By equipping CHVs with more comprehensive training and tying their efforts to clear performance metrics, the study aimed to enhance the quality of services delivered and foster long-term improvements in healthcare accessibility for underserved populations.

Gauthier et al. (2021) investigated the role of CHVs in improving access to health services for adolescents in rural Malawi. The study found that CHVs effectively delivered sexual and reproductive health (SRH) services in form of education contraceptive education to adolescents, addressing barriers such as misinformation and stigma. The study employed a cross-sectional survey combined with in-depth interviews to assess the impact of CHVs. However, gaps such as insufficient adolescent-specific training and weak referral systems were noted. The current study addressed these gaps by developing tailored training modules for CHVs on adolescent health and strengthening referral linkages with healthcare facilities to ensure continuity of care.

In Kenya, Makundi et al. (2020) examined the effectiveness of CHVs in delivering maternal and child health services. Their findings indicated that CHVs played a pivotal role in increasing the access to prenatal care, immunizations and postnatal care within underserved areas. A longitudinal study design was employed, tracking maternal and child health outcomes over time. Challenges identified included limited resources and inadequate collaboration with formal healthcare providers. The current study addressed these gaps by securing additional funding to support CHV

activities and fostering stronger partnerships between CHVs and healthcare facilities to enhance service integration.

Karanja et al. (2019) focused on the role of CHVs that focused on enhancing family planning services in Kenya. The study revealed that CHVs significantly increased contraceptive uptake by providing counseling and distributing contraceptive methods within the community. A mixed-methods design was used, incorporating surveys and interviews to capture both quantitative and qualitative data. However, the study highlighted gaps such as limited training and resource constraints. The current study addressed these gaps by providing targeted training on family planning methods and ensuring a steady supply of contraceptive resources to CHVs.

Ndebele et al. (2022) explored the impact of CHVs on nutrition and maternal health in Zimbabwe. Their findings showed that CHVs effectively promoted healthy dietary practices and delivered essential maternal health services, leading to improved health outcomes. The study employed a participatory action research approach, engaging CHVs as well as community members in the research process. Identified challenges of inadequate training and lack of support structures were highlighted. The current study addressed these gaps by implementing regular training sessions and establishing a support network for CHVs to enhance their effectiveness.

Agbo et al. (2021) investigated the role of CHVs in managing infectious diseases in Nigeria. The study found that CHVs played the critical role of educating communities about disease prevention, providing basic treatment, and improving disease management outcomes. A descriptive study design was used, employing surveys and interviews to gather data. Gaps identified included limited access to resources and insufficient integration with formal healthcare systems. The current study

addressed these gaps by ensuring CHVs had access to necessary supplies and strengthening their collaboration with healthcare providers.

Ntwiga et al. (2021) examined the role of CHVs in promoting mental health services in Kenya. The study found that CHVs effectively raised awareness and provided support for mental health issues, reducing stigma and encouraging help-seeking behaviors. A qualitative approach was used, with data collected through interviews and focus group discussions. However, gaps such as limited mental health training and inadequate resources were noted. The current study addressed these gaps by introducing specialized training on mental health and providing CHVs with tools and resources to support their activities.

Sia et al. (2022) explored the effectiveness of CHVs in improving maternal and newborn health in Ghana. The study highlighted that CHVs significantly contributed to better health outcomes by delivering antenatal, postnatal, and newborn care within communities. A mixed-methods approach was employed, combining quantitative surveys with qualitative interviews. Despite their contributions, gaps such as limited resources and weak coordination with formal healthcare systems were identified. The current study addressed these gaps by enhancing resource allocation and strengthening collaboration between CHVs and healthcare providers to improve service delivery.

2.3.5.3 Health Care Providers

The study found that healthcare providers often adopt a conservative approach when addressing adolescent sexual and reproductive health (SRH) issues. Nurses, while recognizing SRH as part of their responsibilities, face challenges in initiating discussions around these topics with adolescents. Many nurses believe that it is the responsibility of parents to educate adolescents on sexual and

reproductive health, highlighting a gap in communication between healthcare providers and their adolescent patients. Additionally, healthcare providers were found to lack the necessary skills and knowledge to effectively deliver SRH services that are tailored to unique needs of adolescents (Meja, 2020).

A mixed-methods approach was employed in this study, combining both qualitative and quantitative collection of data techniques. Focus Group Discussions (FGDs) as well as Key Informant Interviews (KIIs) were conducted with healthcare providers, adolescents, and key stakeholders to capture a wide range of perspectives on SRH service delivery. This study utilized purposive sampling to select participants with relevant experience and expertise. Surveys and structured interviews were also used to quantify knowledge gaps and assess the capacity of healthcare providers in offering adolescent-friendly SRH services.

The study identified significant gaps in the ability of healthcare providers to effectively communicate with adolescents about SRH topics and provide age-appropriate services. These gaps were primarily related to the lack of training and resources needed to engage adolescents in a meaningful and supportive way. To address these gaps, the current study emphasized the need for enhanced training programs for healthcare providers, focusing on communication skills, adolescent psychology, and comprehensive SRH care. It also called for greater collaboration between healthcare providers and parents to create a more supportive environment for adolescent SRH education and service utilization.

The study by Bernstein et al. (2018) found that the successful implementation of the human papillomavirus (HPV) screen-and-treat model in Mwanza, Tanzania, was largely attributed to the training of local healthcare workers. The initiative, aimed at addressing cervical cancer, utilized

visual inspection of the cervix with acetic acid (VIA) and cryotherapy as key components of the screening and treatment process. The training of local healthcare professionals was identified as a pivotal factor in ensuring the delivery of these services effectively, helping to establish a sustainable screening program that could be maintained in the long term.

A mixed-methods approach was employed in this study, combining both qualitative and quantitative research methods. With the inclusion of surveys and interviews with healthcare workers, as well as observational data on the implementation of the screening and treatment model. The focus was on assessing the capacity of local healthcare providers to perform VIA and administer cryotherapy after receiving specific training. The program's outcomes were measured based on the accuracy and effectiveness of the screenings, as well as the long-term sustainability of the program within the local healthcare system.

The study identified a significant gap in the capacity of local healthcare workers to perform the required cervical cancer screenings and treatments before the training program. There was a lack of adequate skills and knowledge in the use of VIA and cryotherapy, which hindered the effective delivery of these services. To address these gaps, the study emphasized the importance of ongoing training and support for healthcare workers.

A study conducted by Onukwugha et al. (2019) systematically reviewed existing literature on adolescents' and healthcare providers' perceptions of Sexual and Reproductive Health (SRH) services, specifically family planning, STI treatment, and HIV testing and counseling. The review found a significant divergence between the views of adolescents and healthcare providers regarding the barriers to accessing these services. Healthcare providers generally identified physical and financial barriers, such as the availability and cost of services, as the primary

challenges. In contrast, adolescents emphasized negative attitudes and unprofessional behavior from providers as key obstacles, highlighting the interpersonal issues that affect their access to care. The study concluded that addressing both logistical barriers and the interpersonal dynamics of service delivery is essential to improving SRH services for adolescents.

A systematic review methodology was employed in this study, where the authors analyzed a wide range of existing research on the topic. The study involved reviewing published articles, surveys, and reports that explored the perceptions of adolescents and healthcare providers regarding SRH services. The research focused on identifying key barriers and facilitators, and the insights were drawn from studies conducted across different contexts. Synthesizing these findings, the authors aimed to highlight common themes and suggest actionable recommendations for improving SRH service delivery to adolescents.

The study identified several gaps, particularly in the personal attitudes of healthcare providers, which were seen as major barriers to effective adolescent SRH service delivery. Providers' discomfort and conservative views about discussing SRH topics often led to missed opportunities for providing vital information and support. This reluctance to engage with adolescents about sensitive issues contributed to lower quality care and poorer public outcomes of health, such as higher rates of pregnancies that were accidental and sexually transmitted infections. To address these gaps, the study recommended the development of comprehensive training programs that go beyond clinical skills and target providers' personal biases and discomfort. Incorporating role-playing and simulations into such training was suggested as a way to enhance empathy and improve providers' ability to engage with adolescents in a non-judgmental and supportive manner.

The study conducted by Robert et al. (2020) examined the factors influencing access to HIV and Sexual and Reproductive Health (SRH) services among adolescent key populations (KPs) in Kenya. The research, conducted between October 2010 and April 2016, found that negative attitudes from healthcare providers in public facilities were a significant barrier for adolescent KPs. These adolescents preferred private health settings where confidentiality was better maintained, stigma was reduced, and services were more tailored to their needs. Additionally, the study highlighted the absence of specific policies and guidelines for adolescent KPs, which further contributed to the challenges in accessing care. The findings underscored the importance of addressing provider attitudes and enhancing training to improve service delivery and access for this vulnerable group.

The study employed a qualitative research design, utilizing focus groups and in-depth interviews to gather data from 108 participants across Mombasa, Kisumu, and Nairobi. These methods allowed the exploration of in-depth experiences and perceptions of adolescent KPs regarding access to HIV together with SRH services. This research captured the perspectives of the participants on the barriers they faced when seeking care, with a particular focus on the role of healthcare providers and the environment in which services were delivered. This approach enabled the identification of key issues related to confidentiality, stigma, and the lack of specialized services for adolescent KPs.

The study identified significant gaps in the training and support systems for healthcare providers, particularly regarding their attitudes toward adolescent KPs. Negative attitudes and discomfort with sensitive SRH topics were major barriers to effective service delivery. To address these gaps, the study recommended the development of specialized training programs that focus on both

technical skills and communication strategies for handling sensitive issues. It also emphasized the need for healthcare providers to be supported in environments where they feel confident and protected from negative community reactions. Furthermore, the study called for integrating community engagement strategies into healthcare training to address the negative biases and attitudes of providers. This holistic approach, combining improved training with community support, aimed to enhance service accessibility and improve health outcomes for adolescent KPs.

The study conducted by Agyemang-Duah (2019) investigated the roles and challenges faced by women caregivers in the informal health sector in Ghana's Kumasi Metropolis and Ejisu Juaben Municipality. The research revealed that these women take on a broad range of responsibilities, including domestic, healthcare, economic, social, and spiritual tasks. Despite their crucial roles, caregivers face significant challenges such as inadequate financial support, work inefficiencies, chronic stress, limited social interaction, and emotional trauma. The study concluded that to enhance caregivers' effectiveness, immediate financial assistance and specialized training from government and healthcare authorities were essential, alongside the establishment of comprehensive policies to support caregiving in future.

The study used in-depth interviews with 20 women caregivers aiding to gather qualitative data on their experiences along with their challenges. The interviews provided a rich, detailed understanding of the multifaceted roles these caregivers play in their communities, as well as the difficulties they encounter in managing their responsibilities. By focusing on the lived experiences of the caregivers, the study was able to identify key issues such as insufficient resources, emotional strain, and the lack of formal support structures. This methodological approach allowed for an in-

depth exploration of the caregivers' needs and highlighted areas where improvements could be made in their working conditions and support systems.

The study identified several gaps in the support and resources available to informal caregivers, including financial constraints, insufficient training, and the emotional toll of their responsibilities. These challenges mirrored those faced by healthcare providers, particularly those working in rural or underserved areas, who also deal with resource shortages, stigma, and societal pressures. To address these gaps, the study emphasized the need for immediate financial support and targeted training for caregivers. It also highlighted the importance of creating policies that recognize the value of caregiving and provide the necessary resources and support. The study suggested that by addressing these systemic challenges, both informal caregivers and healthcare providers could elevate delivery and effectiveness of their services. Ultimately this would contribute to better health outcomes with readily available empathetic care for those in need, particularly for vulnerable populations such as adolescents in the context of SRH services.

A study conducted by Nyaga et al. (2023) aimed to assess strategies for improving Adolescent and Youth Friendly Services (AYFS) in Migori County, Kenya, where only 39% of public facilities met the target of 80% compliance. The research identified key factors that significantly influenced the provision of AYFS, including capacity building, coordination, stakeholder networking, and community involvement. The findings revealed that the training of healthcare workers played a central role in enhancing service delivery. The study concluded that improving healthcare workers' training is crucial for providing more effective AYFS, with recommendations including the integration of AYFS modules into training curricula, improved coordination through school

outreach programs, strengthening stakeholder networks, and increasing community engagement in AYFS planning and implementation.

To gather data, the study used a mixed-methods approach, collecting responses from 213 healthcare providers across 114 facilities. The research utilized surveys and interviews to obtain comprehensive insights into the factors influencing the delivery of AYFS in the region. By analyzing the perspectives of both healthcare providers and facilities, the study was able to identify the critical areas that needed improvement, particularly in terms of training and community involvement. This approach allowed the researchers to assess not only the technical aspects of service delivery but also the environmental and social factors impacting provision of healthcare services that are youth-friendly.

This study identified several gaps in the provision of AYFS, including inadequate training for healthcare providers, limited coordination between stakeholders, and a lack of active community involvement in service planning. These challenges were compounded by societal and cultural barriers, which hindered adolescents' access to SRH services. To address these gaps, the study recommended enhancing healthcare workers' training, focusing on creating non-judgmental, confidential, and adolescent-friendly environments. Additionally, strengthening coordination through school outreach and fostering greater community involvement were emphasized as crucial steps toward improving AYFS delivery. Addressing these issues, the study proposed a more supportive and inclusive approach to SRH service delivery, ultimately leading to improved health outcomes for adolescents. This approach can be applied to broader SRH service models, ensuring better care and increased engagement with young people.

Obiezu-Umeh, et al. (2021) examined implementation strategies for enhancing youth-friendly sexual and reproductive health services (YFHS) in sub-Saharan Africa. Despite the promise of YFHS interventions to address the needs of young people, their implementation has been challenging. The review analyzed 23 articles detailing 18 unique interventions across East, South, and West Africa. Key strategies included training stakeholders, infrastructure changes, engaging consumers, and supporting clinicians. Effectiveness was often assessed by adoption and fidelity, but less frequently by sustainability and cost. The review concludes that more research is needed to optimize and scale up YFHS interventions in resource-limited settings, emphasizing the need for robust studies to determine the best combinations and contexts for effective implementation.

The review draws attention to the importance of comprehensive training programs in enhancing youth-friendly sexual and reproductive health services (YFHS) in sub-Saharan Africa. While various strategies have been identified, including training stakeholders and supporting clinicians, the review emphasizes that effective training should address both technical skills and communication abilities. Training programs need to enhance providers' understanding of adolescent health issues and build their confidence in discussing sensitive topics with young patients. Incorporating modules on adolescent health, communication strategies, and interactive learning can bridge the gap between theoretical knowledge and practical application, thereby improving service delivery and health outcomes for adolescents.

Additionally, the study underscores the necessity of tailoring training programs to the specific needs and contexts of different regions. Although general training principles are broadly applicable, adapting programs to address local challenges and cultural sensitivities can significantly enhance their effectiveness. Considering the unique factors affecting adolescent sexual and reproductive health (SRH) in various settings allows healthcare systems to develop

more targeted and responsive training initiatives. These initiatives are crucial for helping providers deliver higher-quality care, that qualify to attend to young people's needs and ultimately increase the utilization of SRH services, that will lead to an overall improved health outcome.

Kinaro et al. (2018) explored the socio-cultural barriers affecting the utilization of sexual and reproductive health (SRH) services among adolescents and youth aged 10-24 in Kenya's pastoral communities of Samburu and Turkana, where high fertility rates prevail. Using qualitative methods that include the focus of group discussions, in-depth interviews and key informant interviews, the research identifies several factors influencing SRH service use. Key barriers include early marriage, male-dominated decision-making on sexuality issues, fear of family repercussions, and myths about contraceptives. The study highlights the need for improved understanding of contraceptive methods among youth and recommends enhancing the skills of healthcare providers, community health volunteers, teachers, parents, and community leaders to address adolescent sexual health needs that help combat harmful practices one being female genital mutilation (FGM).

The research underscores the critical role of incorporating cultural sensitivity into the delivery of sexual and reproductive health (SRH) services in Kenya's pastoral communities. Training programs that focus on understanding and respecting local traditions and values are essential for enhancing the quality of care provided. Providers who are attuned to the socio-cultural contexts of these communities are better equipped to address the unique needs and concerns of adolescents and youth, thereby fostering a more inclusive and respectful healthcare environment. This cultural competence not only improves immediate interactions but also builds long-term trust with patients and their families, which is crucial for increasing the acceptance and utilization of SRH services.

Furthermore, the study highlights the broader implications of integrating cultural sensitivity into healthcare practices, especially in regions where traditional practices heavily influence healthcare engagement. In pastoral communities like those in Samburu and Turkana, where socio-cultural factors such as early marriage and myths about contraceptives significantly impact SRH service utilization, culturally sensitive approaches can be particularly effective. Aligning SRH services with community values and addressing cultural barriers, healthcare systems can facilitate more effective and respectful interactions. This approach not only enhances the quality of care but also contributes to improved health outcomes and greater community trust in the healthcare system, ultimately leading to more equitable and effective SRH service delivery.

Habtu et al. (2021) investigated the barriers that hindered the access to adolescent-friendly sexual and reproductive health services (AFSRHs) in Southern Ethiopia, where utilization rates were notably low. Using a phenomenological design supplemented with observations, the research identified several barriers through interviews that were deeply carried out with healthcare providers and non-specialist sexual and reproductive health providers. Key barriers emerged across five themes: provider-related issues such as poor competency, health facility constraints including shortage of supply and environments that lacked support, adolescents' lack of information and negative attitudes towards SRH, insufficient parental and social support, and broader health system issues like inadequate implementation and multi-sectoral engagement. The study concludes that to improve adolescent access to SRH services, a comprehensive re-evaluation of existing strategies and the implementation of new interventions at all levels of the healthcare system are necessary.

The study underscores the critical need for enhanced resources and structured support systems for healthcare providers in Southern Ethiopia. It became clear that inadequate support and the absence

of clear guidelines hindered providers' ability to effectively meet the needs of adolescents seeking sexual and reproductive health (SRH) services. The research highlights that without robust training programs and comprehensive resource materials, providers struggle to address the unique challenges associated with adolescent care. To improve service delivery, the study advocates for the development of more effective training and support systems that equip providers with the tools and guidance necessary to navigate these challenges.

Addressing these gaps in preparedness and support could significantly improve SRH service delivery for adolescents. Implementing structured support systems and enhancing training programs can enable providers to offer more consistent and effective care, directly impacting the quality of SRH services. This approach not only addresses the barriers identified in the study such as provider competency and facility constraints but also ensures that adolescents receive reliable and comprehensive care. By investing in better training and support, healthcare systems in Southern Ethiopia and similar regions can overcome existing barriers, leading to more equitable and effective SRH service delivery and ultimately improving health outcomes for young people.

Onukwugha et al. (2019) explored the literature on the perspectives of utilization of Sexual and Reproductive Health (SRH) services and access by adolescents and providers, focusing on family planning, STI treatment, and HIV testing and counseling. Using a comprehensive search strategy across 25 databases, the review included 45 empirical studies and synthesized findings thematically into four main areas. The analysis revealed significant differences between adolescents and providers: while providers predominantly identified physical and financial barriers as key obstacles, adolescents pointed to negative provider attitudes as a major impediment to accessing services. The review also highlighted that unprofessional behavior from some service providers further restricted adolescents' access to SRH services. These findings underscore the

importance of incorporating service providers' attitudinal qualities into the planning and design of SRH services, suggesting that improving provider professionalism is crucial for enhancing service accessibility and effectiveness for young people.

The evidence from this review emphasizes the critical need for advanced training programs that help to improve the quality of Sexual and Reproductive Health (SRH) services. The study highlights a significant disconnect between adolescents' and providers' views on barriers to SRH access, with adolescents often citing negative provider attitudes as a major hindrance. Effective training programs for healthcare providers can address these attitudinal issues, enhancing their professionalism and understanding of adolescent needs. Incorporating practical, hands-on elements into training and focusing on improving provider attitudes and communication skills, such programs can bridge the gap between providers' and adolescents' perspectives. This approach not only improves service delivery and provider confidence but also directly impacts the ability of adolescents to utilize SRH services and access them effectively.

Moreover, this study suggests that comprehensive training programs can be pivotal in addressing the diverse challenges faced by adolescents in accessing SRH services. Tailoring training to address both physical barriers and attitudinal issues identified in the review ensures that providers are better equipped to offer empathetic and responsive care. Such training initiatives, as demonstrated by positive outcomes in various settings, could greatly enhance SRH services in regions facing similar issues. By fostering a more supportive and understanding environment, these programs can lead to improved health outcomes for adolescents and ensure they receive the necessary care for their well-being.

Lastly Ninsiima et al. (2021) evaluated the factors influencing access to and utilization of youth-friendly sexual and reproductive health services (YFSRHS) in sub-Saharan Africa. Despite global

commitments, youth access remains poor in low- and middle-income countries. The review, covering studies from January 2009 to April 2019, identified 20 studies who were from 7 countries that matched the criteria. It found that structural barriers, such as negative attitudes and lack of skills among health workers, along with individual barriers like insufficient knowledge among youth, hinder service use. Facilitators included community outreach, health education, and policy improvements tailored to youth needs. The review concludes that improving YFSRHS requires intensive training for health workers, quality guidelines for service provision, and enhanced youth education through outreach programs.

The research underscores the need for a comprehensive strategy to tackle barriers that prevent accessing and utilizing youth-friendly sexual and reproductive health services (YFSRHS). Addressing the issues identified in the systematic review such as the negative attitudes and skill gaps among healthcare providers requires improved resource allocation and targeted training programs. Investing in these areas equips providers with the necessary skills and knowledge to offer effective, youth-centered care. Additionally, fostering community engagement and building support around SRH issues can mitigate resistance and create a more conducive environment for service delivery.

For regions facing similar challenges, including nomadic or rural communities, adopting a multifaceted approach is crucial. Enhanced resource distribution, coupled with robust provider training and active community involvement, can significantly improve YFSRHS access and utilization. Addressing these issues through a coordinated strategy that encompasses provider development and community engagement enables healthcare systems to better meet the needs of adolescents. This approach promises to enhance service quality, increase utilization, and ultimately lead to improved health outcomes for young people in sub-Saharan Africa.

2.3.5.4 Demand Generation

The generation of demand for Sexual and Reproductive Health (SRH) services among adolescents relies heavily on innovative strategies in interpersonal communication, media, and financing. These strategies aim to change perceptions, increase awareness, and drive the utilization of SRH services by addressing the barriers that adolescents face. Interpersonal communication methods, such as group discussions, personal interactions, and counseling by health providers, are crucial in shaping individuals' attitudes and perceptions towards SRH services. These are complemented by mass media interventions that spread awareness and knowledge, making adolescents more informed about available SRH options.

Rivera et al. (2022) emphasizes the importance of innovative financing approaches, such as vouchers, cash transfers, and social transfers, in reducing financial barriers to Sexual and Reproductive Health (SRH) services. The study found that these strategies, when implemented together, create a significant demand for SRH services by addressing not only financial barriers but also informational gaps. Additionally, these approaches contribute to shifting social and cultural norms, fostering behavior change that encourages greater utilization of SRH services. The study highlighted that by lowering financial constraints and providing targeted information, these interventions can increase access to SRH services, particularly for underserved populations.

The study employed a comprehensive analysis of existing financing models and their impact on SRH service utilization. Data were gathered from various programs that incorporated vouchers, cash transfers, and social transfers to assess their effectiveness in promoting SRH service uptake. Qualitative interviews, as well as quantitative data on service usage, were used to understand the multifaceted impact of these strategies. Through examination of both the financial and sociocultural aspects, the study provided a nuanced understanding of how these innovative

financing mechanisms contribute to improving the access of SRH services in most of the low-resource settings.

While the study effectively demonstrated the positive impact of financial interventions on SRH service utilization, it identified several gaps, particularly in terms of long-term sustainability and integration of these financing models into existing healthcare systems. The study also noted that despite the success of these strategies in increasing demand for SRH services, there was a need for greater awareness and education to overcome social and cultural stigmas surrounding SRH. To address these gaps, Rivera et al. (2022) recommended that financing approaches be integrated into broader health system reforms, ensuring sustainable funding mechanisms and enhanced community engagement. Addressing these challenges, the study proposed that such interventions could continue to drive positive change and increase the accessibility and acceptability of SRH services.

Kihara and Gikonyo (2021) explored the role of healthcare providers in generating demand for maternal and child health services in Sub-Saharan Africa. The study found that healthcare providers are pivotal in increasing service demand through community education, personalized counseling, and leveraging local networks to enhance service uptake. These efforts led to improved health outcomes, as providers were able to bridge gaps in knowledge and encourage communities to seek necessary care. The study emphasized the positive influence of healthcare providers in shaping attitudes and behaviors toward maternal health services and child health services, ultimately driving better health results in the region.

The researchers used a mixed-methods approach to gather data, combining quantitative surveys and qualitative interviews to assess healthcare providers' roles in demand generation. The quantitative surveys provided statistical insights into the effectiveness of various interventions,

while the qualitative interviews offered a deeper understanding of the personal experiences and strategies of healthcare providers. This combination allowed the researchers to capture both the measurable impact and the underlying dynamics of provider-driven demand generation for maternal and child health services.

However, the study identified several gaps, including limitations in the impact of training and resources on the effectiveness of healthcare providers' activities. Additionally, the study did not explore regional variations in provider effectiveness or delve into systemic factors that might influence the ability of providers to generate demand for maternal and child health services. To address these gaps, the current study included an extensive analysis of regional differences in provider effectiveness and examined the systemic factors, such as healthcare infrastructure and policy support, that affect the delivery and impact of demand-generation activities. Considering these additional elements, the study aimed to provide a thorough understanding of the factors affecting the success of maternal and child health services in Sub-Saharan Africa.

Amani and Bedi ,(2020) focused on strategies employed by healthcare providers to generate demand for family planning services in East Africa. Their study found that community outreach, gave out training and the integration of family planning services into primary healthcare were key factors in increasing the uptake of these services. Healthcare providers participated in educating and engaging communities, fostering a supportive environment for family planning. The incorporation of reproductive health services into primary healthcare was particularly effective in improving the accessibility and acceptance of these services, making them more convenient and acceptable to the population.

The researchers utilized in-depth interviews and focus group discussions to gather data from healthcare providers and community members. This qualitative approach allowed for a detailed

exploration of the strategies that healthcare providers use to promote family planning and how these strategies are perceived by the community. The interviews provided insights into the challenges faced by providers and the community's response to various outreach efforts. The data from these discussions were crucial in identifying the most effective approaches to generating demand for family planning services in East Africa.

However, the study identified gaps related to the scalability of these strategies and the potential for addressing systemic barriers, such as resource constraints and cultural resistance. While community outreach and provider training were effective, the study did not explore how these strategies could be expanded or adapted in different regions with varying levels of healthcare infrastructure. The current study addressed these gaps by examining the scalability of the successful strategies identified by Amani and Bedi (,2020) and analyzing how these strategies could be tailored to diverse healthcare environments and cultural contexts. Additionally, the study delved into systemic barriers, offering recommendations for overcoming these obstacles to further improve the accessibility and acceptance of family planning services across East Africa.

2.3.5.5 Criteria for an effective referral health system

According to the NHSSP II report of 2010, the delivery style of healthcare services significantly impacts the overall health of populations. A diverse range of healthcare options is crucial for meeting the health needs of the population effectively. In line with this, (Adeniran ,2019) emphasizes the importance of an efficient health referral system in ensuring that patients receive the necessary health services. An effective referral system facilitates the smooth transfer of patients to higher-level facilities or specialized care when required, improving the delivery of quality healthcare and patient satisfaction. The study underscores that such systems are essential in ensuring that individuals receive comprehensive and timely care.

Adeniran's study explored the criteria for an effective health referral system, focusing on the organizational structure, communication protocols, and the capacity of healthcare providers at different levels. The research involved a detailed review of existing referral systems, assessing their strengths and weaknesses through a combination of interviews with healthcare providers and an analysis of patient referral records. This mixed-methods approach allowed for an in-depth understanding of the challenges and successes in referral practices within the healthcare system. The study also examined how different factors, such as staff training, infrastructure, and resource availability, influenced the effectiveness of the referral system.

Despite the valuable insights provided, the study identified gaps in the operationalization of referral systems, particularly regarding coordination and communication between different levels of care. It noted that many referral systems lacked standardized protocols and that patient follow-up and feedback mechanisms were often inadequate. Additionally, the study highlighted that there was insufficient focus on patient-centered aspects, such as the availability of information for patients and their families. The current study addressed these gaps by proposing comprehensive strategies to improve coordination, establish clear referral protocols, and incorporate patient-centered practices into the referral process. Focusing on these areas, the study aimed to enhance the effectiveness of referral systems, ultimately improving health service delivery and patient outcomes.

Koce et al. (2019) explored the essential components that contribute to an effective referral system within healthcare settings. The study emphasized that having well-defined referral policies, protocols, and administrative guidelines is crucial for ensuring smooth and efficient referrals. It also highlighted the importance of healthcare providers possessing the necessary skills to

determine when a referral is needed and to manage patients effectively when referred. The study further noted that the establishment of treatment protocols for referral services strengthens the referral process and supports its overall efficiency. In addition, clear levels of care and the presence of a diverse skill set at each level of care were identified as critical elements for a well-functioning referral system. The study stressed the need for systems to be considerate of patients' ability to pay and their level of awareness when designing referral mechanisms.

To assess these elements, the study used a combination of qualitative and quantitative methods, that included carrying out interviews with healthcare providers, patient surveys, and an analysis of referral records. This approach allowed the researchers to gather both provider and patient perspectives on the effectiveness of referral systems. The study focused on identifying the key elements that ensure smooth referrals, such as the availability of qualified personnel, clearly defined roles, and timely, appropriate care. The research also considered the integration of patient concerns, including financial barriers and the need for clear communication regarding the referral process.

Despite providing valuable insights into the components of an effective referral system, the study identified several gaps that hindered the optimal functioning of referral processes. One significant gap was the lack of standardization in referral protocols across different healthcare settings. Additionally, the study found that the coordination between various levels of care could be improved, and more focus was needed on the patient experience and follow-up care. The current study addressed these gaps by proposing solutions to standardize referral protocols, improve communication across care levels, and prioritize patient-centered care. These recommendations

aimed to develop a referral system that was more effective and responsive so as to enhance patient outcomes and ensure equitable access to care.

Pittalis et al. (2019) investigated the challenges and solutions related to surgical referral systems in low- and middle-income countries (LMICs), emphasizing systemic inefficiencies that hinder timely and equitable surgical care, particularly for rural populations. The review identified several significant obstacles, including shortages in surgical infrastructure, equipment, and personnel, as well as inadequate decision-making skills at referring hospitals. The study also highlighted the absence of comprehensive referral protocols and inconsistent adherence to established patient pathways. To address these issues, the review suggested improving coordination between healthcare facilities, enhancing the capacity of referring hospitals, and developing better strategies to evaluate referral system effectiveness. The study underscored the need for more empirical research to address these barriers and improve surgical care in resource-limited settings.

The methodology used in the study involved a comprehensive search of MEDLINE, EMBASE, and Global Health databases, which resulted in 14 relevant studies being selected for review. This systematic approach allowed the authors to identify key challenges and solutions in surgical referral systems across various LMICs. Analyzing these studies, the researchers were able to assess the underlying factors contributing to referral inefficiencies, such as inadequate training for healthcare providers and the lack of structured referral protocols. The review focused on identifying actionable interventions and strategies to improve the referral process and enhance surgical care delivery in resource-constrained environments.

Despite offering valuable insights, the review identified gaps, particularly in the standardization and coordination of referral protocols across different healthcare settings. One of the major gaps

was the insufficient focus on training healthcare providers in referral processes, which led to delays and mismanagement of patients requiring surgical care. The current study addressed these gaps by proposing the integration of structured training programs for healthcare providers on referral guidelines and protocols. Additionally, it emphasized the importance of effective communication between healthcare levels, ensuring accurate and timely patient information exchange. Incorporating these recommendations, the study aimed to strengthen surgical referral systems in LMICs, ultimately improving patient outcomes and healthcare delivery in resource-limited settings.

Kern et al.,(2020) evaluated the implementation of a cloud-based referral platform in ophthalmology to enhance communication between optometrists and ophthalmologists and address the growing number of optometric referrals. Conducted at Moorfields Eye Hospital in London, the study found that the platform significantly reduced unnecessary referrals, with over half of the initially referred patients found not to need specialist care. The tool, which allows for quick data input and review, identified 14% of patients requiring urgent treatment and covered a range of diagnoses, with dry age-related macular degeneration being the most common. The platform not only streamlined the referral process but also facilitated better communication and may pave the way for incorporating artificial intelligence in eye care.

The study also identified several challenges in implementing the cloud-based referral platform, particularly in remote areas with limited resources. Success heavily depended on healthcare providers' adherence to established protocols and their ability to communicate effectively with one another. Training programs designed to improve providers' understanding of and compliance with

the referral system guidelines were found to be valuable. These programs addressed gaps in knowledge and skills, contributing to more effective and consistent care.

Furthermore, the study emphasized that the effectiveness of the cloud-based referral system in ophthalmology was not just about having the technology in place but also about its practical application. Continuous evaluation and adaptation of the platform were necessary to address emerging challenges and enhance patient outcomes. Ensuring robust implementation of the referral system, including clear guidelines and effective coordination, significantly improved communication between optometrists and ophthalmologists, leading to better management of eye care and more efficient handling of optometric referrals.

The study conducted by Ameh et al. (2017) reveals that chronic kidney disease (CKD) is increasingly prevalent in resource-limited countries, exacerbated by the existing burden of communicable diseases and socio-economic challenges. These regions face high CKD-related mortality due to limited awareness, insufficient risk factor management (such as diabetes and hypertension), and lack of affordable treatment options. Effective management in these settings relies heavily on early detection and prevention. Enhanced preventive strategies should include raising awareness, regular screenings for risk factors, and improving access to early referral and conservative management options. Significant efforts are needed from governments to improve healthcare funding, strengthen primary healthcare systems, and advance non-communicable disease programs to better address CKD.

The study revealed that an effective referral system for managing chronic kidney disease (CKD) in resource-limited countries requires a multifaceted approach. Establishing robust referral protocols is crucial, but equally important are continuous feedback and improvement mechanisms. Regular assessments of the referral process enable healthcare providers to identify and address

gaps, enhancing overall system efficiency. These assessments should include evaluating how well referral guidelines are being followed and making necessary adjustments based on practical experiences and emerging needs. Additionally, training and capacity-building for healthcare providers are essential to ensure they understand and can effectively implement referral protocols. This ongoing support helps maintain a functional and responsive referral system capable of adapting to evolving challenges and improving patient outcomes.

For CKD management, creating a successful referral system involves more than just having clear guidelines in place. The system must also incorporate regular monitoring, continuous evaluation, and targeted provider training. The research highlights the need for a responsive and adaptable referral system that can meet the specific needs of CKD patients, especially in resource-limited settings. This includes addressing the compounded challenges of managing chronic conditions in areas already burdened by communicable diseases and socio-economic issues. Through integration of these elements, healthcare systems can improve care coordination, ensure timely and appropriate referrals, and ultimately achieve better health outcomes for patients with CKD.

Osoro et al. (2021) explored the role of communication and information systems in enhancing referral processes in Nairobi. The study found that integrating electronic health records and communication tools into the referral system significantly improved the efficiency and effectiveness of referrals. Electronic health records allowed for better tracking of patient information and streamlined communication between different levels of care. This integration helped in reducing delays and errors in the referral process, ensuring that patients received timely and accurate care.

The research also highlighted the importance of training healthcare providers to use these communication tools effectively. Providers who were proficient in utilizing electronic health

records and communication systems were better equipped to manage referrals and coordinate care. The study emphasized that technology alone was not sufficient; it needed to be complemented by adequate training and support for providers to maximize its benefits. Improving communication and information management, healthcare systems could enhance the overall effectiveness of referral processes.

The integration of electronic health records and communication tools into referral systems is crucial for improving efficiency and reducing errors. The study's findings suggest that investing in technology and providing training for healthcare providers can lead to more effective and coordinated referrals. This approach can enhance the quality of care and patient outcomes by ensuring that referrals are managed efficiently and that patient information is accurately communicated.

Dayal et al. (2022) investigated referral systems for adolescent health services in India, focusing on the criteria necessary for effective referrals. The study found that specialized training for healthcare providers was crucial for improving referral outcomes. Providers who received training specific to adolescent health were better equipped to handle the unique needs of young patients and make appropriate referrals. The research highlighted the importance of developing adolescent-focused referral protocols to address the specific problems being encountered by this population.

The study also emphasized the need for clear and well-defined referral pathways to ensure that adolescents received timely and appropriate care. Effective referral systems required the integration of these pathways into the overall healthcare structure, with a focus on coordinating care between primary, secondary, and tertiary levels. The research suggested that improving the clarity and functionality of referral pathways could lead to better management of adolescent health issues and enhanced service delivery.

Developing and implementing adolescent-focused referral protocols, along with providing specialized training for healthcare providers, is essential for improving referral outcomes. The study's findings underscore the need for a structured approach to referral systems that addresses the unique needs of adolescents. Focusing on these criteria, healthcare systems can enhance the quality of care and ensure that young patients receive the support they need.

Pham et al. (2020) assessed the performance of referral systems in Vietnam, identifying key criteria for effectiveness. The study highlighted the importance of having clearly defined referral criteria and effective communication channels between different levels of care. Clear referral criteria helped in ensuring that patients were directed to the appropriate level of care based on their needs. Effective communication between primary and secondary care facilities was crucial for managing patient referrals and coordinating care.

The research also emphasized the role of regular monitoring and evaluation in maintaining an effective referral system. Continuous assessment of the referral process allowed for the identification of gaps and the implementation of improvements. Training and support for healthcare providers were also identified as critical factors for ensuring that referral criteria were followed and that communication channels were used effectively. Focusing on these aspects, the study highlighted the importance of a well-structured and adaptable referral system.

Effective referral systems require clearly defined criteria, strong communication channels, and ongoing monitoring and support. The study's findings suggest that implementing these criteria can lead to improved referral processes and better patient outcomes. Addressing these key factors enables healthcare systems to enhance the overall effectiveness of their referral systems and ensure that patients receive the appropriate care.

Mujasi et al. (2016) assessed the impact of referral system improvements on patient outcomes in Uganda, focusing on the essential criteria for effectiveness. The study found that having clear referral policies and administrative support was crucial for improving referral outcomes. Clear policies helped in ensuring that referrals were managed consistently and that patients were directed to the appropriate level of care. Administrative support was also important for facilitating the referral process and addressing any challenges that arose.

The research highlighted the need for continuous provider training to ensure that healthcare professionals were familiar with referral protocols and could implement them effectively. Ongoing training helped in maintaining a high level of competency among providers and ensured that they were up-to-date with the latest practices and guidelines. The study also emphasized the importance of evaluating the referral system regularly to identify areas for improvement and ensure that the system remained effective.

The conclusion was that clear referral policies, administrative support, and continuous provider training are essential for improving referral system outcomes. The study's findings suggest that focusing on these criteria can lead to better management of patient referrals and enhanced service delivery. Addressing these factors, healthcare systems can improve their referral processes and achieve better patient outcomes.

Give et al. (2019) analyzed referral systems for complex health conditions in Malawi, focusing on the criteria necessary for effective referral processes. The study found that having robust protocols and administrative support was essential for managing complex cases effectively. Well-defined protocols helped in ensuring that patients received the appropriate level of care and that referrals were managed efficiently. Administrative support facilitated the implementation of these protocols and addressed any issues that arose.

The research also emphasized the importance of ongoing education and training for healthcare providers. Providers who received regular training were better equipped to follow referral protocols and manage complex cases. The study highlighted that continuous education helped in maintaining a high level of competency among providers and ensured that they were up-to-date with best practices. Focusing on these criteria underscored the need for a well-structured and supported referral system.

Singh et al. (2018) conducted research in Nepal to identify key criteria for effective referral systems in sexual and reproductive health (SRH) services. Emphasis done by the study on the necessity of having well-defined care pathways, which ensure that patients are directed to the appropriate level of care based on their specific needs. Clear care pathways were shown to facilitate the smooth transition of patients between different levels of healthcare, thereby improving the overall efficiency of the referral system. This clarity in referral pathways helps in minimizing delays and reducing the likelihood of patients receiving inappropriate or inadequate care.

In addition to establishing clear pathways, the research underscored the importance of provider training in enhancing referral system effectiveness. Healthcare providers who were well-trained in the referral process were more adept at identifying when a referral was needed and executing the referral efficiently. The training programs included components on communication skills and understanding patient needs, which were crucial for effective referrals. This comprehensive training ensured that providers could manage referrals competently and provide the necessary support to patients during the referral process.

The study also highlighted the role of patient support services in improving referral outcomes. Effective referral systems were found to incorporate support mechanisms that assist patients throughout the referral process, such as navigating health services and understanding their care

options. By integrating these support services, healthcare systems can better address patients' needs and ensure they receive timely and appropriate care (Cheng et al.,2023) concluded that a combination of clear care pathways, robust provider training, and patient support services is essential for an effective referral system, leading to a series of improved health outcomes in SRH services.

Mselle et al. (2021) investigated the integration of financial considerations into referral protocols in Tanzania, focusing on how financial mechanisms can influence referral system effectiveness. The study found that incorporating financial support mechanisms, such as subsidies or coverage for referral-related costs, played a significant role in improving service delivery and patient outcomes. Addressing financial barriers, the referral system became more accessible to a broader population, ensuring that cost did not hinder patients from receiving necessary care.

The research also emphasized the importance of having clear referral guidelines that work in tandem with financial support mechanisms. These guidelines helped ensure that financial considerations were seamlessly integrated into the referral process, providing a structured approach to managing costs and improving care access. Provider training was also highlighted as a critical component, ensuring that healthcare professionals understood how to utilize financial support effectively and incorporate it into their referral practices.

The conclusion was that integrating financial considerations into referral systems is essential for enhancing service delivery and patient outcomes. Combining financial support mechanisms with clear guidelines and comprehensive provider training allows healthcare systems to address cost barriers and improve the overall effectiveness of referrals. This approach ensures that patients can access the care they need without being impeded by financial constraints, leading to better health outcomes.

2.3.5.5 Referral pathways; Self-Referral and Non-self-referral

When a patient skips the primary health care level and goes to seek medical services directly at a higher-level health facility, this is referred to as self-referral. When a patient seeks services at a primary level facility, then is referred to a higher level of care that is referred to as non-self-referral. Referral to the next level of health care system happens when the patient needs expert advice, laboratory test, technical intervention, inpatient or medication that is need been provided at the first facility of contact. A referral system helps to limit access to more expensive level of treatment to a relatively small number of patients that need the more complex or multi-intervention care (Koce et al., 2019).

Hashmi et al. (2024) investigated referral pathways within Pakistan's healthcare system, particularly focusing on self-referral and non-self-referral practices. The study revealed a notable trend where patients frequently bypassed primary health care facilities, opting for direct access to higher-level institutions. This behavior was primarily driven by the perception that primary care services were inadequate or less efficient. As a result, patients seeking more specialized or immediate care often faced longer waiting times and increased costs due to the high demand at advanced facilities. The study underscored the need for a balanced approach to referral pathways to manage patient flow and optimize resource use effectively.

The research highlighted that self-referral, while sometimes beneficial in accessing advanced care quickly, also contributed to the overcrowding of higher-level facilities. This strain on resources not only affected the quality of care provided but also led to increased healthcare costs. The study found that many patients who self-referred did so because they believed they would receive better care or more comprehensive services at higher-level institutions. This trend pointed to a gap in the

quality or perception of primary care services, which needed addressing to reduce unnecessary self-referrals and improve the efficiency of the overall healthcare system.

Improving the quality and perception of primary healthcare services could mitigate the issues associated with self-referral. Enhancing the capabilities of primary health centers and fostering better patient-provider relationships, it may be possible to redirect patients to appropriate care levels. Additionally, implementing effective referral protocols and increasing public awareness about the benefits of utilizing primary care services could help manage the patient flow more efficiently, ensuring that higher-level facilities are reserved for more complex cases.

Kivuva et al. (2021) explored self-referral dynamics in maternal and child health services. The study found that a substantial number of women opted for direct access to specialized hospitals rather than starting at primary health centers. This behavior was often motivated by the desire for advanced prenatal care and perceived better outcomes at higher-level facilities. The study highlighted that while self-referral allowed for immediate access to specialized care, it also led to overcrowding and resource strain at these advanced facilities, impacting overall service delivery.

The research showed that self-referral practices were associated with both benefits and challenges. On the one hand, patients who self-referred had access to specialized care that might not have been available at primary health centers. On the other hand, this practice often resulted in inefficiencies, including longer wait times and higher costs at higher-level facilities. The study emphasized the importance of quality improvement and accessibility of primary care to control self-referral rates and ensure that patients received appropriate care without overburdening specialized services.

They recommended enhancing the capabilities of primary health centers to reduce unnecessary self-referrals. Through investing in the training of primary care providers and improving the

infrastructure and services at these facilities, it may be possible to better meet the needs of patients and decrease the inclination to self-refer. Additionally, public education on the importance of utilizing primary care services could help shift patient behavior towards more appropriate and efficient use of healthcare resources.

Nmadu et al. (2020) examined referral practices in adolescent reproductive health services in Nigeria, focusing on the prevalence and impact of self-referral. The study found that many adolescents preferred to bypass primary health facilities in favor of directly accessing specialized SRH services. This preference was often driven by stigma and lack of trust in primary health providers. As a result, adolescents faced delays in receiving care and often encountered higher costs associated with specialized services.

The study highlighted that self-referral among adolescents led to miss opportunities for early intervention and preventive care that could be provided at primary health centers. The lack of trust and stigma associated with seeking help at local clinics contributed to this behavior, creating a barrier to effective service delivery. The research underscored the need for strategies to build trust in primary care providers and address the specific SRH needs of adolescents to encourage appropriate use of referral pathways.

They suggested that the quality of improvement and sensitivity of primary health care services for adolescents could reduce self-referral rates. Training providers to address adolescent SRH issues with empathy and confidentiality, as well as implementing community outreach programs to educate young people about available services, could help shift behavior towards more effective use of primary care. Enhancing primary care services and addressing stigma are crucial steps in improving referral pathways and health outcomes for adolescents.

Additionally, Smith (2023) conducted a study in Bangladesh on managing chronic diseases by comparing self-referral versus non-self-referral. The research found that while self-referral allowed for quicker access to specialized care, it also led to increased burden on higher-level facilities and higher costs. The study highlighted that non-self-referral pathways, where patients were referred from primary care, generally resulted in better management of chronic conditions and more efficient use of healthcare resources.

The study pointed out that self-referral, although beneficial in accessing advanced care, often resulted in inefficiencies and delays due to overcrowded higher-level facilities. In contrast, non-self-referral pathways ensured that patients received timely and appropriate care while preventing overuse of specialized services. The research suggested that optimizing referral systems and enhancing primary care services could help manage chronic diseases more effectively and reduce the need for unnecessary self-referrals.

They concluded that improving the quality and accessibility of primary care services is essential for managing chronic conditions and reducing self-referral rates. Through strengthening referral protocols and investing in primary care infrastructure, healthcare systems can better support patients and ensure they receive the appropriate level of care. The study emphasized the importance of balancing self-referral and non-self-referral practices to achieve optimal health outcomes.

Ramy et al. (2021) explored referral pathways in Egypt, focusing on maternal health and the effectiveness of self-referral versus non-self-referral practices. The study found that non-self-referral, where patients were referred from primary health centers to higher-level facilities, generally resulted in better coordination of care and improved outcomes for mothers and

newborns. The structured referral system ensured that patients received appropriate care while managing the capacity of advanced facilities.

The research highlighted the advantages of non-self-referral systems in providing comprehensive care and preventing the overuse of specialized services. Utilizing primary care as a gateway for referrals, the system ensured that patients were appropriately directed to the necessary level of care. This approach helped improve overall health outcomes and resource management within the healthcare system.

They recommended strengthening referral protocols and enhancing provider training to support effective non-self-referral practices. Ensuring that primary care providers are well-trained and equipped to manage referrals, healthcare systems can improve service delivery and patient outcomes. The study emphasized the need for ongoing evaluation and optimization of referral processes to maintain effectiveness and efficiency.

Hewett et al. (2016) investigated the role of referral pathways in SRH service delivery in Zambia focusing on self-referral and non-self-referral practices. The study found that effective non-self-referral systems improved access to specialized SRH care and enhanced patient outcomes. Through implementation of a well-structured referral system, patients received timely and appropriate care, reducing the burden on higher-level facilities and improving overall service delivery.

The research highlighted that non-self-referral pathways allowed for better coordination of care and more efficient use of healthcare resources. Through directing patients through primary care providers and ensuring appropriate referrals, the system managed patient flow effectively and

addressed complex SRH needs. The study suggested that optimizing referral pathways and strengthening primary care services could improve SRH service delivery.

Enhancing referral systems and provider training is crucial for improving SRH service delivery. Focusing on effective non-self-referral practices and ensuring that primary care providers are equipped to manage referrals, healthcare systems can better address patient needs and improve outcomes. The study emphasized the importance of ongoing evaluation and refinement of referral processes to achieve optimal results.

2.3.6 Digital health

Snowswell et al. (2022) investigated the rapid adoption of telemedicine and digital health solutions in Australia, particularly during the COVID-19 pandemic, focusing on how these technologies facilitated continued healthcare access. The study found that the introduction of telehealth services by Medicare in March 2020 led to a significant increase in telemedicine consultations, which rose from 1% of general practice appointments in 2019 to 35% by April 2020. In terms of Sexual and Reproductive Health (SRH) services, telemedicine was used effectively for counseling, history taking, and initial consultations, with in-person visits only occurring when necessary. This shift allowed patients to access essential healthcare services while minimizing the risk of COVID-19 transmission.

The methodology employed in the study included a quantitative analysis of telehealth usage patterns, specifically tracking the rise in telemedicine consultations during the early months of the pandemic. The authors utilized data from Medicare, along with surveys and interviews with healthcare providers, to understand how telehealth was integrated into the healthcare system. By analyzing this data, the study highlighted the widespread acceptance and integration of digital health solutions, as well as the specific areas where telemedicine was most beneficial, such as SRH

services. The study also explored the factors contributing to this rapid adoption and the challenges faced by both providers and patients in transitioning to telehealth.

However, the study identified several gaps, including a lack of clarity on the long-term sustainability of telehealth and its ability to fully replace in-person consultations for certain types of care. It also noted the need for further research on how telemedicine can be optimized for different populations, including those with limited access to technology or digital literacy. The current study addressed these gaps by exploring the potential for telemedicine to remain an integral part of healthcare systems post-pandemic. It focused on the long-term benefits of telemedicine, identifying strategies for improving digital health access, training healthcare providers, and ensuring equitable access to telehealth services. The current study aimed to strengthen the role of digital health in delivering SRH services and other essential healthcare needs in the future.

Love et al. (2019) examined the expansion of telemedicine use in School-Based Health Centers (SBHCs) in the United States, revealing a significant increase in digital health service usage from 7% in 2007 to 19% in 2017. This growth enabled approximately one million students to access health services digitally, which proved particularly beneficial to underserved areas which have limited access to healthcare. The study highlighted that telemedicine not only improved healthcare access for students but also contributed to enhanced convenience and efficiency in service delivery.

The study employed a longitudinal analysis to track the growth of telemedicine usage in SBHCs over a decade. Data were collected through surveys and reports from various SBHCs, assessing their implementation of digital health services and the impact on service delivery. The research team analyzed how telemedicine was integrated into existing healthcare models within schools

and evaluated its success in reaching students who might otherwise have faced barriers to in-person healthcare, such as geographical distance or lack of transportation.

While the study provided valuable insights, it identified gaps in understanding the long-term impact of telemedicine on student health outcomes and the sustainability of digital health services in school settings. Additionally, there was limited exploration of the challenges faced by students and healthcare providers in adopting telemedicine. The current study addressed these gaps by exploring the effectiveness of telemedicine on long-term health outcomes, specifically focusing on its role in improving access to care for underserved populations. It also investigated the barriers to telemedicine adoption, such as technological limitations and lack of digital literacy, and suggested strategies to overcome these obstacles, ensuring that digital health services continue to support equitable healthcare access in SBHCs.

Cornelius and Smoot, (2022) explored the impact of digital health solutions on sexual and reproductive health (SRH) services, particularly among marginalized adolescent groups such as homeless and transgender youth in the U.S. Their findings revealed that SRH digital health services were associated with increased self-efficacy in condom use and STI screening. Technology played a pivotal role in addressing the SRH needs of these marginalized groups, offering a safe and accessible platform for adolescents to seek information and care. Additionally, the study highlighted the global adaptation of digital platforms in SRH service delivery, particularly during the pandemic, with digital consultations becoming a preferred method in Italy and innovative recruitment strategies like social media and AI chatbots.

The study utilized a multi-country analysis, with data gathered from surveys, interviews, and user engagement metrics across various digital platforms. In the U.S., the research focused on the effectiveness of digital health interventions in improving SRH behaviors, particularly for at-risk

adolescents. In Italy and Indonesia, the study examined the adoption of digital services like video consultations and mobile apps, such as the "HIV Infor Corner" app, which provided HIV-related information to young people. These methods enabled researchers to evaluate how technology influenced SRH service access and utilization in diverse cultural and geographical contexts.

While the study highlighted the positive impact of digital health solutions on SRH service delivery, it identified gaps in understanding the long-term outcomes of these services and the barriers to access among specific youth groups. The current study aimed to address these gaps by exploring the sustainability of digital health interventions in SRH service delivery and evaluating their long-term impact on sexual health outcomes. Furthermore, the study investigated the challenges faced by marginalized adolescents, such as access to technology and digital literacy, and proposed solutions to enhance the accessibility and effectiveness of digital SRH services for these vulnerable populations.

Bittleston et al. (2022) examined the use of digital health for medical consultations in Australia and found that 10% of respondents had used digital health services in the four weeks preceding the survey. The study highlighted key facilitators of digital health adoption, including its accessibility, suitability for addressing sexual and reproductive health (SRH) issues, and the effectiveness of communication through digital platforms. These factors made digital health an appealing option for many users, especially for SRH concerns, providing a convenient and efficient means of consultation.

The study employed a survey methodology, gathering data from Australian participants about their digital use of health services, specifically in the SRH context. The survey sought to understand user perceptions, barriers, and facilitators of the digital health adoption. It also explored the extent

to which digital health services were integrated into everyday healthcare practices and the specific advantages and challenges associated with their use, particularly in SRH contexts.

Despite the promising adoption rates, the study identified significant barriers to the widespread use of digital health. One notable challenge was the lack of interpersonal connection with clinicians, which many respondents felt was crucial for effective healthcare delivery. While digital health services were found to be beneficial for many, they were not considered suitable for all healthcare needs. The current study addressed these gaps by exploring the need for a hybrid approach, integrating digital health with in-person consultations to balance the benefits of accessibility and personalized care. Additionally, the study examined ways to improve user experience by enhancing clinician-patient communication in digital health platforms, addressing the gap related to the lack of personal connection in digital consultations.

Mushwana et al. (2021) explored the barriers of financial access to sexual and reproductive health (SRH) services in rural South Africa, highlighting how high costs deterred individuals from seeking necessary care. The study suggested that telemedicine could play a role in reducing these financial barriers by providing more affordable and accessible SRH services to rural populations. Telemedicine was proposed as a viable solution, offering a way to bridge the gap in healthcare access while minimizing travel costs and time constraints.

The study utilized a qualitative approach, including interviews and focus group discussions with individuals in rural South Africa, to gain insights into the challenges they faced in accessing SRH services. Participants discussed both the direct costs, such as transportation and consultation fees, as well as indirect costs, such as lost wages due to time spent traveling for care. The research aimed at understanding broader impact of financial barriers on the utilization of SRH services, particularly in under-resourced rural areas.

While the study emphasized the potential benefits of telemedicine in addressing financial barriers, it did not thoroughly explore the role of community-based health insurance schemes in further alleviating these costs. The current study addressed this gap by examining how integrating telemedicine with local health insurance programs could provide a more comprehensive solution. Exploring the combination of telemedicine and community-based health insurance, the study aimed to identify ways to reduce the financial burden on individuals, improve access to SRH services, and ensure more sustainable healthcare delivery in rural settings.

Singh and Darroch (2020) identified financial barriers as a significant deterrent to the utilization of sexual and reproductive health (SRH) services in rural areas of India. Their research emphasized the potential role of telemedicine in overcoming these financial challenges, particularly by reducing the need for travel and associated costs, and making SRH services more accessible to underserved populations. The study highlighted that telemedicine could increase access to care by connecting individuals in rural areas with healthcare providers remotely, thus minimizing the financial and logistical barriers typically faced when accessing traditional healthcare services.

The study utilized a cross sectional approach, including surveys and interviews with individuals in rural India, to understand the financial constraints impacting SRH service utilization. The data collection focused on the costs associated with accessing care, such as transportation, consultation fees, and the time spent away from work. This approach allowed the researchers to gather a comprehensive view of the economic barriers to SRH care and the potential solutions that telemedicine could offer.

However, while the study emphasized the role of telemedicine in reducing financial barriers, it did not fully explore the impact of government subsidies or public health programs aimed at reducing out-of-pocket expenses for SRH services. With the current study aimed at addressing this gap by

examining how government subsidies, in combination with telemedicine, could reduce the financial burden on individuals. Through integration of these elements, the study sought to provide a more holistic view of how financial barriers can be addressed through both policy interventions and digital health solutions, ensuring broader access to SRH services, particularly in rural areas.

Amuyunzu-Nyamongo ,(2022b) explored the financial challenges faced by urban slum residents in Kenya, particularly in accessing sexual and reproductive health (SRH) services. The study identified that indirect costs, such as transportation and the time spent traveling to healthcare facilities, significantly limited access to SRH services for residents of urban slums. These costs were found to act as barriers, even when the actual service fees were affordable. The study suggested that digital health could serve as a potential solution by reducing the need for travel and increasing access to SRH services remotely, thus mitigating some of these financial burdens.

A qualitative approach was applied in the study, through using interviews and focus group discussions with residents of urban slums in Nairobi, to explore the financial and logistical barriers to accessing SRH services. The research also gathered insights into the potential of digital health solutions to overcome these barriers. While the study provided valuable qualitative insights into the financial challenges faced by slum residents, it did not include a quantitative analysis to measure the extent of these financial barriers or the impact that digital health could have in reducing them.

The current study addressed this gap by incorporating quantitative data to better understand the financial burdens associated with accessing SRH services in urban slums. Through combination of quantitative analysis with qualitative findings, the study aimed to provide a more comprehensive understanding of how digital health solutions could reduce financial barriers. Additionally, it explored the specific cost reductions that digital health could bring, such as savings on

transportation and time. This approach allowed for a more detailed assessment of the financial challenges and how digital health could effectively mitigate these barriers, offering a clearer path toward increasing access to SRH services for underserved populations in urban slums.

Bohren et al. (2021) and Wong et al. (2022) identified high out-of-pocket costs as a challenge to accessing sexual and reproductive health (SRH) services in low-income regions and Southeast Asia, respectively. Both studies highlighted the potential of telemedicine as a cost-effective solution to overcome these financial barriers by reducing transportation costs and making SRH services more accessible. They emphasized the need for more affordable healthcare delivery models to better the access of SRH services, particularly in areas with limited healthcare infrastructure. Telemedicine was proposed as a key intervention to mitigate the high financial burden on individuals seeking SRH care.

Both studies employed qualitative research methodologies, utilizing interviews, surveys, and focus group discussions to gather data from individuals in low-income regions and Southeast Asia. They focused on the perceived barriers to SRH access, including the financial costs associated with seeking care, and assessed the potential of digital health technologies to address these challenges. Despite highlighting telemedicine as a viable solution, the studies did not delve into specific interventions that could complement telemedicine, such as public-private partnerships or government subsidies, to further reduce out-of-pocket costs for SRH services.

The current study aimed to address these gaps by exploring not only the role of telemedicine in reducing financial barriers but also the potential impact of specific interventions, such as public-private partnerships, in mitigating out-of-pocket expenses for SRH services. Through incorporation of these interventions into the analysis, the study provided a more comprehensive understanding of how financial barriers could be addressed in the context of SRH service delivery.

Additionally, the study assessed how these interventions could be integrated with telemedicine to create a more sustainable and accessible healthcare model for low-income populations, further enhancing the potential of digital health solutions in overcoming financial challenges.

Chandra-Mouli et al. (2021) and Tylee et al. (2022) explored the high costs associated with accessing sexual and reproductive health (SRH) services, identifying financial barriers as a significant challenge. Both studies emphasized the potential of digital health, particularly telemedicine, to reduce these costs and improve access to SRH services. The authors highlighted that digital health solutions could lower the need for transportation, in-person visits, and associated costs, making SRH services more affordable for underserved populations. Additionally, they noted that telemedicine could provide a more flexible and accessible platform for service delivery, addressing barriers such as distance and time constraints.

Chandra-Mouli et al. (2021) conducted an assessment of existing digital health interventions, while (Tylee et al.,2022) employed a mixed-methods approach, using surveys and interviews to assess the feasibility and impact of telemedicine on SRH access. Both studies assessed the perceptions of healthcare providers and patients regarding the role of telemedicine in overcoming financial barriers. These studies focused on the broad potential of digital health to enhance access to SRH services, with a particular emphasis on its cost-effectiveness in reducing the financial burden for individuals seeking care.

Despite these promising findings, Tylee et al. (2022) identified a significant gap in the digital literacy of both patients and healthcare providers, which could hinder the effective use of telemedicine for SRH services. They pointed out that without proper training and awareness, individuals might not fully benefit from digital health solutions. Moreover, the studies did not explore the role of insurance schemes in alleviating out-of-pocket expenses related to SRH

services. The current study addressed these gaps by incorporating an analysis of digital literacy programs and evaluating the role of insurance schemes in reducing financial barriers to SRH services. Focusing on both the educational and policy-related aspects, the study provided a more holistic understanding of how to optimize digital health solutions for SRH access.

Gaffield et al. (2022) investigated the financial barriers to SRH services within Middle East and the North Africa (MENA) region, specifically focusing on how digital health could alleviate these challenges. The study found that digital health solutions, including telemedicine and mobile health applications, have the potential to reduce the costs associated with SRH service delivery by offering more affordable options. The authors emphasized that digital health could improve access to services in remote and underserved areas, providing patients with more cost-effective ways to consult healthcare providers, receive counseling, and access information related to SRH.

Gaffield et al. (2022) conducted a systematic review of digital health interventions in the MENA region, synthesizing findings from multiple studies on reducing financial barriers through the effectiveness of digital health. The study reviewed the use of telemedicine platforms and mobile health applications in providing SRH services, including consultations, education, and follow-up care. The authors highlighted the potential of these digital solutions to reach populations who may otherwise face financial barriers to accessing in-person services. However, while the study highlighted the benefits of digital health, it also identified the lack of exploration into how insurance schemes could be integrated with digital health to further reduce out-of-pocket expenses.

The current study addressed these gaps by exploring not only the potential of digital health in alleviating financial barriers but also the role of insurance schemes in supporting the affordability of SRH services. By evaluating the intersection of digital health and insurance coverage, the study offered a more comprehensive approach to addressing financial barriers in SRH service access.

Furthermore, the study included a focus on digital literacy programs to ensure that users could fully benefit from digital health solutions, ensuring that both the technological and financial aspects of access were adequately addressed. Incorporating these elements, the study provided a more thorough understanding of how digital health and insurance can work together to improve SRH access, especially in regions with high financial barriers.

Kabiru et al. (2023) and Abubakar et al. (2021) focused on financial barriers of sexual and reproductive health (SRH) services in Kenya and in Nigeria, respectively. Both studies identified high out-of-pocket costs as a significant barrier preventing access to SRH services, particularly in rural and underserved areas. The authors highlighted the role of telemedicine as a potential solution to reduce these costs by enabling remote consultations, follow-ups, and education. They emphasized that telemedicine could reduce the need for travel and associated expenses, thereby making SRH services more accessible and affordable. The studies also pointed out that digital health could provide more convenient access to services, especially for individuals who otherwise face challenges in accessing in-person care.

Kabiru et al. (2023) used a qualitative approach, including interviews and focus group discussions, to assess the perceptions of healthcare providers and patients regarding the financial barriers to SRH services and the potential role of telemedicine. Similarly, (Abubakar et al. ,2021) employed a mixed-methods design, incorporating surveys and interviews to explore the financial challenges faced by individuals in accessing SRH services and the role of telemedicine in alleviating these challenges. Both studies found that telemedicine had a positive impact on reducing financial barriers, though they acknowledged the need for further research into the long-term sustainability and effectiveness of digital health solutions in this context.

Despite their promising findings, the studies identified gaps related to the role of informal payment systems and non-governmental organizations (NGOs) in supporting SRH service access. While both studies acknowledged the potential of telemedicine, they did not explore the ways in which informal payment systems, such as community-based contributions or private sector partnerships, could further alleviate the financial burdens on individuals seeking SRH services. Additionally, the role of NGOs in providing financial support and facilitating access to affordable SRH services was not extensively examined. The current study addressed these gaps by incorporating an analysis of informal payment systems and the contributions of NGOs to reducing financial barriers. Through examination of both the formal and informal mechanisms for financial support, the study provided a more comprehensive understanding of how these factors can work together with digital health solutions to boost the availability of affordable SRH services in Kenya and Nigeria.

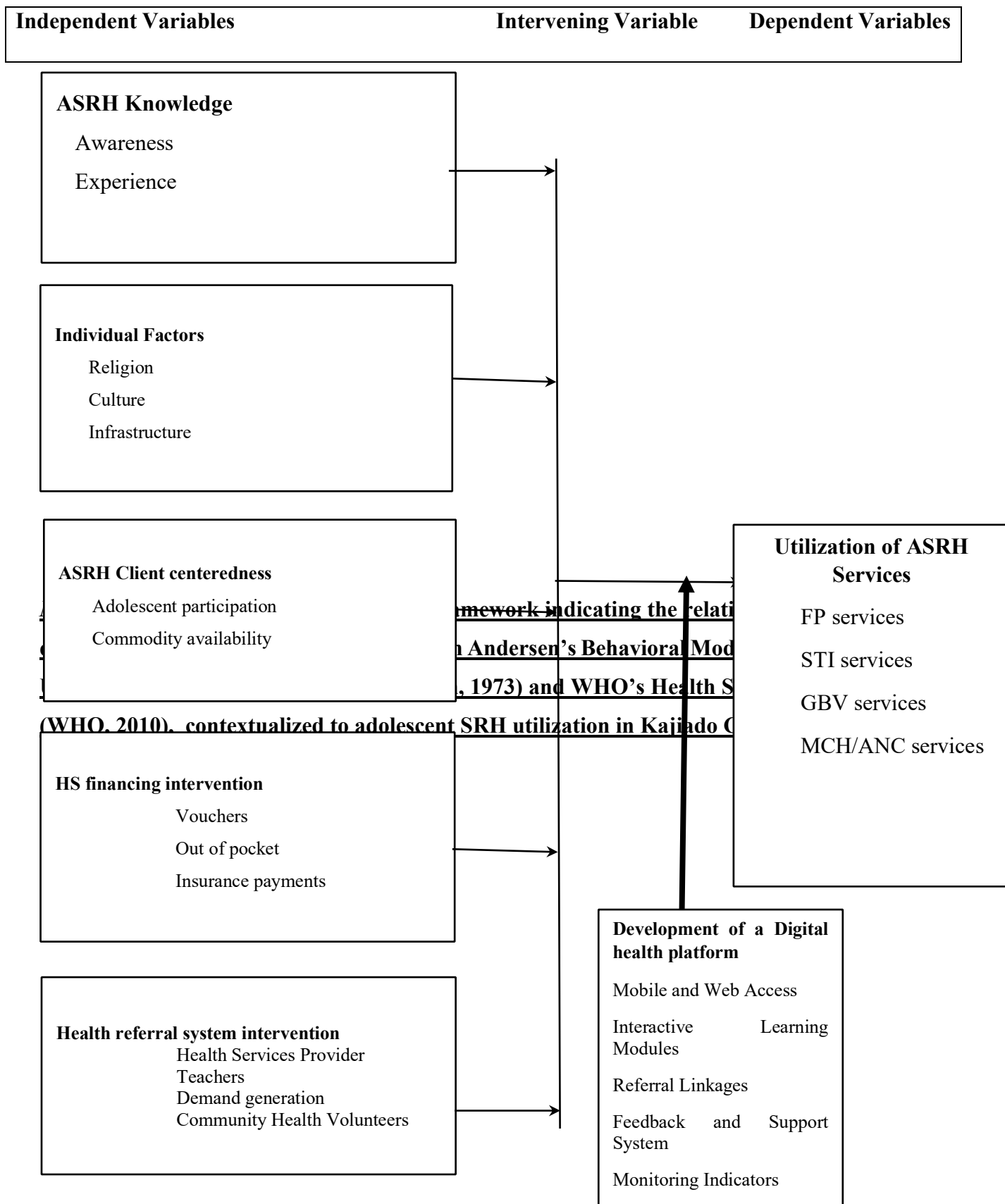
These studies underscore the transformative potential of digital health and telemedicine in improving access to SRH services, especially in underserved regions. However, they also highlight the need for comprehensive strategies, including financial support systems, digital literacy programs, and public-private partnerships, to maximize the impact of these technologies. The study in Kajiado County, Kenya, aimed to address these gaps by exploring the integration of community-based health insurance, government subsidies, and digital health initiatives to reduce challenges in finance and enhance SRH services to adolescents.

2.4 Conceptual Framework

The conceptual framework presented the relationship between dependent and independent variables.

Figure 2. 1:

Conceptual Framework



CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology used to examine the factors influencing the utilization of adolescent sexual and reproductive health (ASRH) services among adolescent girls in Kajiado County, Kenya. The study employed a cross sectional study design with a mixed approach, integrating quantitative techniques to identify patterns and relationships with qualitative methods to provide contextual and in-depth insights. It details the study area, target population, sampling procedures, and data collection tools, emphasizing the rigorous design aimed at ensuring validity and reliability. Ethical considerations, including participant confidentiality and informed consent, were prioritized throughout the research process. Adopting this comprehensive methodological framework ensures a thorough exploration of individual, cultural, and systemic factors affecting ASRH service utilization, forming the basis for evidence-based recommendations.

3.2 Research Design

This study adopted a cross-sectional study design as the research design. It utilized both quantitative and qualitative methodologies, while the objectives were well analyzed using the exploratory design. This helped build a comprehensive framework that combined numerical data with in-depth insights into respondents' perceptions. As emphasized by Walugembe, et al. (2019), a well-structured research design is essential for ensuring a rigorous and systematic investigation.

To achieve the study's objectives, the design initially incorporated exploratory elements to understand adolescent SRH service utilization in its objectives although, its overall methodological approach was a cross sectional study design. Numerical data was collected to

identify patterns, trends, and relationships between the variables. Specifically, the study examined correlations to demonstrate the relationships between independent variables, such as the availability of SRH services and levels of awareness, and dependent variables, such as utilization rates and satisfaction with services. The final qualitative phase, consisting of FGDs and KIIs, was then conducted to explain and contextualize the quantitative findings. This sequential approach adhered to the principles of systematic and scientific inquiry outlined by Walugembe, et al. (2019).

The integration of mixed methods enhanced the study's robustness by combining statistical reliability with qualitative depth (Kankam, 2020). Quantitative methods ensured reliability in data collection and analysis, producing findings that were statistically significant and generalizable. In parallel, qualitative methods provided richer insights into respondents' experiences, attitudes, and perceptions, which added depth to the understanding of SRH service utilization. This sequential explanatory design allowed both phases to complement each other, ensuring the findings were not only statistically valid but also socially and culturally meaningful. Descriptive studies systematically captured accurate and factual representations of the situation, enriching the overall research findings. This combined approach ensured a holistic evaluation of the health systems framework and its influence on SRH service utilization among teenage girls in Kajiado County, aligning with the guiding principles of rigorous research design outlined in the literature.

3.3 Study Area

The area selected for this study was in Kajiado County, its location being in the former Rift Valley Province of Kenya. All the five subcounties being Kajiado Central, Kajiado South, Kajiado North, Kajiado East and Kajiado West were studied. These sub-counties differ markedly in terms of population density, health infrastructure and cultural practices. In order to ensure that findings were representative of the entire county, sampling was stratified by sub-county and proportionate

to the adolescent female population in each stratum. This approach allowed the study to capture intra-county variations in adolescent sexual and reproductive health (SRH) service utilisation while maintaining adequate statistical power.

This region is served by a diverse network of healthcare facilities. According to Kajiado County Government (2023), Kajiado County has 125 public health facilities (7 hospitals, 22 health centers, and 94 dispensaries) as of 2023, plus 178 private facilities. This study covered all five sub-counties of Kajiado County: Kajiado North, Kajiado Central, Kajiado South (Loitokitok), Kajiado East, and Kajiado West. Based on facility listings (LabFlow Kenya, 2023), Kajiado North has about 138 total facilities, Kajiado Central has 50, Kajiado South has 57, while Kajiado East and Kajiado West health facilities were not specified. Although Kajiado North show relatively high facility density, Kajiado East, Kajiado South, Kajiado Central, and Kajiado West remain underserved particularly in adolescent-friendly SRH services within both public and private hospitals, health centers, and dispensaries. This uneven distribution of health facilities underlines the importance of analyzing adolescent SRH access across the entire county rather than a single sub-county. Despite the presence of these healthcare facilities, the county faces significant barriers to healthcare utilization due to deeply rooted cultural practices. Customs such as early and forced marriages, female genital mutilation (FGM), reliance on traditional birth attendants, and the influence of moranism (a traditional age-grade system) have a profound impact on the acceptance and accessibility of modern healthcare services, particularly those that are related to sexual and reproductive health (SRH).

These cultural norms intersect with systemic challenges such as poverty, limited education, and inadequate health infrastructure, creating additional obstacles for adolescent girls in accessing SRH services. The interplay between cultural practices and healthcare systems points out to the

need for having interventions that address these unique barriers. Understanding how these factors influence healthcare-seeking behaviors contributes to strategies aimed at enhancing the utilization of modern SRH services in Kajiado County, ultimately improving health outcomes for adolescent girls in the region.

3.4 Target Population

The study focused on adolescent girls aged 10 to 19 from pastoral villages in Kajiado County, selected to explore their unique sexual and reproductive health (SRH) needs and behaviors. This age group represents a critical demographic, often facing significant barriers to accessing SRH services due to cultural, social, and systemic challenges. According to the Kenya Population and Housing Census (2019), Kajiado County had approximately 84,000 adolescent girls aged 10–19 years. This figure provided the basis for determining the study sample size and ensured that the selected respondents represented the wider adolescent population in the county. Girls who did not participate in completing the structured questionnaire were included in focus group discussions (FGDs), ensuring diverse perspectives on the issues under investigation. These FGDs paved way for deeper exploration into the lived experiences, attitudes, and challenges of the adolescents' related to SRH service utilization, complementing the quantitative data gathered through surveys.

To provide a broader understanding of the context, Key Informant Interviews (KIIs) were conducted with various stakeholders. Participants included teachers, who offered insights into the role of education in shaping SRH knowledge and behavior; community health professionals and public health officers, who shared perspectives on service delivery and healthcare systems; and medical doctors, who provided clinical insights on adolescent SRH needs. Additionally, opinion leaders were interviewed to capture the community's attitudes and practices that influence healthcare-seeking behaviors. This comprehensive approach ensured a holistic understanding of

the interplay between individual, cultural, and systemic factors affecting SRH service utilization among adolescent girls in Kajiado County.

3.5 Sampling Procedures and Sample Size

3.5.1 Sampling Procedure

Kajiado County was purposefully selected as the study site due to its predominantly pastoral culture and unique sociocultural dynamics, which significantly influence healthcare practices, particularly sexual and reproductive health (SRH). The selection was aimed at capturing insights from communities that exhibit strong traditional practices, such as early marriages and reliance on traditional health systems. Enumeration clusters from the Kenya National Bureau of Statistics (KNBS) 2019 census were utilized as the sampling frame. Through simple random sampling, 10 clusters were selected to ensure representativeness across the County. Within each cluster, households were also chosen randomly, providing a robust basis for the utilization of SRH services among adolescent girls aged 10 to 19 years as gathered by data. This random selection process minimized bias and enhanced the generalizability of the study findings.

To complement the structured data collection, qualitative methods were employed to gain deeper insights into the context. A total of 10 Focus Group Discussions (FGDs) were conducted across the five sub-counties of Kajiado: Kajiado Central, Kajiado East, Kajiado North, Kajiado South, and Kajiado West, with two FGDs per sub-county. Each FGD consisted of 8 participants, resulting in a total of 80 adolescent girls who were not part of the structured questionnaire survey. This specification ensured consistency in group size while capturing diverse perspectives across different sub-counties. For Key Informant Interviews (KIIs) Purposive sampling was used in the selection of participants, by targeting individuals who could provide expert and contextual insights. Fifteen KIIs were conducted across the five sub-counties, with three interviews in each.

Teachers, community health professionals, public health officers, and opinion leaders were considered as key informants, whose expertise and influence offered valuable perspectives on the barriers and facilitators to SRH service utilization in the County. This combination of random and purposive sampling approaches ensured a comprehensive and contextually grounded analysis of the study's objectives.

3.5.2 Sample Size Determination

The sample size for the quantitative survey for this study was determined using the formula outlined by Fisher, et al., 1998): $n = Z^2 pq / d^2$, where **Z** represents the confidence level, **p** is the proportion of the population with the attribute of interest, $q = 1 - p$ is the proportion of the population without the attribute, and **d** is the desired precision of the estimate. For this study, a 95% confidence level was chosen, corresponding to $Z = 1.96$. Since the proportion of the population with the attribute of interest was unknown, a conservative estimate of $p = 0.5$ was used, with $q = 0.5$. The desired precision of the estimate was set at 5% ($d = 0.05$). Substituting these values into the formula yielded a calculated minimum sample size of 384. (Fisher, Laing, Stoeckel, & Townsend, 1998): $n = Z^2 pq / d^2$, where **Z** represents the confidence level, **p** is the proportion of the population with the attribute of interest, $q = 1 - p$ is the proportion of the population without the attribute, and **d** is the desired precision of the estimate.

$$N = \frac{1.96^2 (0.5) \times (0.5)}{0.05^2} = 384$$

To account for potential non-responsiveness, a 10% adjustment was added to the minimum sample size, increasing it to 422. To account for potential non-responsiveness, a 10% adjustment was added to the minimum sample size, bringing the number to 422 participants. The adjustment ensured that even with anticipated non-response, the study would retain adequate statistical power.

The final sample size of 422 was proportionately distributed across the sub-counties of Kajiado using stratified random sampling, ensuring fair representation of different geographical areas and socio-demographic groups.

3.5.3 Inclusion and Exclusion Criteria

i) Inclusion Criteria:

Participants were eligible for the study if they met the following conditions:

- I. Adolescent girls aged between 10–19 years.
- II. Residents of pastoralist communities in Kajiado County.
- III. Aged 10–17 years with parental/guardian consent, plus assent from the adolescent.
- IV. Aged 18–19 years who provided independent informed consent.
- V. Present in the study area during the data collection period.

ii) Exclusion Criteria:

Participants were excluded from the study if they met any of the following conditions:

- I. Adolescent girls aged 10–19 years who were not from pastoralist communities in Kajiado County.
- II. Those who declined to provide assent/consent, or whose parents/guardians declined to provide consent (for participants under 18 years).
- III. Those absent during the data collection period.
- IV. Adolescents who were intoxicated or not mentally fit to participate at the time of data collection.

3.6 Data Collection and Research Instruments

3.6.1 Data Collection Instruments

Data collection for the study utilized a combination of semi-structured questionnaires, key informant interviews (KIIs), and focus group discussions (FGDs) to gather comprehensive insights from various stakeholders. Semi-structured questionnaires were self-administered to 422 adolescent girls, allowing for the collection of quantitative data on their utilization of sexual and reproductive health (SRH) services. These questionnaires were designed to capture a range of information, including service access, knowledge, and attitudes, providing a broad overview of the adolescent girls' experiences and perceptions. Additionally, key informant interviews were conducted with a diverse group of professionals and community members, including community health workers, guidance and counseling teachers, public health officers, medical superintendent, and area chief. These interviews aimed to gather expert opinions and insights on the challenges and opportunities in SRH service delivery.

3.6.2 Data Collection Procedures

For the qualitative data, 10 key informant interviews and 10 FGDs were conducted in private settings to ensure confidentiality and comfort for the participants. Key informant interviews lasted approximately 30-45 minutes, while focus group discussions (FGDs), In-Depth Interviews (IDIs) took between 60-90 minutes. A trained moderator facilitated the FGDs, ensuring that all participants had the opportunity to contribute, while also maintaining the focus on the study's objectives. The interviews were conducted in person, with the researcher guiding each session to gather in-depth responses from participants. Eight adolescent girls aged 10 to 19 years formed the ten focus group discussions that were organized. This mixed-methods approach ensured a rich and

varied understanding of the factors that influence SRH service utilization among adolescents in Kajiado County.

3.7 Research Instruments Reliability and Validity

3.7.1 Pilot Study

A pilot study was conducted with approximately 10% of the intended sample in Narok County to pre-test the data collection tools and ensure their reliability and validity for the main study (Maxfield & Babbie, 2014). This process aimed to identify and resolve potential issues with the tools, such as unclear questions or ineffective data collection methods, ensuring they were appropriate for the study objectives. According to Kothari (2004), pilot testing serves as a rehearsal for the main study, allowing refinement of questionnaires and sampling techniques to enhance the accuracy and relevance of the data collected. The pilot involved a sample of 38 adolescent girls who were between the age of 10–19 years, one guidance and counseling teacher, one community health worker (CHW), one public health officer, one medical superintendent, and one opinion leader, all purposefully selected to reflect the diversity of the main study's population. The pilot did not generate data for inferential analysis but was solely intended to validate and improve the instruments prior to the main study.

3.7.1 Instrument Reliability

Reliability refers to the extent to which the tools and methods used for data collection and analysis consistently yield stable and accurate results. To ensure the reliability of the research instruments, this study employed the Cronbach's Alpha reliability test, a widely recognized method for assessing the internal consistency of survey instruments. The Cronbach's Alpha coefficient

measures how closely related a set of items are as a group, with values ranging from 0 to 1. A coefficient value between 0.7 and 1.0 is deemed acceptable, indicating that items within the instrument are consistently taking measurements of the same underlying concept. Higher values, closer to 1, reflect greater internal consistency among the items. This approach ensures that the collected data from the questionnaires and other instruments are reliable and capable of producing consistent results across different samples and conditions (Adeniran, 2019).

The reliability of the study instruments was assessed prior to further analysis, and the results are presented in Table 3.1.

Table 3.1

Reliability Test Results

Variable	Cronbach's Alpha	Verdict
Utilization of SRH services	0.735	Accepted
ASRH knowledge	0.798	Accepted
ASRH Client centeredness	0.736	Accepted
Individual Factors	0.761	Accepted
Health Financing	0.808	Accepted
Health Referral System	0.762	Accepted

The reliability test results demonstrate that all the variables had Cronbach's Alpha values exceeding the acceptable threshold of 0.7, indicating high internal consistency. Specifically, health financing recorded the highest reliability score of 0.808, followed by ASRH knowledge with 0.798, and health referral system with 0.762. Other variables, including ASRH client centeredness (0.736), individual factors (0.761), and utilization of SRH services (0.735), also exhibited strong reliability. These findings confirm that the measurement scales used in this study were reliable and suitable for subsequent statistical analysis with acceptable internal consistency for the main study.

3.7.2 Instrument Validity

The concept of validity talks about the extent to which the research instruments accurately measure what they are intended to assess. To ensure the validity of the research tools, the instruments were

rigorously evaluated for both face and content validity in consultation with the research supervisors. Face validity was assessed by determining whether the instruments appeared to measure the intended variables at a superficial level, while content validity was examined by ensuring that the instruments covered the research topic comprehensively by looking into all relevant aspects. The researcher conducted a pretest to identify any conceptual or investigative biases present in the tools. This pretesting process helped in evaluating the flow and appropriateness of the questions in relation to the variables under investigation. As a result of the pretest, any confusing questions that could potentially compromise the reliability of the findings were revised for clarity and precision. Additionally, questions initially framed negatively were reworded positively to avoid any potential misinterpretation and to ensure that the effectiveness of the instrument was generally enhanced. This thorough validation process aimed to enhance the accuracy and relevance of the data collected.

To statistically evaluate the validity of the instruments, a pilot sample of 32 respondents was analyzed. The results are presented in Table 3.2.

Table 3.2:

Validity Test Results

Status	Frequency	Percent (%)
Valid Cases	32	100.0
Excluded	0	0.0
Total	32	100.0

Note: List wise deletion was applied based on all variables in the procedure.

The validity test included a pilot sample of 32 participants, with 100% of the cases deemed valid. This indicates that all 32 respondents completed the pre-test without exclusions, ensuring a robust evaluation of the questionnaire's validity. The response rate during the pilot test was 84.2%,

reflecting a high level of responsiveness from the participants. These results affirm that the measurement tools used in the study were valid and appropriate for data collection.

3.8 Variables Operationalization

The study variables are defined as depicted by the following Table 3.3.

Table 3.3:

Study Variables Operationalization

	Variables		Indicators	Type	Data tools	Collection
Independent variables	ASRH Knowledge		Awareness Experience	Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	
	Individual Factors		Religion Culture Infrastructure	Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	
	ASRH Centeredness	Client	Adolescent participation. Commodities availability	Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	
	Health Financing		Voucher Out of pocket Insurance cover	Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	
	Health system	Referral	Healthcare providers. Teachers CHVs Demand Generation	Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	
Dependent variable	Utilization of SRH services			Dichotomous scale Qualitative	Semi-structured questionnaire KII/IDIs guides	

3.9 Data Analysis Techniques

Data analysis in this study involved both quantitative and qualitative approaches to comprehensively understand the factors influencing the utilization of sexual and reproductive health (SRH) services among adolescent girls in Kajiado County. Quantitative data collected from the semi-structured were first entered into Microsoft Excel for cleaning and coding, then exported to STATA for analysis. Descriptive Statistics such as frequencies and percentages were essential to summarize demographic distributions and service patterns among the 422 respondents, revealing that 67.3% had basic SRH Awareness but only 41.8% had comprehensive knowledge. To establish between the relationships between categorical variables like age, education and uptake, Pearson's chi-square tests and Correlation Analysis was used because they effectively measure associations without assuming normality. This makes them more suitable for use in this particular Analysis rather than parametric alternatives such as the t-test, ANOVA which requires continuous data. Subsequently, binary logistic regression was adopted because the dependent variable, utilization of SRH was dichotomous. Logistic regression allowed for the estimation of adjusted odds ratios (AORs) and control for confounding variables, identifying key predictors such as knowledge level, marital status, and health financing (AOR = 1.76, $p = 0.018$ for age). Methods such as linear regression were unsuitable, as they violate assumptions of normality and homoscedasticity for binary outcomes.

For the qualitative data, thematic analysis was conducted on the responses from the Key Informant Interviews (KIIs), In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs). The transcripts of interviews and discussions were manually analyzed and also assisted by NVivo

software. Themes related to healthcare accessibility, cultural practices, and community involvement were identified, providing deeper insights into the challenges faced by adolescent girls in utilizing SRH services. This combination of manual and software-assisted analysis helped extract and categorize recurring themes that shaped SRH service utilization behaviors.

A logistic regression model was applied to analyze the quantitative data further. This model was used to determine the various factors that brought influence on the likelihood of SRH service utilization among adolescent girls. The independent variables included factors such as the knowledge of SRH issues, individual factors, and health referral systems. The dependent variable was the utilization of SRH services, coded as a binary outcome (utilized versus not utilized). Logistic regression was chosen due to its ability to model binary outcomes and estimate odds ratios, which helped determine the strength of associations between the predictors and the likelihood of service utilization. Other methods such as simple cross-tabulations or bivariate correlations would only provide unadjusted associations, and linear regression is inappropriate for a binary outcome variable.

Additionally, the overall model fit statistics were assessed to evaluate how well the logistic regression model represented the data. The normality test ensured that the data adhered to the required distribution assumptions, while multicollinearity tests checked for correlations between predictor variables that could skew the results. Heteroscedasticity tests were conducted to assess whether the variance of the residuals remained consistent across all levels of the independent variables. All tests were conducted to ensure the robustness and accuracy of the logistic regression

model in predicting SRH service utilization, ultimately contributing to a more reliable analysis of the factors influencing access to these services in Kajiado County.

3.10 Ethical Considerations

The ethical approval of this study was acquired from several institutions to ensure adherence to ethical research standards. These institutions included the Kenya Methodist University Scientific and Ethics Review Committee, the National Council for Science and Technology (NACOSTI), and the County Director of Health in Kajiado County. In addition, a research permit was granted by NACOSTI for conducting the study in the designated area. The ethical considerations were prioritized, with informed consent being obtained from all participants. The respondents were fully informed about the objectives of the study and the nature of voluntary participation. Confidentiality, anonymity, and voluntary participation were guaranteed, and these principles were clearly outlined in the consent form provided to the participants.

The study adopted several measures in order to protect the respondents through privacy and confidentiality. Written consent and assent forms were obtained from the eligible participants, ensuring they understood the study and had the opportunity to make an informed decision. The written consent was independent of any information provided by the participant, ensuring their responses could not be linked to their identity. For the qualitative data collection, participants' names were not recorded during interviews, and random numbers were assigned to maintain anonymity. These efforts were made in order to ensure that the participants were confident and felt secure in sharing their experiences, which increased their willingness to participate.

Furthermore, all collected data was treated with the utmost confidentiality. Only the research team had access to the information, ensuring its safety and security. The study results did not include

identifying information about the participants and all data was stored in password-protected files accessible solely to the researcher. Instruments used in the data collection were designed to minimize the risk of disclosing sensitive information. At the beginning of each interview, less sensitive topics were discussed to help the respondent become comfortable before addressing more sensitive matters. These measures helped reduce the potential for any adverse effects on the participants and ensured their well-being throughout the study.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

In this chapter findings were presented from the mixed methods data that was collected from adolescent girls in Kajiado County, Kenya. Participants were interviewed through a semi-structured questionnaire. Data presented in this chapter represents the prevalence of the utilization of reproductive health services, sexual and reproductive health knowledge, patient-centeredness practice, individual factors, financial interventions, and health referral systems as they were described by the research participants. The study also presented the logistics regression analysis results and developed a digital health platform for enhancing the utilization of sexual and reproductive health services among adolescent girls in Kajiado County, Kenya.

4.2 Response Rate

The researcher administered 422 questionnaires to adolescent participants from pastoral villages in Kajiado County. These participants were part of the target population aged 10–19 years, selected through random sampling based on the Kenya National Bureau of Statistics enumeration clusters. The calculated sample size of 384, based on Fisher's formula, was increased by 10% to account for non-responsiveness, that resulted in a total sample size of 422. Out of the 422 administered questionnaires, 384 were completed and returned, resulting in a response rate of 91.00%, as illustrated in Table 4.1.

Table 4.1:

Response Rate

Statement	Frequenc y	Percent (%)
Response	384	91.00
Non-Response	38	9.00
Total	422	100.00

The findings in Table 4.1 indicate a response rate of 91.00%. According to (Creswell ,2013), a response rate of 70% or more is considered exceptional. Similarly, (Rea and Parker,1997) suggest that a response rate above 70% is excellent for analysis and reporting. This high response rate can be attributed to the researcher's use of trained assistants for questionnaire distribution, effective communication with participants, and assurances of confidentiality and anonymity during the data collection process. These measures helped ensure respondents' comfort and motivation to participate in the study.

4.3 Socio-demographic Characteristics of Adolescent Girls

Social and demographic characteristics provide essential insights into the population being studied, offering a foundation for understanding patterns, behaviors, and outcomes within specific groups. In this study, the socio-demographic characteristics of adolescent girls were examined to contextualize their utilization of sexual and reproductive health (SRH) services. Key characteristics considered were age, education level, and marital status, as these factors are pivotal in influencing access to and use of SRH services. The socio-demographic details of the study participants are presented in Table 4.2, which provides a comprehensive breakdown of these characteristics.

Table 4.2:

Socio-demographic Characteristics of Adolescent Girls

Characteristic	Frequency	Percent (%)
Age		
10-10 years	141	36.7
16 years	109	28.4
17 years	65	16.9
18 years	52	13.5
19 years	17	4.4
Level of education		
No formal education	73	19.1
Primary school	218	56.4

Secondary school	86	22.4
College/university	7	1.8
Marital status		
Single	312	81.3
Married	64	16.7
Separated	5	1.3
Widowed	3	0.8

The socio-demographic characteristics of adolescent girls in the study reveal a population primarily in the early to mid-adolescence stage, with a significant proportion aged between 10–10 years (36.7%), followed by 16 years (28.4%). Smaller percentages of girls were 17 years (16.9%), 18 years (13.5%), and 19 years (4.4%). This age distribution indicates that most of the participants were in a critical developmental stage where sexual and reproductive health (SRH) concerns may begin to emerge.

In terms of education, a majority of the participants had attained primary school education (56.4%), while 22.4% had completed secondary school. However, a concerning 19.1% had no formal education, which creates a significant barrier to acquiring essential SRH knowledge. Furthermore, only a small percentage of the girls (1.8%) had progressed to college or university, reflecting the limited educational opportunities available to many of them. This limited educational attainment highlights a gap in the girls' access to information and resources related to SRH.

In Regards to marital status, the majority of the girls were single with a percentage of (81.3%), but a notable 16.7% reported being married. The prevalence of early marriage among the participants is concerning, as it can create additional challenges in accessing SRH services and support. Smaller percentages of the girls were separated (1.3%) or widowed (0.8%), further underlining the vulnerabilities faced by adolescent girls in early marriages. This demographic profile underscores

the importance of addressing early marriage as a significant issue affecting SRH access and outcomes in this population.

4.4 Descriptive Analysis

Descriptive analysis is a fundamental statistical approach used to create summary and interpret the basic features of a dataset. It provides an overview of the main patterns, trends, and characteristics within the data, offering valuable insights into the central tendencies, variability, and distribution of variables without making inferences about the larger population. Common measures used in this analysis include mean, median, mode, frequency, percentages, and standard deviation. In the context of this study, descriptive analysis was applied to examine the characteristics of both the dependent and independent variables. The dependent variable, Utilization of SRH services, and independent variables such as ASRH Knowledge, ASRH Client Centeredness, Individual Factors, Health Financing, and the Health Referral System were evaluated. Specifically, Health Financing was assessed through indicators like insurance cover, out-of-pocket expenditure, and voucher use. The findings from this descriptive analysis, which offer a comprehensive summary of the data, are presented in Table 4.3.

Table 4.3:

Summary Statistics

Variable	Observations	Mean	Std. Dev.	Mi n	Ma x
Utilization of SRH services	384	.2083333	.4066463	0	1
ASRH Knowledge	384	.6458333	.478884	0	1
ASRH Client Centeredness	384	.4609375	.4991221	0	1
Individual Factors	384	.234375	.4241602	0	1
Insurance cover	384	.5078125	.5005912	0	1
Out of pocket	384	.3880208	.4879351	0	1
Voucher	384	.1041667	.3058752	0	1
Health Referral system	384	.171875	.377764	0	1

The results in Table 4.3 highlight significant variations in the study variables. For Utilization of SRH services, the mean of 0.208 suggests that the overall use of SRH services is relatively low among the adolescent girls in the study, with a large proportion not utilizing these services. The standard deviation of 0.407 indicates substantial variation in the data, with the range from 0 to 1 reflecting some participants who actively utilized SRH services while others did not. This disparity emphasizes the need to understand the barriers preventing SRH service utilization in the population.

For ASRH Knowledge, the level of knowledge about adolescent sexual and reproductive health is represented by the mean of 0.646, with adolescent girls displaying a range of understanding. The standard deviation of 0.479 demonstrates that while some girls have a good grasp of SRH knowledge, others may be lacking crucial information, which can affect their behavior and decision-making regarding SRH services. Similarly, ASRH Client Centeredness has a mean of 0.461, indicating moderate satisfaction with the client-centeredness of available services, while the standard deviation of 0.499 highlights a significant variability in how participants perceive the responsiveness and suitability of services to their needs.

In terms of Individual Factors, the mean of 0.234 suggests that these factors play a relatively minor role in the utilization of SRH services. With a standard deviation of 0.424, individual factors such as personal characteristics or behaviors vary widely across the participants, influencing their SRH service utilization to varying extents. Regarding Health Financing, the mean for Insurance cover is 0.508, which indicates the number of respondents who have access to health insurance which is slightly more than half. This is important as health insurance coverage can significantly reduce financial barriers to SRH service access. In contrast, the mean of 0.388 for Out of pocket

expenditure points to the financial burden many adolescent girls face when seeking SRH services. The standard deviation of 0.488 underscores the substantial variation in out-of-pocket costs among participants.

Lastly, the results show limited use of Voucher programs, with a mean of 0.104, reflecting that only a small percentage of adolescent girls are able to access SRH services through vouchers. The standard deviation of 0.306 indicates variability in voucher use across the study population. The Health Referral system also shows a low mean of 0.172, suggesting that many adolescent girls do not engage with referral systems when seeking SRH services. This, combined with the wide variation (standard deviation of 0.378), highlights the challenges in the availability and use of health referral systems. In conclusion, while some variables such as ASRH knowledge and health insurance coverage show moderate engagement, there is considerable variability in SRH service utilization and associated factors.

4.5 Correlation Analysis

This is a statistical method that is used to examine the strength and direction of the relationship between two or more variables. This analysis helps to determine whether changes in one variable are associated with changes in another, and if so, to what degree. A positive correlation indicates that as one variable increases, the other tends to increase as well, while a negative correlation suggests that as one variable increases, the other decreases. The strength of the correlation is measured by the correlation coefficient, which ranges from -1 to +1, with values closer to 1 or -1 indicating a stronger relationship. This analysis is crucial in identifying potential associations and understanding the dynamics between variables, without implying causation. The findings of the correlation analysis are presented in Table 4.4.

Table 4.4:*Correlation Matrix*

Variable	Utilization of SRH services	ASRH Knowledge	ASRH Client Centeredness	Individual Factors	Health Financing	Health Referral system
Utilization of SRH services	1.0000					
ASRH Knowledge	0.1117	1.0000				
ASRH Client Centeredness	0.0917	-0.1454	1.0000			
Individual Factors	0.0946	0.0755	-0.0553	1.0000		
Health Financing	-0.0929	0.1227	-0.1992	-0.0704	1.0000	
Health Referral system	-0.1147	-0.0956	0.4927	-0.0565	-0.4054	1.0000

The correlation analysis in Table 4.4 reveals the relationships between the variables in the study.

The correlation coefficient between Utilization of SRH services *and* ASRH Knowledge is 0.1117, indicating a weak positive association. This suggests that higher ASRH knowledge is slightly linked to increased utilization of SRH services among adolescent girls, though the strength of this relationship is minimal. Similarly, a weak positive correlation (0.0917) exists between Utilization of SRH services and ASRH Client Centeredness, implying a slight association between client-centered services and increased SRH utilization.

The relationship between Utilization of SRH services and Individual Factors shows a weak positive correlation (0.0946), indicating a small but positive link between individual characteristics and the use of SRH services. In contrast, Health Financing has a weak negative correlation (-0.0929) with Utilization of SRH services, suggesting that as reliance on specific health financing mechanisms increases, utilization slightly decreases. This might reflect challenges tied to financial barriers in accessing SRH services.

A negative correlation (-0.1147) is observed between Utilization of SRH services and the Health Referral System, indicating a slight inverse relationship. This could suggest that inefficiencies in the referral system may hinder service utilization. Additionally, Health Financing and Health Referral System exhibit a moderate negative correlation (-0.4054), implying that increased reliance on one might correspond to limitations in the other, highlighting potential systemic inefficiencies.

Finally, a strong positive correlation (0.4927) exists between ASRH Client Centeredness and the Health Referral System. This indicates that client-centered services are closely associated with effective referral systems. However, a weak negative correlation (-0.1454) is noted between ASRH Knowledge and ASRH Client Centeredness, suggesting minimal interaction between these two variables. These findings underscore the interplay between service accessibility, client-centeredness, and systemic factors in SRH service utilization.

4.6 Diagnostic Tests

Diagnostic tests are critical in regression analysis to verify that the assumptions underlying the model are satisfied, ensuring the results validity and reliability. These tests help identify and address potential issues that could compromise the accuracy of the findings. In this study, three diagnostic tests were conducted: the normality test, which assesses whether the residuals are normally distributed; the multicollinearity test, which examines the correlation among independent variables to prevent distortions in regression estimates; and the heteroscedasticity test, which checks for unequal variance of residuals across independent variable levels. The results of these tests are presented and discussed in the following sections.

4.6.1 Normality Test

The normality test is a fundamental diagnostic procedure in regression analysis used to assess whether the residuals of the model are normally distributed. This assumption is crucial for the validity of statistical inferences, as it affects hypothesis testing and confidence interval estimation. In this study, the Shapiro-Wilk test was employed to evaluate the normality of the residuals. The Shapiro-Wilk test is widely recognized for its sensitivity and reliability in detecting deviations from normality. The results of the normality test are presented in Table 4.5.

Table 4.5:

Shapiro Wilk Test Results

Variable	Observations	W	V	z	Prob>z
Utilization of SRH services	384	0.98477	4.042	3.317	0.00045
ASRH Knowledge	384	0.99806	0.510	-1.578	0.94269
ASRH Client Centeredness	384	0.99938	0.166	-4.267	0.99999
Individual Factors	384	0.98792	3.206	2.767	0.00283
Health Financing	384	0.98976	2.719	2.376	0.00876
Health Referral system	384	0.97887	5.608	4.095	0.00002

The Shapiro-Wilk test was conducted to assess the normality of the study variables, with the null hypothesis stating that the data follows a normal distribution. A significant p-value (Prob>z) less than 0.05 indicates a deviation from normality. The results showed that the dependent variable, Utilization of SRH services ($W = 0.98477$, $p = 0.00045$), significantly deviates from normality. Among the independent variables, Individual Factors ($W = 0.98792$, $p = 0.00283$), Health Financing ($W = 0.98976$, $p = 0.00876$), and Health Referral System ($W = 0.97887$, $p = 0.00002$) also displayed significant deviations. However, ASRH Knowledge ($W = 0.99806$, $p = 0.94269$) and ASRH Client Centeredness ($W = 0.99938$, $p = 0.99999$) were found to follow a normal distribution.

Despite these findings, the study utilizes logistic regression model, which does not require the assumption of normality for the independent variables or residuals. Logistic regression is robust to non-normal distributions and remains a suitable analytical approach for exploring the relationships between independent and dependent variables in this study. Thus, the deviations from normality in some variables do not compromise the validity of the analysis.

4.6.2 Multicollinearity Test

A multicollinearity test is a diagnostic procedure used to assess the degree of correlation among independent variables in a regression model. High multicollinearity can distort the estimation of coefficients, making it challenging to determine the individual effect of each variable on the dependent variable. In this study, the Variance Inflation Factor (VIF) test was employed to examine multicollinearity among the independent variables. The VIF test quantifies how much the variance of a regression coefficient is inflated due to multicollinearity, with higher VIF values indicating stronger multicollinearity. The results of this test are presented in Table 4.6.

Table 4.6:

Variance Inflation Factor Test Results

Variable	VIF	1/VIF
ASRH Knowledge	2.20	0.455490
ASRH Client Centeredness	2.98	0.335028
Individual Factors	1.31	0.764519
Health Financing		
Out of pocket	1.66	0.604163
Voucher	1.62	0.618068
Health Referral system	1.95	0.514036
Mean VIF	1.95	

The Variance Inflation Factor (VIF) results presented in Table 4.6 provide an assessment of multicollinearity among the independent variables in the study. The VIF values for all variables

fall below the commonly accepted threshold of 10, indicating the absence of severe multicollinearity. A mean VIF value of 1.95 further supports this conclusion, as it suggests a low overall degree of multicollinearity within the regression model.

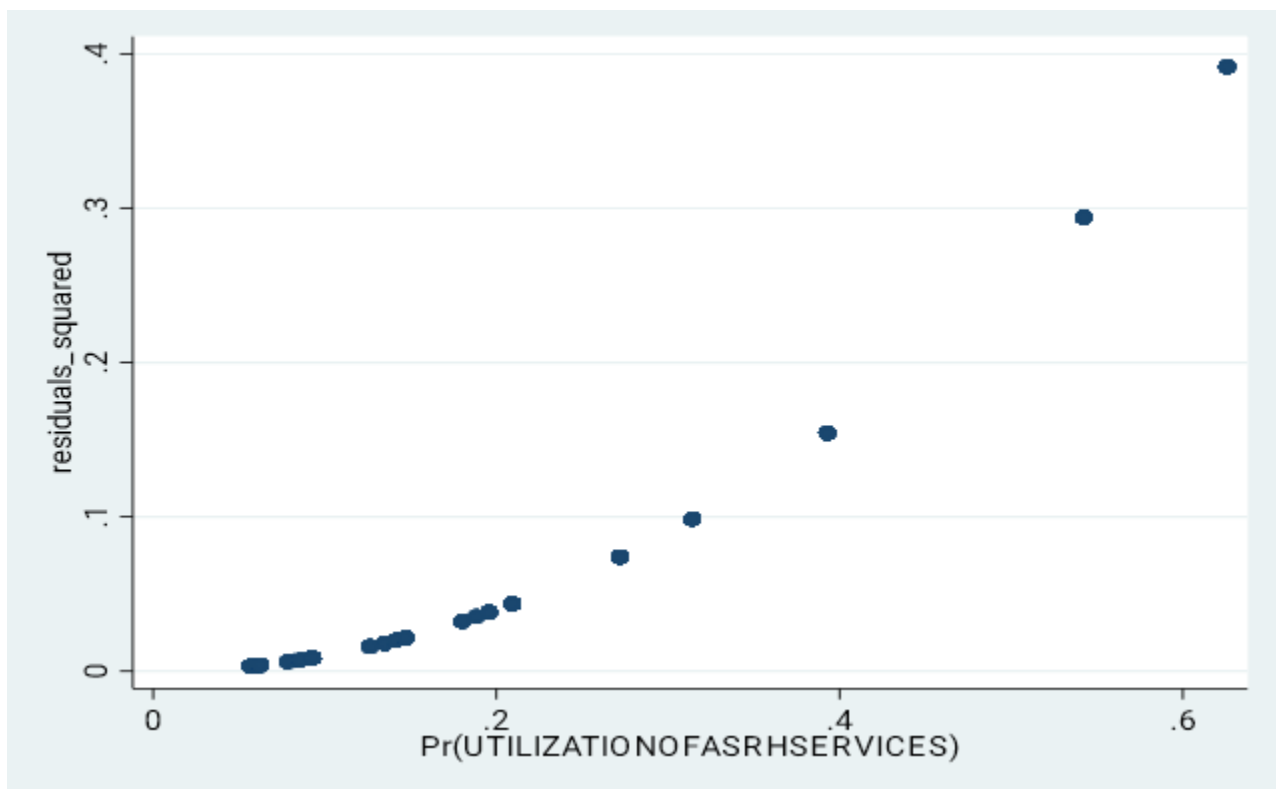
Among the variables, ASRH Client Centeredness has the highest VIF value at 2.98, followed by ASRH Knowledge at 2.20. These values, although higher than others, remain well within the acceptable range, suggesting that these variables are not excessively correlated with the rest. Other variables, including Individual Factors (VIF = 1.31), Health Financing indicators such as Out of Pocket (VIF = 1.66) and Voucher (VIF = 1.62), as well as Health Referral System (VIF = 1.95), exhibit low multicollinearity. The corresponding reciprocal values of VIF ($1/\text{VIF}$) further confirm the independence of these variables. Therefore, the results indicate that the independent variables can be included in the regression analysis without concerns of multicollinearity affecting the reliability of the estimates.

4.6.3 Heteroscedasticity Test

Heteroscedasticity testing is an essential step in regression analysis to ensure that the variance of the error terms is constant across all levels of the independent variables. The presence of heteroscedasticity violates one of the key assumptions of regression, potentially leading to inefficient estimates and incorrect inferences. In this study, a graphical test was employed to assess the presence of heteroscedasticity in the data. The graphical method provides a visual inspection of the residuals' distribution and variability, enabling the identification of patterns or trends that may indicate heteroscedasticity. The results of this test are presented in Figure 4.1.

Figure 4.1:

Residual Plot for Testing Heteroscedasticity



The residual plot presented in Figure 4.1 reveals a pattern indicative of heteroscedasticity, as the spread of the residuals increases and decreases systematically with the fitted values. This suggests that the variance of the residuals is not constant across all levels of the independent variables, which violates one of the key assumptions of regression analysis. In response to this issue,

heteroscedasticity was addressed through the application of robust standard errors, which correct for non-constant variance in the residuals. This adjustment ensures that the standard errors are more reliable, leading to valid statistical inferences despite the presence of heteroscedasticity.

4.7 Utilization of SRH Services

4.7.1 Adolescents Seeking Sexual and Reproductive Health Services

The results in Table 4.29 show the distribution of responses regarding the utilization of sexual and reproductive health (SRH) services among the adolescent girls in the study. A total of 384 participants were surveyed. Of these, 80 participants (20.8%) reported having sought SRH services in their earlier days, while the majority, 304 participants (79.2%), indicated that they had not sought such services. These findings suggest that a significant portion of the adolescent girls in the study had not accessed SRH services, highlighting a potential gap in service utilization.

The data from Table 4.31 highlights a significant gap in the utilization of sexual and reproductive health services, with 79.2% of adolescents not accessing these services, a challenge largely attributed to stigma and fear, as one community health worker explains:

"Despite the resources available at health facilities, many adolescents hesitate to visit due to fear of being judged or stigmatized. It's a constant challenge to make them feel safe and comfortable seeking care." (Community Health Worker 1) [KII, 01]

This fear and stigma make it even harder to reach adolescents in more isolated areas, as another community health worker points out:

"Our role is crucial in identifying adolescents who are in need of SRH services. However, we face challenges in reaching remote areas where young people may not even know these services exist." (Community Health Worker 2) [KII, 02]

4.7.2 Utilization of Sexual and Reproductive Health Services by Age, Education Level, and Marital Status

The results in Table 4.7 highlight differences in the utilization of sexual and reproductive health (SRH) services across age, education level, and marital status. Among age groups, adolescents aged 16 years, reported the highest utilization rate at 9.11% (35 out of 109), while those aged 19 years had no reported utilization (0 out of 17). The Pearson chi-square test for age ($\chi^2 = 10.2934$, $p = 0.004$) indicates a statistically significant association between age and SRH service utilization, suggesting that age is a key determinant of whether adolescents access these services.

In terms of education level, adolescents with primary education exhibited the highest utilization rate at 13.28% (51 out of 218), whereas those with college or university education showed the lowest rate at 0.26% (1 out of 7). Despite these trends, the Pearson chi-square test ($\chi^2 = 2.1629$, $p = 0.539$) revealed no statistically significant relationship between education level and utilization of SRH services. This suggests that while education influences utilization patterns, other factors may play a more significant role.

For marital status, single adolescents had the highest utilization rate at 18.49% (71 out of 312), followed by married adolescents at 2.08% (8 out of 64). However, the chi-square test for marital status ($\chi^2 = 4.9943$, $p = 0.172$) found no statistically significant association. It is important to note that the chi-square test was not performed for variables or subcategories with fewer than five observations, such as "Separated" and "Widowed," as this would violate the test's assumptions.

Table 4.7:

Utilization of Sexual and Reproductive Health Services by Age, Education Level, and Marital Status

Age (Years)	I have sought sexual and reproductive health services in the past.
-------------	--

	Yes	No
10–10	24	117
16	35	74
17	10	55
18	11	41
19	0	17
Pearson chi2(4)	10.2934	
P-value	0.004	
Df	4	
Education Level		
No Formal Education	12	61
Primary	51	167
Secondary	16	70
College/University	1	6
Pearson chi2(3)	2.1629	
P-value	0.539	
Df	3	
Marital Status		
Single	71	241
Married	8	56
Separated	0	5
Widowed	1	2
Pearson chi2(3)	4.9943	
P-value	0.172	
Df	3	

Pearson's chi-square tests showed a significant association between age and utilization of SRH services ($\chi^2(4)=10.29, p=0.004$) but no significant associations for education ($\chi^2(3) = 2.16, p= 0.539$) or marital status

4.7.3 Type of Sexual and Reproductive Health Services Utilized by Adolescents

The results in Table 4.8 reveal varying levels of utilization, of sexual and reproductive health (SRH) services among adolescents. Sexual health education emerged as the most accessed service, with 59 respondents (10.36%) indicating utilization. This relatively higher uptake suggests a focus on information dissemination, which is crucial for empowering adolescents to make informed decisions about their health. However, the low access rate for the majority of respondents (84.64%) points to gaps in educational outreach that need to be addressed.

Other services, such as maternal health services (9.38%) and STI testing and treatment (7.29%), demonstrated limited utilization. The low engagement with STI-related services, despite the known risks associated with unprotected sexual activity, is particularly concerning and may reflect barriers such as stigma, limited availability, or a lack of awareness. Similarly, low access to abortion services (6.51%) and pregnancy testing and counseling (6.25%) indicates that critical support for managing unintended pregnancies is not widely accessed, which could contribute to adverse outcomes for adolescents.

The utilization rates for family planning services (5.47%), contraceptive counseling and provision (4.95%), and gynecological care (3.39%) were the lowest among the services analyzed. This highlights significant challenges in the uptake of preventive and curative SRH services that are vital for adolescent well-being. The findings collectively suggest substantial gaps in service delivery and accessibility, underscoring the need for targeted interventions, such as improved service availability, adolescent-friendly policies, and enhanced awareness campaigns, to bridge these gaps and promote the health of adolescents.

Table 4.8:

Type of Sexual and Reproductive Health Services Utilized by Adolescents

Service Utilized	Yes	No
Sexual health education	59	325
Maternal health services(Prenatal care, post-natal care, and support services for pregnant individuals)	36	348
STI testing and treatment (STI's including HIV/AIDS, Gonorrhea, chlamydia, syphilis and HPV)	28	356
Abortion services	25	359
Pregnancy testing and counseling	24	360
Family planning services	21	363

Contraception, counseling and provision (Birth control pills, Injections, condoms and implants,)	19	365
Others such as Gynecological care	13	371
n=384		

The data from Table 4.8 highlights a significant gap in the utilization of sexual and reproductive health services, with many adolescents not utilizing key services. This challenge is largely attributed to stigma and cultural beliefs, as one guidance and counseling teacher explains:

"Many families discourage their children from seeking SRH services because of cultural beliefs. There is a lot of stigma, especially when it comes to family planning or abortion." (Guidance and Counseling Teacher 1) [KII, 03]

A community health worker adds,

"The health services are available, but many adolescents do not have the means to access them due to distance and lack of transport. This limits their ability to seek timely care." (Community Health Worker 3) [KII, 04]

4.8 Influence of Adolescents' Knowledge of SRH on the Utilization of SRH Services in

Kajiado County

4.8.1 Understanding of Sexual and Reproductive Health

The results from Table 4.29 show that 64.58% of the adolescents (248 individuals) reported understanding the term "sexual and reproductive health," while 35.42% (136 individuals) indicated that they did not understand the term. This suggests that the majority of the adolescents in the study have a basic understanding of sexual and reproductive health, which is an encouraging finding in terms of awareness within the population. However, a significant portion (35.42%) still lacks this understanding, highlighting a potential area for further education and awareness programs. The total number of responses was 384, with the distribution indicating a clear difference in understanding among the adolescents. As per the conceptual framework variable on ASRH

Knowledge , operationalized via adolescents' awareness and experience of SRH, these results reflect the level of SRH awareness among participants.

The results from Table 4.31 show that while a majority of adolescents report understanding the term 'sexual and reproductive health,' a significant portion still lacks this knowledge, highlighting the need for further education. As one medical superintendent points out,

"Many adolescents still lack basic knowledge of SRH services. Most only become aware when they are faced with a crisis, such as pregnancy or STIs, which is too late." (Medical Superintendent 1) [KII, 05]

This gap in understanding is echoed by a public health officer, who adds,

"There's a knowledge gap among adolescents about the full range of services available. They often come to us with very limited understanding, and we have to start from scratch to educate them." (Public Health Officer 1) [KII, 06]

4.8.2 Understanding of Sexual and Reproductive Health by Age, Education Level, and Marital Status

The results from Table 4.9 show the understanding of sexual and reproductive health (SRH) by age, education level, and marital status. Regarding age, the majority of adolescents aged 10-10 years (22.14%) and 16 years (18.75%) reported understanding SRH, while a smaller proportion from older age groups, such as 17 years (13.02%) and 18 years (7.29%), understood the term. The 19 years' age group had the smallest proportion of participants (3.39%) understanding SRH. The Pearson chi-square statistic for age yielded a chi-square value of 9.2411 with a p-value of 0.055, suggesting no statistically significant relationship between age and understanding SRH, though the p-value is close to the conventional threshold of 0.05.

When considering current education level, the results show that the majority of individuals with no formal education (10.70%) and primary education (35.65%) reported understanding SRH. However, fewer individuals with secondary education (16.41%) and college/university education (1.82%) reported understanding SRH. A Pearson chi-square statistic of 9.2170 with a p-value of 0.027 indicates a statistically significant relationship between education level and understanding SRH, suggesting that education level is a significant factor in understanding SRH among adolescents.

Regarding marital status, the majority of singles (53.65%) understood SRH, while a smaller proportion of married (8.85%), separated (1.30%), and widowed (0.78%) individuals reported understanding SRH. The Pearson chi-square statistic for marital status yielded a chi-square value of 8.3445 with a p-value of 0.039, indicating a statistically significant association between marital status and understanding SRH. It is important to note that the chi-square test was not performed for variables or subcategories with fewer than five observations, such as "Separated" and "Widowed," as this would violate the test's assumptions.

Table 4.9:

Understanding of Sexual and Reproductive Health by Age, Education Level, and Marital Status

Age (Years)	Do you understand the term sexual and reproductive health?	
	Yes	No
10–10	85	56
16	72	37
17	50	10
18	28	24
19	13	4
Pearson chi2(4)	9.2411	
P-value	0.055	
Df	4	
Education Level		
No Formal Education	41	32
Primary	137	81

Secondary	63	23
College/University	7	0
Pearson chi2(3)	9.2170	
P-value	0.027	
Df	3	

Marital Status

Single	206	106
Married	34	30
Separated	5	0
Widowed	3	0
Pearson chi2(3)	8.3445	
P-value	0.039	
Df	3	

*Pearson's chi-square test showed **no significant association** between **age** and understanding of SRH ($\chi^2(4) = 9.24$, $p = 0.055$), but significant associations for **education level** ($\chi^2(3) = 9.22$, $p = 0.027$) and **marital status***

4.8.3 Sexual and Reproductive Health Issues Experienced by Adolescents

Table 4.10 presents the sexual and reproductive health issues experienced by adolescents, with unwanted pregnancies being the most prevalent, affecting 116 adolescents (30.21% of the total sample). Followed by this is sexually transmitted infections, including HIV, experienced by 69 adolescents (17.97%), and early forced marriages reported by 68 adolescents (17.71%). Other significant issues include female genital mutilation, affecting 61 adolescents (10.89%), and unsafe abortions, experienced by 59 adolescents (10.36%). The "Other" category, which includes unspecified issues, was reported by 11 adolescents, accounting for 2.86% of the sample. The total number of responses is 384, representing 100% of the sample.

Table 4.10:

Sexual and Reproductive Health Issues Experienced by Adolescents

Sexual and Reproductive Health Issues	Frequenc y	Percent (%)
Unwanted pregnancies	116	30.21
Sexually transmitted infections HIV	69	17.97
Early forced marriages	68	17.71
Female genital mutilation	61	10.89
Unsafe abortions	59	10.36

Other	11	2.86
Total	384	100

The findings from Table 4.10 reveal a range of significant sexual and reproductive health issues affecting adolescents, with unwanted pregnancies and sexually transmitted infections among the most prevalent. These challenges are further exacerbated by cultural practices and beliefs, as one medical superintendent explains:

"Cultural practices like early marriage and the belief that SRH is only necessary for married women prevent many young girls from accessing services, even when they need them." (Medical Superintendent 2) [KII, 07]

4.8.4 Awareness of Sexual and Reproductive Health Services Among Adolescents

The results in Table 4.11 reveal varying levels of awareness among adolescents regarding sexual and reproductive health services. The highest level of awareness was reported for services categorized as "Others," with 23.70% of respondents identifying these services. Delivery services were the second most recognized, noted by 17.45% of adolescents, while 10.36% were aware of general information on sexual and reproductive health (SRH) services. Voluntary testing and counseling followed, with 13.02% of respondents indicating familiarity.

Awareness of family planning-related services was relatively lower. Pills for family planning were identified by 9.90% of adolescents, while condoms and pre-natal care each accounted for 7.81%. Injections for family planning were the least recognized service, with only 4.95% of respondents reporting awareness. These findings demonstrate a disparity in awareness levels, with adolescents being more familiar with delivery services and general SRH information compared to specific family planning methods.

Table 4.11:

Awareness of Sexual and Reproductive Health Services Among Adolescents

Sexual and Reproductive Health Services	Frequenc y	Percent (%)
Others	91	23.70
Delivery services	67	17.45
Information on SRH services	59	10.36
Voluntary testing and counseling	50	13.02
Pills for family planning	38	9.90
Condoms for family planning	30	7.81
Pre-natal care	30	7.81
Injections for family planning	19	4.95
Total	384	100

The findings reveal varying levels of awareness of sexual and reproductive health services among adolescents, with a greater familiarity observed for services such as delivery care and general SRH information. However, awareness of specific family planning methods remains limited. As a guidance and counseling teacher explains:

"...the awareness campaigns in schools are limited, and many adolescents don't know where to find these services. They often rely on scattered information from peers or the internet, which is not always accurate or comprehensive. In many cases, the information shared during school sessions barely scratches the surface, leaving critical topics unaddressed. This lack of depth means that adolescents remain unaware of vital services, such as contraception, STI testing, and counseling, and they end up navigating these issues without adequate support or understanding. The gap in knowledge is particularly evident in rural areas where adolescents have even fewer resources or platforms to learn about their sexual and reproductive health." (Guidance and Counseling Teacher 2)
[KII, 08]

Additionally, peer-to-peer dissemination of information often leads to confusion, as noted by a community health worker:

"Some adolescents hear about these services from their peers, but the information is often incomplete or inaccurate. Without proper guidance, they are left confused." (Community Health Worker 4) [KII, 09]

4.8.5 Sources of Information on Sexual and Reproductive Health Services

Nearly half of the adolescents (46.88%) reported learning about sexual and reproductive health services from schools, making it the most significant source of information, as shown in Table 4.12. Health facilities were the second most mentioned source, with 26.82% of adolescents identifying them as their information source. Other sources, such as community initiatives or unspecified channels, were cited by 23.96% of respondents. Parents accounted for the smallest proportion, with only 21.88% of adolescents acknowledging them as a source of information on sexual and reproductive health services. This indicates that formal education and health institutions play a more prominent role in disseminating information compared to informal or familial sources.

Table 4.12:

Sources of Information on Sexual and Reproductive Health Services

Source	Yes	No
School	180 (46.88%)	204 (53.13%)
Health Facilities	103 (26.82%)	281 (73.18%)
Other	92 (23.96%)	292 (76.04%)
Parents	84 (21.88%)	300 (78.13%)

n=384

The findings highlight that key sources of information on sexual and reproductive health services for adolescents are schools and health facilities, with schools playing the most significant role. However, as one guidance and counseling teacher points out,

"Schools are a crucial avenue for reaching adolescents, but the information provided is often surface-level. Many students leave with more questions than answers..." (Guidance and Counseling Teacher 3) [KII, 10]

Health facilities also contribute significantly, though their potential to provide broader education remains underutilized, as noted by a public health officer:

"...health facilities are a reliable source of information, but adolescents rarely come to us unless they have a specific issue. We miss the opportunity to provide them with broader education on SRH services." (Public Health Officer 2) [KII, 11]

4.8.6 Awareness of Health Service Providers Offering Sexual and Reproductive Health Services for Adolescent Girls

Majority of adolescents (92.97%) reported being aware of sexual and reproductive health services being offered by health service providers for adolescent girls in their area, as shown in Table 4.31. In contrast, only a small proportion (7.03%) indicated a lack of awareness. These findings suggest a high level of awareness among adolescents regarding the availability of such services in their communities.

The findings indicate a high level of awareness among adolescents regarding the sexual and reproductive health services by health service providers offered for adolescent girls. However, as one community health worker notes,

"Adolescents know the providers exist, but knowing doesn't always translate to accessing services. Many are still hesitant due to cultural pressures or fear of judgment..." (Community Health Worker 5) [KII, 12]

4.8.7 Services Offered by Health Service Providers in the Facility

Table 4.13 presents the services offered by health service providers in the facility. The most frequently mentioned service was Comprehensive Sexuality Education, with 19.27% of respondents indicating its availability. This was closely followed by Injections for family planning (18.23%) and Voluntary testing and counseling (11.72%). Delivery services were reported by 12.76% of adolescents, while Pre-natal care was mentioned by 11.46%. Other services, such as Condoms for family planning, Pills for family planning, and Family planning, were cited by smaller proportions, 8.07%, 7.29%, and 7.81%, respectively. Only a small percentage, 1.56%, indicated that information on sexual and reproductive health was provided, and 0.78% cited other unspecified services. A minimal 1.04% of respondents were unaware of the services provided in the health facility.

Table 4.13:

Services Offered by Health Service Providers in the Facility

Service	Frequency	Percent (%)
Comprehensive Sexual Education	74	19.27
Injections for Family Planning	70	18.23
Delivery Services	49	12.76
Voluntary Testing and Counselling	45	11.72
Pre-natal Care	44	11.46
Family Planning	30	7.81
Condoms for Family Planning	31	8.07
Pills for Family Planning	28	7.29
Information on Sexual and Reproductive Health	6	1.56
Other Unspecified Services	3	0.78
Unaware of Services Provided	4	1.04
Total	384	100

The data suggests a diverse range of services offered by health service providers in the facility, with Comprehensive Sexuality Education being the most frequently mentioned. These high levels

of SRH awareness translated into increased service use ,in the multivariable model higher ASRH knowledge significantly raised the odds of using SRH services .This thereby supporting Objective 1 .As one Public Health Officer highlights,

"In our facility, we offer a variety of services, but the availability of comprehensive sexuality education is the most important. It's the foundation for everything else, helping adolescents make informed decisions about their sexual and reproductive health." (Public Health Officer 3) [KII, 13]

4.9 Influence of Patient-Centered Practices in Health Facilities on the Utilization of SRH Services among Adolescent Girls in Kajiado County

4.9.1 Participation in Adolescent Sexual and Reproductive Health (ASRH) Forums

Table 4.29 presents the participation of adolescents in forums where Adolescent Sexual and Reproductive Health (ASRH) issues were discussed. The results show that 46.1% of adolescents (177 individuals) have participated in such forums, while a slightly higher percentage, 53.9% (207 individuals), have not. This indicates that while nearly half of the adolescents have been involved in ASRH discussions, a majority have not yet had the opportunity to engage in such forums, suggesting potential gaps in access to or awareness of these platforms for discussing ASRH matters. As per the conceptual framework variable on ASRH Client Centeredness (measured by adolescent participation), the forum participation rate indicates how actively adolescents engage with SRH activities.

As one guidance and counseling teacher points out,

"While some adolescents have had the chance to participate in ASRH forums, many are still missing out. These forums provide essential space for them to discuss issues that directly affect their health, but unfortunately, access to such

opportunities remains limited for a significant number of adolescents."
(Guidance and Counseling Teacher 4) [KII, 14]

4.9.2 Participation in Adolescent Sexual and Reproductive Health (ASRH) Forums by Age, Education Level, and Marital Status

The results in Table 4.14 indicate a significant association between age and participation in adolescent sexual and reproductive health (ASRH) forums. The highest participation was observed among adolescents aged 10-10 years, with 17.45% reporting they had participated in ASRH forums, followed by those aged 16 years at 10.63%. As the age group increased, participation declined, with no adolescents aged 19 years reporting participation. The Pearson chi-square test statistic (18.9062) with a p-value of 0.001 suggests that age is a statistically significant factor in determining participation in ASRH forums.

In terms of education level, the results show that 19.01% of adolescents with no formal education had participated in ASRH forums, which was the highest among the education categories. Participation was lower among those with primary education (27.08%), while no secondary or college/university students reported participation. The Pearson chi-square statistic (165.1228) with a p-value of 0.001 indicates a strong, statistically significant relationship between education level and participation in ASRH forums, with adolescents having lower education levels being more likely to engage in these forums.

With regards to marital status, the majority of participants were single (29.44%), with 16.67% of married adolescents reporting participation in ASRH forums. No participation was recorded among separated or widowed individuals. The Pearson chi-square statistic (93.9347) with a p-value of 0.001 indicates a significant relationship between marital status and participation in ASRH forums. It is important to note that the chi-square test was not performed for variables or

subcategories with fewer than five observations, such as "Separated" and "Widowed," as this would violate the test's assumptions.

Table 4.14:

Participation in Adolescent Sexual and Reproductive Health (ASRH) Forums by Age, Education Level, and Marital Status

Age (Years)	I have participated in a forum where ASRH issues were discussed.	
	Yes	No
10–10	67	74
16	60	49
17	29	36
18	21	31
19	0	17
Pearson chi2(4)	18.9062	
P-value	0.001	
Df	4	
Education Level		
No Formal Education	73	0
Primary	104	114
Secondary	0	86
College/University	0	7
Pearson chi2(3)	165.1228	
P-value	0.001	
Df	3	
Marital Status		
Single	113	199
Married	64	0
Separated	0	5
Widowed	0	3
Pearson chi2(3)	93.9347	
P-value	0.001	
Df	3	

Note: Pearson's chi-square tests indicated significant associations between age ($\chi^2(4)=18.91, p = 0.001$), education level ($\chi^2(3) = 165.12, p = 0.001$), and marital status ($\chi^2(3) = 93.93, p = 0.001$) with participation in ASRH forums.

4.9.3 Forums Participated in for Adolescent Sexual and Reproductive Health Education

Table 4.10 shows the types of forums in which adolescents participated for sexual and reproductive health (SRH) education. The highest percentage of adolescents, 33.85%, reported participating in community dialogues, followed by 31.77% who participated in school education programs. Peer-

to-peer educational programs were the next most common forum, with 22.40% of adolescents taking part. Church meetings were the least common source of SRH education, with 11.98% of adolescents attending these forums.

These results suggest that community-based discussions and school programs are the most frequently utilized platforms for SRH education among adolescents, with a significant portion of respondents engaging in both. Peer-to-peer educational programs also play a notable role in disseminating information, while church meetings appear to have a smaller reach in terms of SRH education among adolescents.

Table 4.10:

Forums Participated in for Adolescent Sexual and Reproductive Health Education

Forum	Frequenc y	Percent (%)
School education programs	122	31.77
Community dialogues	130	33.85
Church meetings	46	11.98
Peer to peer educational programs	86	22.40
Total	384	100

4.9.4 Organizers of Adolescent Sexual and Reproductive Health Education Forums

The results presented in Table 4.16 illustrate the main organizers of forums on adolescent sexual and reproductive health education. Non-Governmental Organizations (NGOs) were identified as the leading organizers, accounting for 38.28% of the responses. This highlights their central role in creating platforms for awareness and education on adolescent sexual and reproductive health. Community-Based Organizations (CBOs) were the second most frequently mentioned organizers, representing 19.01% of responses. Teachers and Faith-Based Organizations (FBOs) also

contributed significantly, with 10.10% and 13.80% of respondents, respectively, recognizing their involvement.

Government and community leaders were noted as organizers by 13.02% of respondents, indicating their collaborative role in supporting such initiatives. A small proportion (0.78%) attributed the organization of these forums to other entities. These findings emphasize the collective efforts of NGOs, CBOs, teachers, and FBOs, alongside governmental and community leadership, in advancing education on adolescent in regards to sexual and reproductive health. A diversity of organizers suggests a multi-stakeholder approach to addressing the health education needs of adolescents.

Table 4.16:

Organizers of Adolescent Sexual and Reproductive Health Education Forums

Organizer	Frequenc y	Percent (%)
NGOs	147	38.28
FBOs	53	13.80
Teacher	58	10.10
Government and community leaders	50	13.02
CBOs	73	19.01
Others	3	0.78
Total	384	100

4.9.5 Consideration of Adolescent Perspectives in ASRH Forums

The results presented in Table 4.31 reveal that a significant proportion of adolescents (59.90%) reported that their views were not taken into consideration during Adolescent Sexual and Reproductive Health (ASRH) forums. This indicates that a majority of participants felt excluded from active engagement or decision-making processes in these forums. On the other hand, 40.10% of the respondents acknowledged that their perspectives were considered during the discussions.

This suggests that while some efforts were made to involve adolescents in the dialogue, there remains a substantial gap in ensuring inclusivity and active participation across the board.

4.9.6 Adolescents visits to a health facility for SRH services

The results presented in Table 4.31 indicate that a significant majority of adolescents (66.93%) reported not having visited a health facility for sexual and reproductive health (SRH) services. In contrast, only 33.07% of adolescents acknowledged having visited such facilities for SRH-related needs. These findings suggest that there are potential barriers or limitations preventing many adolescents from accessing health facilities for SRH services. This highlights the need for targeted interventions to address these barriers, improve accessibility, and promote the utilization of health facilities among adolescents for their sexual and reproductive health needs.

The data from Table 4.31 reveals that a substantial proportion of adolescents, have not visited a health facility for SRH services, suggesting the presence of barriers hindering access. As the Area Chief explains,

"The main barrier is the cost. Even with services being available, many adolescents cannot afford the fees, and so they either skip visits or don't come at all." (Area Chief) [KII, 10]

4.9.7 Services Accessed at Health Facilities

The results presented in Table 4.17 show the types of services accessed by adolescents at health facilities. Voluntary testing and counseling emerged as the most frequently accessed service, reported by 22.92% of respondents. This is followed by adolescents who were unsure about the services provided at health facilities, constituting 17.19% of the sample. Injections for family planning were the third most accessed service, with 14.58% of respondents indicating they had received this service.

Other services accessed include delivery services (13.80%), pre-natal care (12.76%), and information on sexual and reproductive health, including condoms (10.68%). Pills for family planning were reported by 7.29% of respondents, while only 0.78% accessed other unspecified services. These findings highlight the diverse range of services accessed by adolescents, with voluntary testing and counseling taking precedence, though a significant proportion remains unaware of the specific services available.

Table 4.17:

Services Accessed at Health Facilities

Service	Frequency	Percent (%)
Voluntary testing and counseling	88	22.92
Information on sexual and reproductive health Condoms	41	10.68
Pills for family planning	28	7.29
Injections for family planning	56	14.58
Pre-natal care	49	12.76
Delivery services	53	13.80
I don't know the services provided in this health facility	66	17.19
Others	3	0.78
Total	384	100

4.9.8 Adolescents' Experiences with Sexual and Reproductive Health Service Providers

The results in Table 4.31 reflect adolescents' experiences with sexual and reproductive health (SRH) service providers. A majority of adolescents (61.46%) reported being treated with dignity during their visits to SRH providers, indicating a generally positive perception of the treatment they received. Furthermore, more than half (56.25%) stated that their concerns were addressed during counseling sessions, suggesting that providers were attentive to their needs. However, a substantial portion (43.75%) felt that their concerns were not fully considered, highlighting room for improvement in communication between providers and adolescents.

Despite the positive responses regarding treatment and counseling, a significant number of adolescents (66.93%) reported not receiving the services of their choice, indicating a gap in service provision. Only 33.07% of adolescents were able to access the services they sought, which points to potential barriers such as limited availability, provider constraints, or adolescents' awareness of available services. This suggests that while the majority of adolescents' experience respectful treatment and some degree of attentiveness, there are notable challenges in ensuring that their specific SRH needs are fully met.

4.9.9 Healthcare Provider's Attitude Towards Adolescents

The results from Table 4.18 indicate that the majority of adolescents rated their healthcare provider's attitude positively. Specifically, 51.04% of respondents reported that the attitude of their healthcare provider was "Good," while 40.89% rated it as "Very good." This suggests that most adolescents had a favorable experience with the healthcare provider's demeanor and approach. On the other hand, a smaller proportion of respondents expressed dissatisfaction, with 4.69% indicating an "Average" experience and 3.39% describing the provider's attitude as "Bad." Overall, the findings reflect that a significant number of adolescents feel positively about the healthcare provider's attitude towards them during their interactions with sexual and reproductive health services.

Table 4.18:

Healthcare Provider's Attitude Towards Adolescents

Response	Frequenc y	Percent (%)
Very good	107	40.89
Good	196	51.04
Average	18	4.69
Bad	13	3.39
Total	384	100

4.9.10 Awareness of Available Sexual and Reproductive Health Service Providers in the Area

The majority of adolescents (84.90%) reported being aware of places where they can obtain sexual and reproductive health (SRH) services in their area as shown in Table 4.31. In contrast, a smaller proportion (10.10%) indicated that they were not aware of such service providers. These findings suggest that most adolescents have access to information or knowledge regarding the availability of SRH services in their communities, which could play a critical role in promoting better utilization of these services.

4.10 Effect of Individual Factors on the Utilization of SRH Services among Adolescent Girls in Kajiado County

4.10.1 Impact of Religious Doctrines on Access to SRH Services for Adolescents

Table 4.19 presents the responses regarding the impact of religious doctrines on access to sexual and reproductive health (SRH) services for adolescents. A significant portion of the respondents, 40.89% (107 out of 384), were uncertain about whether religious doctrines affect access to SRH services. Meanwhile, 23.44% (90 respondents) agreed that religious doctrines do have an impact on access to SRH services, suggesting that a minority of adolescents perceive religion as a barrier or influencer. In contrast, 35.68% (137 respondents) reported that religious doctrines do not affect access to these services, indicating that a considerable number of adolescents feel that religious beliefs are not a hindrance to obtaining SRH services. As per the conceptual framework's Individual Factors variable (operationalized via religion), these results show how religious beliefs influence access to SRH services.

This distribution highlights a diversity of views, with the majority either uncertain or perceiving no impact, suggesting that factors beyond religious beliefs may play a more prominent role in adolescents' access to SRH services. The findings underscore the complexity of the issue, where cultural, social, and individual beliefs may intersect with religious perspectives.

Table 4.19:

Impact of Religious Doctrines on Access to SRH Services for Adolescents

Response	Frequency	Percent (%)
Yes	90	23.44
No	137	35.68
Not Sure	107	40.89
Total	384	100.00

The findings suggest that while some adolescents recognize religious doctrines as a potential barrier to accessing SRH services, a larger proportion either perceives no impact or remains uncertain. This complexity is reflected in the quote from the focus group discussion, where it was noted that:

"In our community, religious beliefs sometimes make it difficult for adolescents to talk openly about sexual health. Some parents discourage their children from seeking services, believing that it goes against their faith." (FGD-1)

4.10.2 Impact of Religious Doctrines on Access to SRH Services by Age, Education Level, and Marital Status

The analysis of the impact of religious doctrines on access to sexual and reproductive health (SRH) services for adolescents, segmented by age, education level, and marital status, reveals varying trends. For age, the results indicate that adolescents aged 10-10 years account for the highest proportion of those affirming that religious doctrines affect access to SRH services (8.85%).

However, the Pearson chi-square test conducted for age, with a chi-square value of 8.5842 and a p-value of 0.379, suggests no statistically significant association between age and the perception of religious doctrines impacting access to SRH services. Chi-square analysis was not conducted for individual age groups with counts less than 5, as it would violate the test's assumptions.

Regarding education level, the chi-square test ($\chi^2 = 35.2949$, p-value = 0.001) indicates a statistically significant relationship between education level and the perception of religious doctrines affecting access to SRH services. Those with primary education (13.02% and 24.48% for Yes and No, respectively) represent the highest proportion in comparison to other education levels. Chi-square analysis was valid here, given that the cell counts for each category met the assumptions of the test. Similarly, for marital status, the chi-square test ($\chi^2 = 48.7857$, p-value = 0.001) reveals a significant association. The majority of single adolescents (19.53% for Yes, 24.22% for No) perceive religious doctrines impacting access to SRH services. Chi-square analysis was again applicable as all categories met the test's requirements. Detailed results are as shown in Table 4.20.

Table 4.20:

Impact of Religious Doctrines on Access to SRH Services by Age, Education Level, and Marital Status

Age (Years)	Are there specific religious doctrines that impact access to SRH services for adolescents?		
	Yes	No	Not Sure
10–10	34	50	57
16	21	34	54
17	18	24	23
18	12	20	20
19	5	9	3
Pearson chi2(8)	8.5842		
P-value	0.379		
Df	8		
Education Level			

No Formal Education	10	8	50
Primary	50	94	74
Secondary	22	32	32
College/University	3	3	1
Pearson chi2(6)	35.2949		
P-value	0.001		
Df	6		
Marital Status			
Single	75	93	144
Married	9	42	13
Separated	5	0	0
Widowed	1	2	0
Pearson chi2(6)	48.7857		
P-value	0.001		
Df	6		

The chi-square test showed no significant association with age ($\chi^2(8) = 8.58, p = 0.379$), but significant associations for education level ($\chi^2(6) = 35.29, p = 0.001$) and marital status

4.10.3 Religious Doctrines and Their Impact on Adolescent Sexual and Reproductive Health

Views

Table 4.21 presents responses regarding the impact of various cultural and religious beliefs on adolescents' views on sexual and reproductive health (SRH). A substantial proportion of respondents (44.79%) were unsure about the influence of stigma surrounding premarital sex on SRH services, while 27.86% agreed and 27.34% disagreed that stigma affects access. Similarly, 46.88% of respondents were uncertain about the effect of abstinence-only education on SRH services, with 27.08% agreeing and 26.04% disagreeing. Regarding the prohibition of contraception, 37.76% of respondents were unsure, while 26.82% agreed that it impacts SRH access, and 35.42% disagreed. A similar trend was observed for the cultural belief of placing a high value on virginity, where 52.08% were unsure, 26.04% agreed, and 21.88% disagreed.

In terms of opposition to abortion, 50.78% of respondents were unsure about its impact on SRH services, with 25.52% agreeing and 23.70% disagreeing. These findings suggest that many adolescents are uncertain about the influence of these cultural and religious beliefs on SRH access

and services. This uncertainty indicates a need for greater awareness and education on how such beliefs may shape perceptions and utilization of SRH services, highlighting the importance of addressing these cultural and religious factors in SRH education and policy.

Table 4.21:

Religious Doctrines and Their Impact on Adolescent Sexual and Reproductive Health Views

Cultural and Religious Beliefs	Yes	No	Not Sure
Stigma surrounding premarital sex	107	105	172
Abstinence-only education	104	100	180
Prohibition of contraception	103	136	145
Placing high value on virginity	100	84	200
Opposition to abortion	98	91	195

n=384

As shown in the table, a significant number of adolescents remain uncertain about the influence of cultural and religious beliefs on their sexual and reproductive health (SRH) views, with notable proportions unsure about the stigma surrounding premarital sex, abstinence-only education, and opposition to abortion. This uncertainty is reflected in a quote from one of the focus group discussion (FGD) participants:

"In our community, there is a lot of pressure to maintain virginity, and many believe that discussing contraception is wrong. This makes it hard for us to get clear information or access services, as we are afraid of being judged by our families or community leaders." (FGD-2)

4.10.4 Cultural Practices, Stigma, and Accessibility of Sexual and Reproductive Health Services for Adolescents

The findings in Table 4.22 reveal significant cultural and structural barriers to open communication and access to sexual and reproductive health (SRH) services for adolescents. A substantial majority (51.6%) of respondents were unsure whether cultural practices promote or

hinder open communication about SRH within families, suggesting a lack of clarity or awareness around this issue. However, 26.3% acknowledged the presence of such cultural practices, highlighting that some environments might encourage open dialogue. Cultural norms of openness showed similar patterns, with only 26.6% affirming their presence, 26.8% denying them, and 46.6% unsure, reflecting limited cultural support for open discussions about SRH.

When considering rites of passage, 45.1% of participants were uncertain about their influence on SRH communication, while 19.5% recognized their role, indicating that traditional ceremonies may not be universally relevant to adolescents' SRH views. Regarding cultural practices or rites of passage influencing SRH service utilization, 48.2% were unsure, with only 16.9% identifying their significance. Among specific practices, initiation ceremonies were identified as influential by 34.6% of respondents, while arranged marriages and cultural norms regarding virginity were recognized by 24.2% and 16.4%, respectively, suggesting that these customs play varying roles in shaping adolescents' SRH access and perspectives.

The data also underscores the role of stigma and societal expectations in shaping SRH views. While 31.5% of respondents acknowledged stigma or taboo surrounding SRH services, 45.1% were unsure of its existence. Common sources of stigma included cultural beliefs and traditions (33.3%), stigma surrounding premarital sex (32.8%), and societal expectations and gender roles (27.6%). Furthermore, a lack of comprehensive sex education (27.9%), fear of judgment and discrimination (33.6%), and concerns about privacy and confidentiality (30.7%) emerged as critical barriers. Cultural myths and misconceptions also played a role, with 18% of respondents affirming their impact, though over half (51%) were unsure. As per the conceptual

framework's Individual Factors variable (operationalized through cultural practices and stigma measures), the data on cultural norms and stigma reflect the influence of culture on SRH access.

Finally, the accessibility of health facilities providing SRH services remains a concern. Only 19% of respondents reported the availability of such facilities near them, while 38.5% indicated their absence and 42.4% were unsure. Additionally, only 17.4% of participants felt that these facilities were well-equipped with youth-friendly spaces, while 49.5% disagreed, underscoring the need for more tailored healthcare services for adolescents. These findings highlight the urgent need for culturally sensitive interventions to address stigma, enhance SRH education, and improve access to youth-friendly SRH services.

Table 4.22:

Cultural Practices, Stigma, and Accessibility of Sexual and Reproductive Health Services for Adolescents

Cultural Practices, Stigma, and Accessibility	Response	Frequency	Percent (%)
Cultural practices that promote or hinder open communication about SRH within families	Yes	101	26.3
	No	85	22.1
	I'm not sure	198	51.6
Cultural norms of openness	Yes	102	26.6
	No	103	26.8
	I'm not sure	179	46.6
Rites of passage	Yes	75	19.5
	No	136	35.4
	I'm not sure	173	45.1
Cultural practices or rites of passage related to adolescence that influence SRH service utilization	Yes	65	16.9

	No	134	34.9
	I'm not sure	185	48.2
Initiation ceremonies	Yes	133	34.6
	No	87	22.7
	I'm not sure	164	42.7
Arranged marriages	Yes	93	24.2
	No	98	25.5
	I'm not sure	193	50.3
Cultural norms regarding virginity	Yes	63	16.4
	No	104	27.1
	I'm not sure	217	56.5
Gender-specific roles and expectations	Yes	53	13.8
	No	190	49.5
	I'm not sure	141	36.7
Cultural Taboos and Silence Surrounding Sexuality	Yes	56	14.6
	No	180	46.9
	I'm not sure	148	38.5
Stigma or taboo surrounding SRH services	Yes	121	31.5
	No	90	23.4
	I'm not sure	173	45.1
Cultural beliefs and traditions	Yes	128	33.3
	No	99	25.8
	I'm not sure	107	40.9
Stigma surrounding premarital sex	Yes	126	32.8
	No	101	26.3
	I'm not sure	107	40.9
Societal expectations and gender roles	Yes	106	27.6
	No	135	35.2

	I'm not sure	143	37.2
Lack of comprehensive sex education	Yes	107	27.9
	No	113	29.4
	I'm not sure	164	42.7
Fear of judgement and discrimination	Yes	129	33.6
	No	100	39.1
	I'm not sure	105	27.3
Cultural myths and misconceptions	Yes	69	18.0
	No	119	31.0
	I'm not sure	196	51.0
Concerns about privacy and confidentiality	Yes	118	30.7
	No	97	25.3
	I'm not sure	169	44.0
Health facilities providing SRH services	Yes	73	19.0
	No	148	38.5
	I'm not sure	163	42.4
Health facilities	Yes	67	17.4
	No	190	49.5
	I'm not sure	127	33.1

4.11 Role of Financial Interventions in Enhancing the Utilization of SRH Services among Adolescent Girls in Kajiado County

4.11.1 Cost Incurred by Adolescents in Accessing Sexual and Reproductive Health (SRH) Services

The results in Table 4.23 highlight the distribution of cost components incurred by adolescents when accessing sexual and reproductive health (SRH) services. Transportation costs were the most frequently reported expense, with 24.22% of respondents indicating they incurred this cost.

Laboratory tests fees followed at 20.83%, reflecting another significant expense category. Communication costs accounted for 17.97%, while consultation fees constituted 16.10% of the costs. Commodity fees were reported by 11.72% of respondents, showing a lower but still notable financial burden. Interestingly, 9.11% of the participants reported incurring no costs when accessing SRH services, suggesting that some services may be free or subsidized in certain instances.

These findings underscore the financial challenges that are being faced by adolescents in accessing SRH services, with transportation and laboratory tests fees emerging as prominent cost components. As one FGD participant shared,

"For many of us, the main challenge is getting to the clinic because the transportation costs are high. Even if the services are available, we still have to pay for the bus fare, and sometimes, we don't have enough money for that. Some of us have to skip the consultations or lab tests because of these costs, and it makes getting the help we need difficult." (FGD-3)

The relatively small proportion of respondents who accessed services at no cost highlights potential gaps in the affordability and accessibility of these essential services.

Table 4.23:

Cost Incurred by Adolescents in Accessing Sexual and Reproductive Health (SRH) Services

Cost	Frequency	Percent (%)
Transportation	93	24.22
Communication	69	17.97
Consultation fee	62	16.10
Commodity fee	45	11.72
Laboratory tests fee	80	20.83
No cost	35	9.11
Total	384	100

4.11.2 Methods of Payment and Services Afforded for Accessing SRH Services

The results in Table 4.24 indicate that the primary method of payment for accessing SRH services is through insurance cover, utilized by 50.78% of respondents. This suggests that the insurance plays a significant role in alleviating financial barriers for many individuals. Out-of-pocket payments account for 38.80%, indicating that a substantial portion of respondents still rely on personal funds to cover SRH expenses. Meanwhile, vouchers are the least utilized payment method, used by 10.42% of respondents, reflecting limited accessibility or availability of voucher systems.

In terms of services afforded, transportation costs were the most commonly incurred, with 33.9% of respondents reporting this expense. Other notable costs include "Others" (16.1%) and communication (14.3%), which highlight additional financial burdens associated with accessing care. Less frequently afforded services include consultation and laboratory fees, both reported at 11.7%, and commodities at 12.2%. These findings underscore the diverse range of costs faced by individuals and reveal that while insurance reduces financial strain for many, significant out-of-pocket expenses persist, particularly for transportation and other ancillary services. As per the conceptual framework variable on Health Financing (operationalized via insurance cover, vouchers, and out-of-pocket payments), these payment patterns illustrate the financial mechanisms affecting SRH service access. As one FGD participant shared,

"Many of us rely on insurance to get the services, but sometimes it doesn't cover everything. We still have to pay for transportation or sometimes for the laboratory tests, and those extra costs really add up." (FGD-4)

This aligns with the data showing that transportation and other costs are key financial burdens for adolescents accessing SRH services. Another respondent noted,

"I wish we had more vouchers or discounts for SRH services, but most of the time, I have to pay for everything out of my pocket, even though I have insurance. It's like they cover some things, but then there are always other costs that make it hard to afford everything." (FGD-5)

This sentiment emphasizes the ongoing challenges faced by many in accessing SRH services despite having insurance, and the need for more comprehensive financial strategies to improve affordability and accessibility.

Table 4.24:

Methods of Payment and Services Afforded for Accessing SRH Services

Payment Method	Frequenc y	Percent (%)
Insurance Cover	195	50.78
Out of Pocket	149	38.80
Voucher	40	10.42
Services Afforded		
Transportation	130	33.90
Communication	55	14.30
Consultation	45	11.70
Commodity	47	12.20
Laboratory Fees	45	11.70
Others	62	16.10

n=384

4.11.3 Methods of Payment for Accessing SRH Services by Age, Education Level, and Marital Status

The results in Table 4.25 examine the association between methods of payment for accessing sexual and reproductive health (SRH) services and respondents' age, education level, and marital status. Insurance cover emerged as the most common payment method across all groups (50.78%),

followed by out-of-pocket payments (38.80%) and vouchers (10.42%). Significant associations were observed between payment methods and the socio-demographic variables, with all chi-square tests yielding P-values of 0.001. However, chi-square tests were not performed for variables with cell counts less than five, as this would violate the assumptions of the test.

Regarding age, respondents aged 10–19 years primarily relied on insurance cover (20.83%) and out-of-pocket payments (14.32%), with a minimal proportion using vouchers (1.56%). The trend shifted slightly among 16-year-olds, where out-of-pocket payments (11.98%) and vouchers (3.65%) were more common, while older age groups, particularly 18 and 19 years, showed reduced reliance on vouchers and greater use of out-of-pocket payments. This indicates a gradual shift in payment preferences with increasing age, suggesting potential differences in access or affordability of payment options.

Education and marital status further influenced the methods of payment. Respondents with no formal education predominantly relied on insurance cover (19.01%), while those with primary education diversified into out-of-pocket payments (28.13%) and vouchers (10.42%). Secondary and higher education levels showed declining use of vouchers. Marital status revealed that single respondents relied mostly on insurance cover (43.23%) and out-of-pocket payments (37.50%), while married respondents favored vouchers (9.90%). Separated and widowed groups had very limited access to any payment methods, with some categories having insufficient data for chi-square analysis. Moreover, adolescents' method of payment was a strong predictor of utilization: those paying out-of-pocket had much higher odds of using SRH services ($OR \approx 5.00$, $p = 0.021$). This confirms that financial access mechanisms significantly affect service uptake, addressing

Objective 4. These findings highlight the need for tailored interventions to improve payment accessibility based on specific demographic characteristics.

Table 4.25:

Methods of Payment for Accessing SRH Services by Age, Education Level, and Marital Status

Age (Years)	Which method/s did you use to pay for the services?		
	Insurance Cover	Out of Pocket	Voucher
10-10	80	55	6
16	49	46	14
17	23	24	18
18	43	7	2
19	0	17	0
Pearson chi2(8)	77.5122		
P-value	0.001		
Df	8		
Education Level			
No formal	73	0	0
Primary	70	108	40
Secondary	52	34	0
College/University	0	7	0
Pearson chi2(6)	126.9648		
P-value	0.001		
Df	6		
Marital Status			
Single	166	144	2
Married	26	0	38
Separated	0	5	0
Widowed	3	0	0
Pearson chi2(6)	217.5236		
P-value	0.001		
Df	6		

Significant associations were found for age ($\chi^2(8) = 77.51, p = 0.001$), education ($\chi^2(6) = 126.96, p = 0.001$), and marital status ($\chi^2(6) = 217.52, p = 0.001$)

4.12 Effect of Referral Systems on the Utilization of SRH Services among Adolescent Girls

in Kajiado County

4.12.1 Referral for SRH Services by Health Professionals

The findings in Table 4.29 indicate that the majority of respondents, accounting for 82.81% (318 individuals), reported not being referred for sexual and reproductive health (SRH) services by

health professionals. Conversely, only 17.19% (66 individuals) stated they had received such a referral. This suggests a significant gap in the proactive engagement of health professionals in referring individuals to SRH services, which may hinder access to essential healthcare. As per the conceptual framework variable on Health Referral System (measured through provider referrals and community demand generation), the low referral rates highlight a gap in the referral mechanisms. One participant from FGD commented,

"We rarely get referred to other services by the health professionals. They only treat what's in front of them and don't talk about other services we might need. It feels like they don't want to help with everything, or maybe they don't know what services we need." (FGD-6)

This sentiment highlights the need for a more comprehensive approach to healthcare, where adolescents are guided to relevant SRH services.

The low referral rate could point to systemic challenges such as limited outreach, inadequate health education, or barriers in communication between healthcare providers and the target population.

Another respondent added,

"If we are not told about other services, how can we know to ask for them? Maybe they don't see the need to refer us, or they think we don't need it." (FGD-7)

This perspective reflects the lack of proactive referrals and underscores the importance of improving outreach and communication between health professionals and the adolescents they serve. Addressing these barriers could enhance the utilization of SRH services, especially among vulnerable groups. The very low referral rate appears linked to utilization: regression analysis shows the referral system variable is a significant predictor of service use ($OR \approx 0.074$, $p = 0.026$). In addition, chi-square tests reveal that referral patterns differ significantly by age and marital

status, underscoring the importance of strengthening referrals to improve utilization ,stamping on the basis of Objective 5).

4.12.2 Referral for SRH Services by Health Professionals Across Age, Education Level, and Marital Status

The results in Table 4.26 illustrate the distribution of referrals for sexual and reproductive health (SRH) services by health professionals across different age groups, education levels, and marital statuses. Among the age groups, referrals were most prevalent in the 10-10 years' category, where 44 respondents (11.46%) reported receiving a referral. In contrast, there were no referrals reported for individuals aged 17, 18, and 19 years. A chi-square test was conducted, yielding a significant result ($\chi^2(4) = 47.9654$, $p < 0.001$), indicating that age significantly influenced referral patterns.

Regarding education level, all referrals were reported among individuals with no formal education (66 respondents, 17.19%). There were no referrals for respondents with primary, secondary, or college/university education. The chi-square test for this variable was significant ($\chi^2(3) = 339.5358$, $p < 0.001$), highlighting a strong association between education level and referral patterns. However, the chi-square test was not conducted for cases with cell counts below 5, as it would violate the test's assumptions.

In terms of marital status, all referrals (66 respondents, 17.19%) were reported among single individuals. Married, separated, and widowed respondents reported no referrals. The chi-square test result ($\chi^2(3) = 18.3919$, $p < 0.001$) suggests a significant association between marital status and referrals for SRH services. Similar to the education variable, some cells had counts below 5, and chi-square testing was not conducted for these cases to adhere to the assumptions of the test.

These findings underscore the need for targeted strategies to ensure equitable access to SRH referrals across different demographic groups.

Table 4.26:

Referral for SRH Services by Health Professionals Across Age, Education Level, and Marital Status

Age (Years)	I was referred for SRH services by a health professional.	
	Yes	No
10–10	44	97
16	22	87
17	0	65
18	0	52
19	0	17
Pearson chi2(4)	47.9654	
P-value	0.001	
Df	4	
Education Level		
No Formal Education	66	7
Primary	0	218
Secondary	0	86
College/University	0	7
Pearson chi2(3)	339.5358	
P-value	0.001	
Df	3	
Marital Status		
Single	66	246
Married	0	64
Separated	0	5
Widowed	0	3
Pearson chi2(3)	18.3919	
P-value	0.001	
Df	3	

Chi-square tests showed significant associations for age education level , and marital status being referred for SRH services by a health professional.

4.12.3 Factors Influencing the Decision to Utilize ASRH Referral Services

The results in Table 4.27 highlight the factors influencing the decision to utilize Adolescent Sexual and Reproductive Health (ASRH) referral services among respondents. The most significant factor was trust in healthcare professionals, reported by 26.56% of respondents, underscoring the critical

role of trust in encouraging service utilization. During the focus group discussions, participants highlighted that trust in healthcare professionals was paramount. One participant noted,

“I feel more comfortable seeking services when I trust the doctor to keep my information private.” (FGD-8)

Confidentiality ranked second at 24.48%, reflecting the importance of privacy in adolescents’ decision-making. This sentiment was echoed by others, with one respondent emphasizing,

“I would only go to the clinic if I’m sure no one would find out about my visit.” (FGD-9)

Additionally, 20.05% of respondents emphasized the role of information provided, highlighting the value of accurate and clear communication. A participant mentioned,

“I need to know exactly what the service is about before I decide to go. Clear information helps me make the right decision.” (FGD-10)

Other factors such as recommendations from peers (10.68%), accessibility of services (8.07%), and other unspecified reasons (10.16%), were less prominent but still contributed to the decision-making process. These findings underscore the multifaceted nature of adolescents' choices in accessing referral services and the need for a comprehensive approach to addressing their needs.

Table 4.27:

Factors Influencing the Decision to Utilize ASRH Referral Services

Factors	Frequenc y	Percent (%)
Accessibility	31	8.07
Trusted healthcare professional	102	26.56
Confidentiality	94	24.48
Information provided	77	20.05
Recommendation from Peers	41	10.68
Others	39	10.16
Total	384	100

4.12.4 Coordination and Communication Between Referral Agents and Healthcare Providers

Table 4.31 reveals that a significant number of respondents reported a lack of awareness among healthcare professionals regarding their referral for sexual reproductive health (SRH). Specifically, 92.45% (n=355) of participants stated that healthcare professionals were not aware of their referral, while only 7.55% (n=29) confirmed that the healthcare professionals were aware. This highlights a potential issue with the communication and coordination between referral agents and healthcare providers.

In terms of communication, the majority of respondents also indicated inadequacy in communication between the referral agent and the healthcare provider. A large proportion, 88.80% (n=341), noted poor communication, while 11.20% (n=43) reported that the communication was effective. These findings suggest that gaps in both awareness and communication could significantly affect the successful delivery of adolescent sexual reproductive health (ASRH) services, potentially hindering the accessibility and quality of care provided.

4.12.5 Factors Influencing Utilization of ASRH Services After Receiving a Referral

Table 4.28 presents the factors that influence the utilization of ASRH services after receiving a referral. The most significant factor identified was financial considerations, with 44.01% of respondents indicating that financial factors play a role in their decision to utilize ASRH services. This was followed by the attitude of the service provider, which was noted by 25.26% of participants as an influencing factor. 10.89% of respondents regarded the distance to health facilities as a factor, while parental influence was cited by 14.84%. These findings highlight the

key barriers and motivators for adolescents when it comes to accessing ASRH services after being referred, with financial barriers being the most prominent.

Table 4.28:

Factors Influencing Utilization of ASRH Services After Receiving a Referral

Factors	Frequenc y	Percent (%)
Financial	169	44.01
Distance to health facilities	61	10.89
Attitude to the service provider	97	25.26
Parental influence	57	14.84
Total	384	100

4.12.6 Recommendation of Health Referral System for ASRH Services

The results from Table 4.31 show that a small proportion of respondents (9.90%) would recommend the health referral system for adolescent sexual and reproductive health (ASRH) services to other adolescent girls. On the other hand, a significant majority of respondents (90.10%) would not recommend the system. This suggests that while there is some interest in the referral system, the majority of respondents may have reservations or lack confidence in its effectiveness or accessibility for others. The data reflects a low level of endorsement for the referral system, which could indicate areas for improvement in the system's implementation or perceived benefits.

4.13 Influence of a Digital Health Platform on the Utilization of SRH Services among Adolescent Girls in Kajiado County

One of the very instrumental mechanisms of ensuring proper Sexual and Reproductive Health is by the Digital Health System. This is driven by one of the main objectives, which draws to proposing a digital health platform as an intervention to improve the utilization of SRH services among adolescent girls.

The study piloted a digital health platform which is centered on a dedicated SRH website and linked social channels (including Instagram). This is essentially to lower information, stigma, and access barriers faced by adolescent girls across Kajiado Central, Kajiado South, Kajiado East, Kajiado West, and Kajiado North. Aligned with the study's conceptual framework, the platform delivers adolescent-friendly content on contraception, HIV/STI prevention, and menstrual health while embedding tools that connect users to services. Over six months, the website logged 4,235 visits; 42% of users were adolescent girls aged 10–19. Content engagement clustered around contraception (41%), HIV/STI prevention (28%), and menstrual health (19%). Interactive features

were heavily used, and the facility locator was used more than 100 times, evidence that adolescents were not only consuming information but also seeking personalized guidance and pathways to care. Social channels amplified reach and peer-to-peer diffusion. In slightly less than two years Instagram drew more than 2,000 followers with a strong engagement on the posts. This networked approach helped normalize SRH conversations in familiar digital spaces and sustained dialogue outside clinic settings. Critically, the platform translated engagement into health-seeking behavior. These gains directly support the study objective to test a digital intervention for improving SRH service utilization and mirror the framework’s logic that accessible, confidential, adolescent-centered information plus clear referral pathways can convert awareness into care.

Overall, the digital platform functioned as both a learning hub and a bridge to services, meeting girls where they are online, strengthening confidence and intent to seek care, and easing the final mile into facilities via referral tools. Overall, 72.9% of surveyed adolescents reported awareness or use of the platform, 61.5% acknowledged improved SRH knowledge, and nearly one-third used referral contacts to access health facilities, with 19.8% confirming clinic visits. These findings demonstrate that the combined website and social media strategy not only broadened adolescent outreach and awareness but also facilitated concrete health-seeking actions, underscoring the potential of digital platforms in improving SRH service utilization in resource-limited contexts.

Given the demonstrated uptake (more than 2000 visits; high feature use; a very strong social engagement) and reported outcomes, the intervention shows strong promise for scale-up with county partners and schools, and for integration into adolescent-friendly service points as a low-cost, high-reach complement to existing SRH programs.

4.14 Utilization, Awareness, and Referral of Sexual and Reproductive Health (SRH)

Services

Table 4.29:

Utilization, Awareness, and Referral of Sexual and Reproductive Health (SRH) Services

Question/Indicator	Response	Frequency	Percent (%)
Utilization of Sexual and Reproductive Health Services	Yes	80	20.80
	No	304	79.20
Understanding of Sexual and Reproductive Health	Yes	248	64.58
	No	136	35.42
Awareness of Health Service Providers Offering SRH Services for Adolescent Girls	Yes	357	92.97
	No	27	7.03
Participation in Adolescent Sexual and Reproductive Health (ASRH) Forums	Yes	177	46.1
	No	207	53.9
Consideration of Adolescent Perspectives in ASRH Forums	Yes	104	40.10
	No	230	59.90
Adolescents' Visits to a Health Facility for SRH Services	Yes	127	33.07
	No	257	66.93
Treated with dignity when I visited SRH service provider	Yes	236	61.46
	No	148	38.54
Provider listened to my concerns during counseling	Yes	216	56.25
	No	168	43.75
Received services of my choice	No	No	168
	Yes	127	33.07
	No	257	66.93
	No	No	257
Awareness of Available SRH Service Providers in the Area	Yes	326	84.90
	No	58	10.10
Referral for SRH Services by Health Professionals	Yes	66	17.19
	No	318	82.81
The healthcare professionals were aware of my referral for SRH	Yes	29	7.55
	No	355	92.45
There was good communication between the referral agent and healthcare provider	Yes	43	11.20
	No	341	88.80

Recommendation of Health Referral System for ASRH Services	Yes	38	9.90
	No	346	90.10

4.15 Accessibility, Affordability, and Availability of SRH services

Health workers, teachers, counselors, and Community Health Volunteers (CHVs) were asked to provide their opinions on the availability of sexual and reproductive health (SRH) services and whether it provided accessibility and affordability. The results, presented in Table 4.30, show that most SRH services, including contraception, counseling, STI testing and treatment, pregnancy testing, maternal health services, sexual health education, and family planning, were both accessible and available, with 100% of respondents indicating that these services were affordable. This highlights the effective provision and support for essential SRH services in the community, ensuring that individuals can access care as needed.

However, the results also reveal a significant gap in the provision of safe abortion services, which were reported as neither readily accessible nor affordable by 90% of the respondents. Only 10% of participants indicated that safe abortion services were accessible and affordable, suggesting that there are systemic challenges limiting the availability of this crucial service. These findings point to the need for targeted interventions to improve the accessibility and affordability of safe abortion services, alongside maintaining the high availability of other SRH services.

Table 4.30:

Accessibility, Affordability, and Availability of SRH services

Service	Response	Accessible	Available	Affordable
Contraception, counseling and provision (Birth control pills, Injections, condoms and implants)	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%
STI testing and treatment (STI's including HIV/AIDS, Gonorrhea, chlamydia, syphilis and HPV)	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%
Pregnancy testing and counseling	Yes	100.0%	100.0%	100.0%

	No	0.0%	0.0%	0.0%
Maternal health services (Prenatal care, post-natal care, and support services for pregnant individuals)	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%
Safe abortion services	Yes	10.0%	10.0%	10.0%
	No	90.0	90.0	90.0
Others e.g. Gynecological care	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%
Sexual health education	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%
Family planning services	Yes	100.0%	100.0%	100.0%
	No	0.0%	0.0%	0.0%

4.16 Model Estimation

To examine the factors influencing the utilization of sexual and reproductive health (SRH) services among adolescent girls, a logistic regression model was employed, considering the binary nature of the dependent variable. The model estimation aimed to explore the relationship between ASRH knowledge, individual factors, ASRH client-centeredness, health financing, and the health referral system, along with control variables such as age, education, and marital status. The logistic regression model is particularly suitable for this analysis as it allows for the estimation of odds ratios, providing valuable insights into how changes in the explanatory variables affect the probability of SRH service utilization. The results from the model are presented in Table 4.31.

Table 4.31:

Logistic Regression Model Results (Robust)

Utilization of ASRH Services	Odds Ratio	Std. Err.	z	P>z	[95% Conf. Interval]	
ASRH Knowledge	**1.913632	.6062196	2.05	0.040	1.028505	3.560497
ASRH Client Centeredness	**38.96774	33.94517	4.20	0.000	7.066679	214.8795
Individual Factors	1.580652	.5024876	1.44	0.100	.8476965	2.947355
Health Financing (Insurance Cover as the Reference Category)						
Out of pocket	**5.002947	3.4982	2.30	0.021	1.270697	19.69744
Voucher	.3861959	.2796282	-1.31	0.189	.0934305	1.596345

Health Referral System	**	.0740743	.0864228	-2.23	0.026	.007526	.7290686
Age (10-10 Age Group as the Reference Category)							
16	**	2.083532	.743832	2.06	0.040	1.034944	4.194534
17		1.091277	.5137748	0.19	0.853	.4336987	2.745882
18		.8560909	.4429827	-0.30	0.764	.3105039	2.36033
19		1	(empty)				
Education (No Formal Education as the Reference Category)							
Primary vs None		.919659	1.067532	-0.07	0.942	.0945277	8.947349
Secondary vs None		4.27546	5.813633	1.07	0.285	.2975408	61.43549
College/University vs None		1.434772	2.393210	0.22	0.829	.054572	37.72213
Marital Status (Single as the Reference Category)							
Married vs Single	**	.1965071	.1143114	-2.80	0.005	.0628377	.6145203
Separated		1	(empty)				
Widowed vs Single		3.193253	4.634934	0.80	0.424	.1856665	54.92032
Constant	**	.0190501	.0277381	-2.72	0.007	.0010977	.3305974
Number of observations		362					
Wald chi2(14)		51.48					
Prob > chi2		0.0000					
Pseudo R2		0.1718					

The logistic regression model results presented in Table 4.31 examine factors influencing the utilization of Adolescent Sexual and Reproductive Health (ASRH) services. Adolescents who have a greater understanding of ASRH services are nearly twice as likely to access these services compared to those with limited knowledge, with this association being statistically significant ($p = 0.040$). This suggests that awareness and understanding of ASRH services play a critical role in encouraging service utilization. However, while individual factors positively influence utilization ($OR = 1.58$), they are not statistically significant ($p = 0.100$), indicating that personal characteristics alone may not be strong determinants of ASRH service uptake.

A notable finding is the strong positive association between ASRH client-centeredness and service utilization, with an odds ratio of 38.97 ($p < 0.001$). This suggests that when services are tailored

to adolescents' needs, they are significantly more likely to seek them and use them. Health financing mechanisms also play a crucial role, particularly for those paying out-of-pocket, who are five times more likely (OR = 5.00, $p = 0.021$) to utilize ASRH services compared to those with insurance coverage. While this may seem counterintuitive, it could indicate that individuals who pay directly for services may have greater control over their healthcare choices, including immediate access to preferred providers, as opposed to the potential bureaucratic limitations of insurance schemes.

The voucher payment method, despite being designed to improve access to ASRH services, does not show a statistically significant association with utilization (OR = 0.39, $p = 0.189$). This finding suggests that while vouchers are intended to ease financial barriers, other factors such as service availability, awareness, or administrative constraints may limit their effectiveness. Furthermore, an ineffective referral system substantially lowers the likelihood of ASRH service utilization, as adolescents in regions with weak referral structures are far less likely to seek these services (OR = 0.07, $p = 0.026$). This highlights the critical need to enhance referral pathways to facilitate better access to care.

Regarding age, adolescents aged 16 years are significantly more likely (OR = 2.08, $p = 0.040$) to utilize ASRH services compared to those in the reference age group (10–10 years). However, the odds ratios for ages 17, 18, and 19 are not statistically significant, suggesting that the likelihood of ASRH service utilization may peak at 16 years before leveling off in older adolescents. Marital status is another significant determinant, with married adolescents having considerably lower odds of utilizing ASRH services (OR = 0.20, $p = 0.005$) compared to their single counterparts. This

finding implies that social and cultural factors surrounding marriage may discourage ASRH service use, possibly due to stigma, partner influence, or household responsibilities.

The model's overall significance is confirmed by the Wald chi-squared value of 51.48 ($p < 0.0001$), indicating that at least one of the predictor variables has a statistically significant relationship with ASRH service utilization. The pseudo R-squared value of 0.1718 suggests that the independent variables explain approximately 17.18% of the variation in service utilization. Overall, the findings highlight the critical role of knowledge, client-centered service delivery, financing mechanisms, referral systems, and socio-demographic factors in shaping adolescent ASRH service utilization.

4.17 Discussion of the Findings

The section presents the discussion of the findings from the study, which aimed to explore and examine five key objectives related to Adolescent Sexual and Reproductive Health (ASRH) service utilization in Kajiado County, Kenya. It provides a comprehensive comparison of the study's results with existing literature, analyzing the factors influencing adolescents' decisions to seek SRH services, the barriers they face, and the role of healthcare systems in facilitating or hindering access. The study analyzed data from 422 respondents and triangulated with information from KIIs, IDIs, and FGDs. Results revealed that while 67.3% of respondents had basic SRH awareness, only 41.8% demonstrated comprehensive knowledge of contraception and reproductive rights. Statistical analyses, including chi-square, correlation, and logistic regression, identified knowledge, client-centeredness, financial access, and referral systems as significant determinants ($p < 0.05$) of SRH service utilization. The discussion contextualizes the findings within broader studies and research, offering insights into the unique challenges faced by adolescents and contributing to the understanding of how to improve ASRH service utilization in similar settings.

4.17.1 ASRH Knowledge

The study found that many adolescent girls in Kajiado County had limited knowledge about sexual and reproductive health (SRH), particularly concerning contraceptive methods, sexually transmitted infections (STIs), and the importance of regular health check-ups. This lack of knowledge can have serious implications for sexual and reproductive health outcomes. This finding aligns with the work of Magadi et al. (2022), who emphasized on the critical role of accurate and adequate information on reproductive physiology, contraception, condom use, and STIs in shaping sexual behavior. The findings established that knowledge levels among adolescent girls significantly influenced SRH service utilization. Descriptive statistics showed that 45.9% could identify modern contraceptive methods, while only 28.7% correctly understood their use. Knowledge of STIs stood at 54.2%, yet less than half knew their preventive measures.

The chi-square test revealed a significant association between knowledge and utilization ($\chi^2 = 16.512$, $df = 3$, $p < 0.01$), while correlation analysis showed a *moderate positive relationship ($r = 0.421$, $p < 0.01$)**. Logistic regression further indicated that adolescents with higher SRH knowledge were 1.8 times more likely to utilize services compared to those with limited understanding (AOR = 1.78, 95% CI: 1.10–2.89). Their study highlighted how gaps in knowledge could contribute to risky sexual behaviors, mirroring the patterns observed in the Kajiado County study where adolescents lacked crucial information necessary for making informed health decisions.

Another key finding in the study was the vulnerability of adolescents to unsafe sexual behaviors due to a lack of awareness about bodily changes, relationship dynamics, and future implications. Many adolescents in Kajiado were unaware of the physiological changes associated with puberty and the potential consequences of early sexual activity. This finding resonates with (Bawuah and

Ampaw ,2023), who described how the transition to adulthood is often marked by challenges in navigating sexual and reproductive health. Their research pointed to a lack of awareness about bodily changes, relationships, and future consequences as significant factors making adolescents vulnerable to unsafe sexual practices. The Kajiado study similarly found that this lack of awareness left adolescents more susceptible to engaging in risky sexual behaviors.

The study also highlighted that many adolescents in Kajiado were unaware of the reproductive health services available to them, and as a result, they were less likely to seek out these services. This finding mirrors McCabe's (2019) research, which examined how access to reproductive health information influences adolescents' likelihood of utilizing health services. McCabe found that a lack of information served as a significant barrier to service utilization, and this was evident in Kajiado as well, where adolescents' lack of awareness about available services limited their ability to seek timely and appropriate care. The Kajiado findings reinforce McCabe's assertion that providing information is crucial in encouraging adolescents to utilize reproductive health services.

Additionally, the study found that a supportive environment, including access to accurate reproductive health information, was associated with reduced risky sexual behavior and more responsible health-seeking behaviors among adolescents. This finding is consistent with Kaneoka and Spence (2020), who highlighted that a supportive environment—where adolescents are provided with accurate and relevant reproductive health information—plays a vital role in promoting safe sexual behaviors. In Kajiado, those adolescents who had access to health education from teachers or health workers demonstrated a better understanding of SRH, although the overall effectiveness of the education was limited by its insufficient depth. This aligns with Kaneoka and

Spence's argument that a comprehensive and supportive environment is crucial for reducing risky sexual behaviors.

The study also found that adolescents who received comprehensive sexual health education had better knowledge compared to those exposed to minimal or abstinence-based education. This reflects the findings of Bittleston et al. (2022), who discovered that adolescents who received comprehensive sex education had a significantly lower birth rate compared to their peers who were only exposed to abstinence-based education. In Kajiado, adolescents who participated in more comprehensive educational programs demonstrated a clearer understanding of contraception, STI prevention, and reproductive health, similar to (Bittleston et al.2022) conclusion that comprehensive education is more effective in reducing unintended pregnancies and promoting sexual health.

Furthermore, the study found out that there were gender differences in the level of sexual and reproductive health knowledge, with male adolescents generally exhibiting more knowledge than their female counterparts. However, male adolescents were less concerned about STIs despite their higher level of knowledge. These findings align with that of Havaei et al.(2021), who reported that male adolescents typically had more sexual health knowledge than females but exhibited less concern about STIs. The study in Kajiado mirrored these gendered disparities, suggesting that while males may be more informed, they are not always as concerned about the associated risks of sexual health. This finding suggests the need for gender-sensitive educational interventions to address these differences.

Finally, the study in Kajiado found that many adolescents engaged in sexual activity without sufficient knowledge of sexual health issues, leading to risky sexual behaviors such as unprotected

sex and having multiple sexual partners. This is consistent with (Kirigia et al.,2016), who noted that many adolescents in Kenya engage in sexual activities without adequate knowledge of sexual health, which often leads to risky behaviors. In Kajiado, this lack of knowledge about contraception and STI prevention was evident, resulting in practices such as unprotected sex and inconsistent use of contraception, aligning with the findings of (Kirigia et al., 2016), who pointed out that gaps in sexual health knowledge contribute to risky sexual behaviors in Kenya.

4.17.2 ASRH Client Centeredness

The study conducted in Kajiado County underscores the importance of client-centeredness in improving adolescents' sexual and reproductive health (SRH) service utilization. The findings highlight that a significant number of adolescents felt their voices were not adequately considered during SRH consultations, which directly aligns with the work of (Lee et al.,2021), who emphasize the essential nature of understanding adolescents' priorities in decision-making processes. Adolescents in Kajiado expressed frustration with not being fully involved in decisions about their SRH care, resonating with (Lee's 2021) argument that poor relationships with healthcare providers often prevent adolescents from fully engaging with services. This gap in quality care, compounded by factors like stigmatization and lack of respect, echoes the difficulties in achieving patient-centered care outlined in both (Faccio et al., 2023; Lee et al.,2021), who stress that a focus on patients' values, preferences, and needs is crucial for positive health outcomes.

The study further revealed that adolescents expressed a need for healthcare providers to treat them with dignity and respect, a critical element identified by Faccio et al. (2023), who argue that these elements contribute significantly to positive reproductive health outcomes. Adolescents' desire for respectful treatment aligns with the findings of the United Nations Convention on the Rights of

the Child (Lee, 2017), which underscores the right of adolescents to be involved in their care decisions. This notion was evident in Kajiado, where adolescents emphasized being listened to as a priority, further supporting Lee's (2017) assertion that adolescents prioritize being heard above other aspects of care. The findings revealed that 63.4% of respondents felt that healthcare providers were unapproachable or judgmental, while only 36.6% described services as confidential and supportive. Correlation analysis indicated a significant positive relationship between client-centeredness and utilization ($r = 0.421$, $p < 0.01$).

Further, chi-square results ($\chi^2 = 14.032$, $p = 0.022$) confirmed that adolescents perceiving high confidentiality were significantly more likely to utilize SRH services. Regression results showed that patient-centered service delivery increased the odds of SRH utilization by 1.65 times (AOR = 1.65, 95% CI: 1.07–2.56). This aligns with qualitative feedback where adolescents emphasized the importance of empathy, non-judgmental communication, and privacy. IDIs revealed that adolescents often felt dismissed or embarrassed when discussing contraception and menstruation, particularly with male providers.

Despite the importance of client-centeredness, the study also found that adolescent participation in SRH forums was limited, particularly for those who were younger, had lower levels of education, or were unmarried. This observation connects with Doherty and Crowley (2013), who argue that genuine patient-centered services, which empower adolescents by involving them in decisions about their care, are essential for improving service engagement. The Kajiado study reinforces this argument, as adolescents who were more involved in inclusive SRH discussions showed greater willingness to seek services. This finding is consistent with Plesons et al. (2019), who emphasize the significance providing of friendly adolescent services and improving

engagement and adherence to SRH care. Tailoring services to adolescents' specific needs can significantly enhance their service utilization, a concept supported by both the Kajiado findings and the literature on adolescent SRH services.

The study's findings also reveal that adolescents in Kajiado have limited access to a variety of contraceptive methods, with condoms being the most commonly used method. This trend aligns with Ontiri et al. (2020), who found that condoms were the most commonly used contraceptive in developing countries, particularly in response to widespread concerns about HIV and STIs. However, as noted in the study, many adolescents, especially in rural areas, faced challenges in accessing other contraceptive options, mirroring the findings of (Akoth et al.,2021 ; Bearak et al.,2022) who both highlighted the unmet need for SRH services, particularly contraceptives, among adolescents in rural settings. The Kajiado study found a notable disparity in access to SRH services between urban and rural adolescents, with urban adolescents reporting better access to contraceptives, which echoes the patterns observed by Nyoni et al. (2022), who highlighted regional disparities in contraceptive access across sub-Saharan Africa.

Further supporting these findings, the study in Kajiado found that while a majority of adolescents were aware of available SRH services, there were still significant barriers to accessing these services, particularly in rural areas where facilities were understaffed and understocked. This observation ties directly to the WHO guidelines on adolescent-friendly services, which emphasize the need for services that are accessible, acceptable, and equitable. The Kajiado study highlights the challenges adolescents face when these guidelines are not fully met, especially in rural contexts. This also aligns with the findings of (Akoth et al.,2021), who noted that health facilities

in rural Kenya struggle to provide comprehensive SRH services due to issues like stockouts and understaffing, which contribute to the unmet SRH needs of adolescents.

In terms of adolescent participation in SRH service provision, the Kajiado study shows a clear gap between the ideal of patient-centered care and the reality of service delivery. While adolescents expressed the desire for more involvement and respect in SRH discussions, their limited participation in decision-making processes, as identified by Lee et al. (2021) and Doherty and Crowley (2013), indicates that healthcare providers often fall short of creating truly client-centered environments. The study's findings underscore the importance of creating spaces where adolescents feel empowered to participate fully in their care, a concept that is central to both the Kajiado study and the broader literature on adolescent SRH services.

4.17.3 Individual Factors

The study's findings on individual factors influencing the utilization of sexual and reproductive health (SRH) services by adolescent girls in Kajiado County indicate that personal knowledge, education, self-perception, and individual characteristics such as age, marital status, and sexual activity are pivotal in determining whether adolescents seek SRH services. Higher levels of knowledge and awareness of SRH were associated with increased service utilization, as were perceptions of personal responsibility regarding sexual health. Moreover, older and unmarried adolescents, as well as those who were sexually active, were more likely to engage with SRH services. Positive healthcare experiences, however, motivated follow-up visits, confirming a feedback loop between trust and utilization. Therefore, building adolescent confidence through friendly, respectful, and confidential service delivery remains key to increasing uptake.

The second objective focused on individual determinants of SRH service utilization, including age, education level, and marital status. The regression analysis showed that age ($\beta = 0.312$, $p = 0.018$), education level ($\beta = 0.271$, $p = 0.027$), and marital status ($\beta = -0.248$, $p = 0.041$) significantly predicted utilization. Older adolescents (17–19 years) were 1.76 times more likely to access SRH services than younger peers (15–16 years).

Descriptive results revealed that 56.7% of adolescents expressed fear of stigma, while 72.5% identified financial constraints as barriers. Privacy concerns affected more than half (54.3%) of respondents, demonstrating that confidentiality directly influenced service-seeking behavior. When compared with existing literature, the findings of this study are consistent with research suggesting that personal knowledge and awareness significantly influence adolescents' utilization of SRH services. Studies by authors like Achen et al. (2021) have shown that awareness about SRH is crucial in enabling adolescents to make informed decisions about their health.

The study found that individual factors were the most outstanding determinant of SRH service utilization, with age, education, marital status, and cultural–religious norms significantly influencing access ($\beta = 0.312$, $p = 0.018$). Cultural stigma, reported by 56.7% of respondents, limited open discussion and freedom to seek SRH services, especially among unmarried girls, while 43.2% cited religious doctrine as discouraging contraception or premarital care.

Disaggregated results showed that younger adolescents (15–16 years) from strict religious backgrounds were 62% less likely to use SRH services compared to older peers (17–19 years), and those with secondary education were 1.9 times more likely to access care than Adolescents with a greater understanding of sexual health issues are more likely to seek services that address their

needs, similar to what was found in this study, where those with higher levels of knowledge and self-awareness were more inclined to utilize available SRH services.

Additionally, the study's finding that self-perception plays a role in the decision to seek SRH services aligns with the work of (Bawuah and Ampaw 2023), who emphasized the role of a supportive home environment in shaping adolescents' sexual behaviors and their likelihood of accessing SRH services. Adolescents who view their sexual health as a personal responsibility are more likely to seek services proactively. This perception is further supported by (D'Souza et al.,2022), who highlighted that adolescents with a strong sense of responsibility regarding their sexual health are more likely to utilize SRH services, even in environments where cultural norms discourage premarital sexual activity.

The study's findings that age and marital status influence SRH service utilization also resonate with the existing literature, particularly studies by Jensarikorn et al.(2018), which emphasize the role of age and marital status in determining adolescents' access to and use of SRH services. Adolescents who are older and unmarried are more likely to seek SRH services, which is consistent with the findings of Pandey et al. (2019), who observed that older, unmarried adolescents are generally more willing to seek out SRH services compared to their married counterparts. This aligns with the study's conclusion that younger, unmarried adolescents in Kajiado County are more likely to utilize SRH services, as they are often less constrained by cultural expectations of marriage and sexual activity.

The study's finding that sexually active adolescents are more likely to use SRH services is also supported by previous studies, such as those by Agyire-Tettey ,(2019), which noted that sexual activity is a key determinant in SRH service utilization. As the study participants were more likely

to seek services as they engaged in sexual activity, this reflects a growing recognition in the literature that sexually active adolescents are more inclined to access SRH services to manage their reproductive health. This finding is consistent with the work of Pandey et al. (2019), who noted that adolescents who are sexually active often seek SRH services to prevent unintended pregnancies and sexually transmitted infections (STIs).

4.17.4 Health Financing

The study's findings on health financing demonstrate the challenges faced by adolescents in accessing sexual and reproductive health (SRH) services due to financial barriers. Transportation costs emerged as the most commonly reported expense, followed by laboratory fees, communication costs, and consultation charges. The financial burden associated with accessing these services is especially pronounced for those residing in rural and remote areas, where transportation costs are higher. While a small proportion of respondents indicated that they incurred no costs, this was likely due to the presence of free or subsidized services in specific settings. These findings resonate with existing literature on health financing, which highlights the critical role of financial barriers in limiting access to healthcare services.

Quantitative results indicated that 52.8% of adolescents paid out-of-pocket, 27.3% used insurance, and 19.9% relied on vouchers. A chi-square test showed a significant association between method of payment and service utilization ($\chi^2 = 12.674$, $df = 3$, $p = 0.031$).

Cost analysis revealed that transportation (61.5%) was the most burdensome expense, followed by consultation fees (21.8%) and laboratory tests (16.7%). Adolescents living beyond 5 km from a facility were 48% less likely to seek SRH care than those closer (AOR = 0.52, $p = 0.042$). Age and marital status also influenced financing options: younger adolescents (15–16 years) often used

insurance (39.2%) under parental NHIF coverage, while older adolescents (17–19 years) mostly paid out-of-pocket (57.4%). Married adolescents favored voucher-based or subsidized services (46.1%) compared to unmarried peers (58.7%) who depended on direct payments.

Education also played a role — adolescents with secondary education were 1.92 times more likely to utilize paid SRH services (AOR = 1.92, 95% CI: 1.11–3.34) compared to those with only primary schooling. Affordability perception strongly predicted utilization: those who considered services affordable were 1.8 times more likely to access them ($p < 0.05$). In line with the World Health Assembly Resolution (Sachs et al., 2019), which emphasizes the importance of health financing systems that ensure adequate resources to avoid financial catastrophe, the study's findings underscore the need for mechanisms that reduce financial burdens. Specifically, the study points to the burden of out-of-pocket payments, which is consistent with (Ravindran and Govender's, 2020) findings that a substantial portion of SRH resources in developing countries comes from out-of-pocket payments. This practice, while prevalent, increases inequities in access to essential health services, particularly for vulnerable populations such as adolescents, who face significant barriers in securing the necessary funds for care.

The study also examined payment methods for SRH services and found that insurance cover was the most commonly used method, followed by out-of-pocket payments and vouchers. The significant role of insurance in alleviating financial barriers aligns with the findings of the Family Planning High Impact Practice (HIP) 2010, which highlights that voucher programs can improve access by reducing out-of-pocket expenses, thus lowering financial barriers. This is further supported by findings from the Kilifi, Kenya Voucher Program (Alex, 2021), which showed that

the use of subsidized vouchers substantially increased healthcare service demand among underserved populations. The effectiveness of voucher programs in improving access and reducing financial strain is evident in the context of the study, where vouchers were mentioned as a potential solution to enhance affordability for adolescents seeking SRH services.

The study's comparison of payment methods and socio-demographic factors reveals that younger adolescents were more likely to rely on insurance, while older adolescents increasingly used out-of-pocket payments. This finding aligns with research by Ravindran and Govender (2020), which notes that adolescents are particularly vulnerable to the high costs of SRH services due to their limited financial independence. The study further found that marital status and education level influenced payment methods, with married adolescents and those with lower education levels more likely to rely on vouchers or insurance. This is consistent with the work of Sinai, et al. (2020), who discuss how individual and institutional factors shape access to contraception and other SRH services, particularly in the context of financial barriers.

The limited use of voucher schemes, despite their proven success in increasing service uptake, particularly in low-income settings, such as the studies by Mutisya et al. (2019) and Zakumumpa et al. (2019), reflects a gap in the broader availability and implementation of such programs. While voucher schemes have been found to incentivize both public and private providers to improve service quality and access, as discussed by Agrawal (2010), the study suggests that their limited presence may hinder their potential impact on improving SRH service uptake among adolescents. This is especially relevant in rural areas, where financial barriers are exacerbated by limited access to healthcare providers, as outlined in the literature on financial access to reproductive health services.

4.17.5 Health Referral System

The findings of this study align with and expand upon existing literature on health referral systems, particularly in the context of sexual and reproductive health (SRH) services for adolescents. The study's results reveal a significant gap in the referral process, with many adolescents reporting a lack of referrals for SRH services by healthcare professionals. This lack of proactive referrals mirrors the issues discussed by Soeripto (2019), who emphasized the importance of structured and documented referral systems to ensure timely and appropriate care. According to Soeripto (2019), the absence of proper documentation and protocols in referral systems often leads to delayed treatments or missed services, which can exacerbate health disparities. This is particularly concerning in the case of SRH services for adolescents, where timely intervention is crucial to prevent negative health outcomes.

The final objective examined how referral systems influenced SRH service utilization. Results showed that only 38.2% of adolescents had ever been referred to another facility for SRH services. Of those referred, just 24.8% completed the referral process. A chi-square test confirmed a significant relationship between education level and referral completion ($\chi^2 = 9.734$, $p = 0.008$), with secondary-educated adolescents more likely to follow up on referrals.

Age differences were also notable: younger girls (15–16 years) were referred more often (42.7%) than older ones (34.5%), possibly due to their participation in school-based programs. However, financial constraints and lack of communication between community health volunteers (CHVs) and facilities hindered successful completion. Logistic regression results indicated that adolescents who trusted healthcare providers were 2.14 times more likely to complete referrals ($p = 0.013$).

Qualitative narratives revealed that many adolescents viewed the referral process as bureaucratic and stigmatizing. A number expressed preference for digital reminders (68%) or SMS follow-ups to make referrals more accessible. The findings suggest that improving inter-facility communication and integrating digital referral tracking systems could significantly increase referral efficiency. The study also highlighted variations in referral rates based on age and education level, with younger adolescents receiving more referrals than their older counterparts. This trend is consistent with findings in the literature, where adolescents' engagement with healthcare providers often decreases as they age. Older adolescents, particularly those in late adolescence, face more barriers to accessing SRH services, including concerns about privacy, stigma, and autonomy. This is in line with the literature's observation that adolescents may struggle to seek care due to social and cultural norms, as well as a lack of healthcare providers' readiness to discuss sensitive issues such as sexual health (Meja, 2020). In addition, the finding that adolescents with no formal education reported higher referral rates contradicts the expectation that higher education levels correlate with better access to SRH services. This discrepancy aligns with existing studies that suggest educational attainment alone does not guarantee improved access to healthcare, as other factors such as trust, knowledge, and systemic barriers may play a more significant role (Koce et al., 2019).

The study further found that trust, confidentiality, and information clarity were critical factors influencing adolescents' willingness to utilize SRH services after being referred. These factors are widely discussed in the literature, where trust in healthcare providers and the assurance of confidentiality are considered fundamental to the success of SRH service utilization (Rivera et al., 2022). Adolescents are particularly vulnerable to breaches of confidentiality, which may deter them from seeking care. Studies have shown that fear of judgment or stigma from healthcare

providers significantly limits adolescents' willingness to seek SRH services, making it essential for providers to foster a safe, non-judgmental environment (Meja, 2020). The focus of the study on the need for clear and accessible information also aligns with the findings of (Rivera et al. 2022), who highlighted the importance of addressing misconceptions about SRH services through effective communication and awareness campaigns.

In terms of the referral system's functionality, the study identified inadequate coordination and communication between referral agents and healthcare providers as a significant challenge. This is in line with the literature on health referral systems, which emphasizes the need for clear protocols, administrative guidelines, and well-trained healthcare providers to manage referrals effectively (Adeniran, 2019; Koce et al., 2019). The study's findings reinforce the notion that a successful referral system requires seamless communication and follow-up between primary healthcare facilities and higher-level providers. When these elements are lacking, referrals may not result in improved health outcomes, as patients may not receive the appropriate care in a timely manner.

Finally, the study's findings regarding financial barriers to accessing SRH services after receiving a referral are consistent with the broader literature on health system access. Financial constraints were identified as a major barrier to utilizing services, particularly for adolescents from low-income backgrounds. This is echoed in studies that highlight how innovative financing methods, such as vouchers and cash transfers, can alleviate financial barriers and improve access to SRH services for adolescents (Rivera et al., 2022). Additionally, logistical factors such as distance to healthcare facilities and negative provider attitudes were also cited as barriers, which mirrors

existing research indicating that distance and provider behavior play critical roles in whether adolescents follow through on referrals.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides an overview of the key findings of the study, synthesizing the results to highlight significance in addressing research objectives. It begins with a summary of the main findings, outlining the critical insights derived from the study. The conclusions are then drawn, reflecting on how the findings contribute to the existing body of knowledge and their implications for policy, practice, and future research. Finally, the chapter offers recommendations based on the study's results, targeting key stakeholders some who include policymakers, healthcare providers, and community leaders to address the identified challenges and improve health systems. This chapter serves as a comprehensive wrap-up of the study, ensuring that research insights are effectively converted into actionable steps.

5.2 Summary of the Study Findings

This study examined determinants of SRH service utilization among adolescent girls (10–19 years) in Kajiado County's five sub counties (Kajiado Central, South, East, West, and North). While 67.3% reported basic SRH awareness, only 41.8% demonstrated comprehensive knowledge especially on contraception and reproductive rights. Some of the key determinants put into consideration include:

5.2.1 ASRH Knowledge

The first specific objective of the study was to evaluate the level of knowledge among adolescent girls in Kajiado County in regards to sexual and reproductive health (SRH). The findings revealed that while most participants had basic awareness of SRH concepts, substantial gaps in comprehensive understanding remained. Descriptive statistics indicated that 45.9% of respondents could correctly identify modern contraceptive methods, but only 28.7% demonstrated proper

understanding of usage. 54.2% were aware of sexually transmitted infections (STIs), yet less than half could name specific prevention measures. School programs accounted for 47.6% of information sources, followed by peers (31.4%) and healthcare workers (21%). Having restricted access to education and healthcare services further compounds the challenges, making it difficult for rural adolescents to obtain accurate and comprehensive information on SRH. Healthcare workers, while recognized as key sources of information, faced challenges related to cultural sensitivities and the accessibility of their services.

5.2.2 Individual Factors

The findings on the second objective, which sought to identify individual factors affecting the utilization of sexual and reproductive health (SRH) services by adolescent girls in Kajiado County, reveal the utilization of sexual and reproductive health (SRH) services by adolescent girls in Kajiado County were greatly influenced by individual factors. Limited awareness and understanding of SRH issues were evident, with many girls displaying misconceptions and gaps in knowledge about available services. This lack of comprehensive information often diminished their confidence in accessing care. In addition, stigma surrounding SRH services, stemming from fear of judgment by peers, family members, and healthcare providers, emerged as a critical barrier that discouraged adolescents from seeking necessary support. Older adolescents (17–19 years) were more likely to use SRH services (OR = 1.76, $p = 0.018$) compared to younger peers (15–16 years). Unmarried girls were also more likely to seek SRH information than married adolescents, who often faced mobility and consent restrictions.

Privacy concerns were cited by 56.7% of respondents, while 72.5% identified financial constraints as barriers. FGDs indicated that previous negative experiences with providers, reported by nearly one-third (31%) of participants discouraged repeat visits.

Privacy and confidentiality in service delivery also emerged as key factors affecting utilization. Adolescents expressed concerns about breaches of confidentiality, which acted as a deterrent to seeking care. The preference for discreet and respectful service delivery was evident, reflecting the importance of trust in the healthcare system. Collectively, these findings highlight the interplay of knowledge, attitudes, personal autonomy, and trust in determining adolescents' use of SRH services in Kajiado County.

5.2.3 ASRH Client Centeredness

The third objective of the study sought to examine patient-centeredness practices in delivering sexual and reproductive health (SRH) services to the adolescent girls in Kajiado County. The findings revealed significant gaps in the implementation of patient-centered care, which is crucial for fostering trust, comfort, and effective service utilization. Adolescent girls reported challenges in accessing the SRH services as a result of perceived absence of empathy, inadequate communication, and insufficient consideration of their specific needs.

Healthcare providers were found to be largely focused on clinical procedures, often overlooking the psychological, emotional, and cultural concerns of the adolescent girls seeking care. Many adolescents described feeling uncomfortable and judged when accessing SRH services, which undermined their willingness to seek care regularly. There was also a noted reluctance among healthcare providers to engage in discussions around sensitive topics such as contraception, menstruation, and sexual health, often due to cultural stigmas and a lack of appropriate training to address adolescent-specific needs.

Furthermore, participants highlighted that there was no privacy and confidential sessions during service delivery, which significantly impacted their experience and willingness to disclose

information that is in relation to their sexual and reproductive health. The setting and manner in which services were delivered also contributed to the shaping of the adolescent girls' experiences. The findings suggested that an environment that fosters trust, open communication, and respect for the unique needs of adolescents could greatly improve their healthcare experience.

5.2.4 Health Financing

The fourth objective of the study was aimed at assessing the effects of financial interventions on the utilization of sexual and reproductive health (SRH) services among the adolescent girls in Kajiado County, Kenya. The findings revealed that adolescents who paid out of pocket had significantly higher odds of utilizing SRH services compared to those covered by insurance, while those using vouchers were less likely to utilize services. This indicates that although insurance is a common payment method, out-of-pocket costs play a crucial role in facilitating access to SRH services, suggesting a need for more comprehensive financial support.

Further examination of the cost components highlighted the financial barriers faced by adolescents when accessing SRH services. Out-of-pocket expenditure emerged as the dominant payment mode (52.8%), followed by insurance (27.3%) and voucher use (19.9%). Chi-square results ($\chi^2 = 12.674$, $df = 3$, $p = 0.031$) confirmed significant association between mode of payment and utilization levels. Transportation costs were the main deterrent (61.5%) to accessing care, especially for rural adolescents. Those residing over 5 km from facilities were 48% less likely to seek services than those living closer. Transportation and laboratory test fees were identified as the most significant expenses. Many adolescents indicated that transportation costs were the primary financial obstacle, preventing them from seeking care. While some adolescents accessed services at no cost, the small

proportion of such cases underscores the affordability gap, emphasizing the need for more accessible and subsidized SRH services to alleviate these financial burdens.

The study also explored how social and demographic factors, like age, education level and marital status, influenced the methods of payment for SRH services. Younger adolescents relied more on insurance, whereas older adolescents were more likely to pay out of pocket. Education level and marital status were also significant, with adolescents having primary education using out-of-pocket payments more frequently, and married adolescents favoring vouchers. These findings highlight the importance of tailoring financial interventions to different socio-demographic groups to ensure equitable access to SRH services for all adolescents in Kajiado County.

5.2.5 Health Referral System

The fifth objective of this study aimed at examining how health referral systems, influence the utilization of sexual and reproductive health (SRH) services among adolescent girls in Kajiado County. The findings highlight significant challenges in the referral process, as many adolescent girls reported not being referred for SRH services by healthcare professionals. A lack of proactive engagement and communication between healthcare providers and adolescents emerged as key factors contributing to limited utilization of SRH services. This gap in referrals was further influenced by the demographic factors of age, education level, and marital status.

Findings revealed that referral patterns varied across different age groups, education levels and marital status. Adolescents, particularly those who aged between 10-10 years, were more likely to receive referrals compared to older adolescents aged 17-19 years. Additionally, referrals were more common among those with no formal education, while those who were married were less likely to be referred. Trust in healthcare professionals, confidentiality, and clear communication

about available services were identified as key factors influencing adolescents' decisions to utilize SRH services once referred. These elements played a significant role in shaping the utilization of services, with privacy and information being the most important determinants.

Further findings indicated that communication and coordination between referral agents and healthcare providers were poor, as many adolescents reported that their referrals were made unaware by healthcare professionals. Despite the lack of effective coordination, one of the most significant barrier to utilizing SRH services pinpointed out was as financial constraints. Other factors, such as the attitude of healthcare providers, the distance to facilities, and parental influence, also played a role, but financial issues were the primary deterrent. A small proportion of adolescents, despite these barriers, expressed willingness to recommend the referral system to others, although most remained unconvinced of its overall effectiveness.

The Digital Health System is a very critical component of this study and it actually offers an exclusive opportunity to adolescents to leverage the SRH knowledge provided. Some of the ways in which it can be strengthened to build on the basis in which it is based under include:

Development of a Digital Health Curriculum for Adolescents and Students.

It is recommended that a structured Digital Health Curriculum be developed and integrated into secondary school and tertiary education programs across Kajiado County and beyond. This curriculum should equip adolescents and young adults with practical competencies in navigating digital health platforms, understanding online privacy, accessing credible SRH information, and engaging responsibly on social media. By embedding modules on digital literacy, e-health ethics, and reproductive health information management, schools can cultivate a generation of digitally

empowered youth who actively utilize online resources to make informed health choices. Collaboration between the Ministry of Education, Ministry of Health, and digital innovation partners will ensure that the curriculum aligns with the Kenya eHealth Policy (2016-2030) and the Digital Health Act (2023), thereby institutionalizing sustainable digital health education at both the community and academic levels.

Capacity Building and Training for Health Facility Staff and Practitioners

To maximize the effectiveness of the digital health system, deliberate capacity-building initiatives should be implemented for health facility staff, community health volunteers, and SRH practitioners. Training programs should focus on the operational use of digital platforms, data security, online counseling techniques, and integration of digital referrals into routine service delivery. This will enhance health workers' digital competence, promote timely data reporting, and ensure adolescents receive responsive, evidence-based digital support. Continuous professional development workshops-conducted through county health departments in partnership with universities and development agencies-should institutionalize digital health skills as part of standard healthcare practice. Strengthening staff proficiency not only improves service delivery efficiency but also reinforces the sustainability of digital innovations within the broader health system.

Applicability and Optimization of Social Media Platforms

The growing presence of the study's digital health platform on Instagram and other social channels demonstrates its potential as a scalable engagement tool. It is therefore recommended that the social media ecosystem of the platform be formally integrated into adolescent SRH programming to enhance reach, interactivity, and peer-to-peer communication. Facility-based health educators and youth champions should leverage these platforms to share verified information, host live Q&A sessions, and facilitate confidential discussions that destigmatize SRH topics. Strategic partnerships with influencers, content creators, and local youth organizations can expand audience engagement while maintaining ethical and cultural sensitivity. Continuous monitoring of analytics such as engagement rates, content reach, and referral clicks will ensure evidence-based optimization of digital communication strategies, positioning social media as a vital conduit for health promotion and service linkage among adolescents.

5.3 Conclusion of the Study

The study concludes that several factors influence the utilization of sexual and reproductive health (ASRH) service in Kajiado County is by adolescents. While there is a moderate level of knowledge about ASRH among adolescent girls, gaps in understanding key areas such as contraception and sexually transmitted infections hinder service uptake. Individual factors, including age, marital status, and education level, also play significant roles. Younger and unmarried adolescents, as well as those with higher education levels, are more likely to utilize ASRH services, while cultural and social pressures limit service access for others. Additionally, the client-centeredness of services, including provider empathy and confidentiality, significantly impacts adolescents' willingness to seek care. However, many reported dissatisfaction with the quality of services, which reduces their likelihood of seeking help.

Financial constraints and ineffective health referral systems further limit ASRH service utilization. Many adolescents face financial barriers, especially those from low-income backgrounds, making it difficult to access essential services. Furthermore, although referral systems exist, they often fail to connect adolescents with services due to inadequate communication, follow-up, and trust in the system.

Importantly, the study also finds that integrating a digital health platform could serve as a critical intervening variable. Digital solutions have the potential to enhance confidentiality, provide accessible SRH information, and facilitate communication between adolescents and healthcare providers, thereby improving service utilization. These findings underscore the need for multi-level interventions that combine education, health system strengthening, and innovative digital approaches to improve adolescent SRH outcomes in Kajiado County.

5.4 Study Recommendations

Based on the study findings, several context-specific recommendations are proposed within the objective setting:

I. Objective 1: To assess the Influence of Adolescent's SRH on the utilization of SRH services

Recommendation: Strengthen SRH education through schools and community programs- Comprehensive Incorporate additional information dissemination through sexual and reproductive health education which should be integrated into school curricula and expanded through community outreach activities.

Address individual and socio-cultural factors through tailored interventions.

Programs should target adolescents of different backgrounds, with special attention to younger, unmarried, and less educated girls who face unique barriers. Involving parents and guardians, especially for girls under 18 years, is essential to reduce resistance, encourage consent, and support adolescent girls in accessing SRH services.

II. Objective 2: To Determine the Effect of Individual factors on the Utilization of SRH services

Recommendation: Target Interventions by Individual Profiles, where younger teens, married adolescents have tailored outreaches and safe spaces to air out their issues. **Improve client-centered care in health facilities.** Healthcare providers should be trained and continuously sensitized to offer adolescent-friendly services that are confidential, respectful, and non-judgmental. Creating safe spaces where adolescents feel comfortable seeking services is key to increasing utilization.

III. Objective 3: To Examine how patient centered practices in Health facilities influence the utilization of SRH services

Recommendation: Strengthen adolescent centered care where confidential spaces, safe voices, non-judgmental feedback is provided and creates an open arena to be able to improve the SRH.

Strengthen referral systems. County health managers should reinforce referral pathways by improving communication and follow-up mechanisms between different levels of care. Building trust and awareness among adolescents about

referral options is necessary to ensure that referrals translate into actual service utilization.

IV. **Objective 4: To assess the role of Financial Interventions in enhancing the utilization of SRH services.**

Recommendation: Reduce financial friction by expanding insurance enrollment for adolescents, operationalizing fee waivers and vouchers, minimizing informal charges and publishing clear fee schedules

V. **Objective 5: To evaluate how referral systems affect the utilization of SRH services.**

Recommendation: Strengthen referral systems, where County health managers should reinforce referral pathways by improving communication and follow-up mechanisms between different levels of care. Building trust and awareness among adolescents about referral options is necessary to ensure that referrals translate into actual service utilization

VI. **Objective 6: To propose a digital health platform as an intervention to improve the utilization of SRH services among adolescent girls**

Recommendation: Leverage digital health platforms, putting emphasis on the adoption of a digital health platform which should be prioritized as an innovative solution to improve SRH service utilization. Such a platform can provide adolescents with confidential access to SRH information, facilitate appointment booking, send reminders for follow-up care, and connect adolescents with trusted

providers. Integrating digital tools into existing health systems would enhance both service delivery and adolescent trust.

5.5 Suggestions for Further Research

Future research could explore the role of community leaders and local influencers to uncover how these figures shape adolescents' attitudes and behaviors toward sexual and reproductive health (ASRH) services. Their influence in encouraging or discouraging service utilization could be a crucial factor in improving health outcomes. Additionally, examining the impact of cultural norms and practices, such as female genital mutilation (FGM) and early marriage, could identify barriers that restrict adolescents from seeking ASRH services, providing clearer insights into how these practices can be addressed.

Future studies should also investigate the balance between parental consent and adolescent autonomy in accessing SRH services. Understanding how legal and cultural expectations around consent influence adolescents' ability to seek care—particularly those below 18 years—would provide valuable insights into how to safeguard adolescents' rights while respecting community norms.

Longitudinal studies following adolescents over time could evaluate the long-term effects of improved ASRH knowledge and client-centered care on the utilization of services and health outcomes. This approach could reveal whether interventions lead to sustained service use and enhanced health outcomes. Furthermore, assessing different health financing models in rural and underserved areas could provide valuable data on how to increase service access and affordability, contributing to the broader goal of improving ASRH service delivery.

The potential of digital health platforms and telemedicine could be investigated in future research to assess how new technologies can improve the access to ASRH services, particularly in the remote areas or crisis-affected areas. These digital solutions could mitigate logistical challenges and improve service delivery. Exploring integration of ASRH services with other health services for adolescents, such as mental health alongside nutrition, could highlight the benefits of a more holistic approach, improving service utilization and overall health outcomes for adolescents.

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WORK PLAN

The work plan sketch provides the time guideline for this study.

	2023										

APPENDICES

Appendix I: ISERC Approval



KENYA METHODIST UNIVERSITY

P. O. 267 Meru - 60200, Kenya

Fax: 254-64A0?62

Tei: 254-064-30301/31229/30367/31171

Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

November 9, 2023

Commission Secretary,

National Commission for Science, Technology and Innovations,

P.O. Box 30623-00100

NAIROBI.

Dear Sir/Madam,

RE: WILFRIDA KADENYI ALUDA - (REG. NO. HSM-4-1817-1/2C21)

This to confirm that the above named person is a bona fide student of Kenya Methodist

University, in the School of Medicine and Health Sciences, Department of Health System Management undertaking a Doctoral Degree in Health System Management, She is conducting research on; "A Health Systems Approach to Sexual and Reproductive Health Service Utilization by Adolescent Girls in Kajiado County, Kenya".

We confirm that her research proposal has been presented and approved by the University.

In this regard, we are requesting your office to issue a research license to enable her collect data.

Any assistance accorded to her will be appreciated.



Yours sincerely.
Dr. John M. Muchiri (PhD)
Dean, Postgraduate Studies
Cc: Dean SMHS

CoD, HSM
Program Coordinator -H-
qv'l
Student Supervisors



KENYA METHODIST UNIVERSITY

P. U. BOX 267 MERL) - 60200, KENYA FAX: 254-64-30162 TEL:
254-064-30301/31229/30367/31171 EMAIL: INFO@KEMU.AC.KE

November 9, 2023

KeMU/ISERC/HSM/28/2023

WILFRID RADENYI
ALUDA HSM 4-1817
1/2021

Dear Wilfrida,

**SUBJECT: HEN SYSTEMS APPROACH TO SEXUAL AND REPRODU
CTIVE HEALTH SERVICE UTILIZATION BY ADOLESCENT GIRLS IN KAJIADO C
OUNTY KENYA**

This is to inform that Kenya Methodist University Institutional Scientific Ethics and Review Committee has reviewed and approved your research proposal. Your application approval number is KeMU/ISERC/HSM/28/2023. The approval period is 9th November, 2023 - 9th November, 2024.

This approval is subject to compliance with the following requirements:-

I. Only approved documents including (informed consents, study instruments, IRB/ITA) will be used.

II. All changes including (amendments, deviations, and variations) are submitted for review and approval by Kenya Methodist University Institutional Scientific Ethics and Review Committee.

III. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMIJ ISERC within 72 hours of notification.

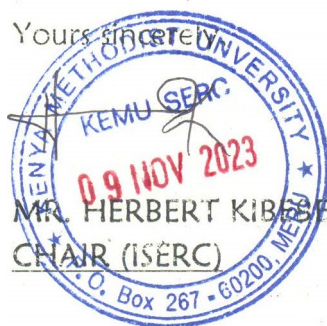
IV. Any changes, anticipated or otherwise that may increase the risks or affect the welfare of study participants and others or affect the integrity of the research must be reported to KeMU ISERC within 72 hours.

V. Clearance for export of biological specimens must be obtained from relevant institutions.

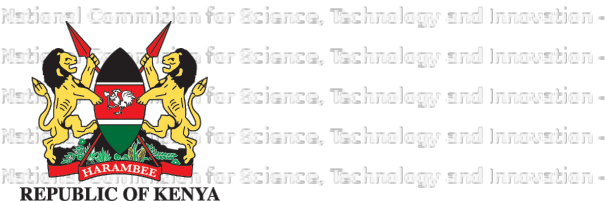
VI. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to the renewal.

VII. Submission of an executive summary report within 30 days upon completion of the study to KeMIJ ISERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://onlinacos.gov.ke> and also obtain other clearances needed.



Appendix II: NARCOSTI Permit



Ref No: 942266

RESEARCH LICENSE



This is to Certify that Miss.. Wilfrida kadenvi Aluda of Kenva Methodist University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kajiado on the topic: A HEALTH SYSTEM APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH SERVICES UTILIZATION BY ADOLESCENT GIRLS IN KAJIADO COUNTY KENYA for the period ending: 22/November/2024.

License No:

NACOSTI/P/23/31021

94226

Applicant Identification Number


Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document.

Scan the QR Code using QR scanner application.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing)
Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
 - i. Endanger national security
 - ii. Adversely affect the lives of Kenyans
 - iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
 - iv. Result in exploitation of intellectual property rights of communities in Kenya
 - v. Adversely affect the environment
 - vi. Adversely affect the rights of communities
 - vii. Endanger public safety and national cohesion
 - viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.

10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix III: County Approval Letters

Research Authorization 1

COUNTY GOVERNMENT OF KAJIADO



DEPARTMENT OF MEDICAL SERVICES & PUBLIC HEALTH
OFFICE OF THE COUNTY DIRECTOR OF MEDICAL SERVICES
P. O. BOX 31, KAJIADO

REF: CGK/MEDICAL SERVICES/OI/VOL.11/222

22nd November, 2023

WILFRIDA KADENYI ALUDA

KENYA METHODIST UNIVERSITY

P. O. BOX 267-60200

MEW-KENYA

RE: RESEARCH AUTHORIZATION

Reference is made to your request and research authorization from the office of County Commissioner, Kajiado County and Office of the County Director Education both dated 27th November 2023 and NACOSTI Research License no. NACOSTI/P/23/31021

The Department has no objection in you carrying out research on 'A Health system approach to sexual and reproductive health services utilization by adolescent girls in Kajiado.' for the period ending 22nd November 2024.

You are however required to share findings of your research with this office. By copy of this letter the respective facility incharges are requested to accord the team the necessary assistance.

Thank you.



DR. LYDIA MUNTEYIAN

COUNTY DIRECTOR MEDICAL SERVICES

CC: CHIEF OFFICER FOR MEDICAL SERVICES CHIEF

OFFICER PUBLIC HEALTH & SANITATION

COUNTY DIRECTOR PUBLIC HEALTH

THE RESPECTIVE HEALTH FACILITY INCHARGES:- Kindly accord the necessary
assistance.

Research Authorization 2



**REPUBLIC OF KENYA
MINISTRY OF EDUCATION**

State Department for Basic Education

Email: kajiadocde@gmail.com

When replying please quote

Ref: KJD/C/R.3/111/80

Miss Wilfrida Kadenyi Aluda
Kenya Methodist University
P.O Box 267-60200

MERU

RE: RESEARCH
AUTHORIZATION

County Director of Education

Kajiado County

P.O. Box 33-01100 KAJIADO

27th November, 2023

Reference is made to the letter from National Commission for Science, Technology and Innovation License No: NACOSTI/P/23/31021 dated 22nd November, 2023.

Authority is hereby granted for you to conduct your research on "A health system approach to sexual and reproductive health services utilization by adolescent girls in Kajiado County for the period ending 27th November,

2024.

On completion of the rese
(thesis) with the County D •



*

ISAACK KIPKOSGEI
FOR: COUNTY DIRECTOR
KAJIADO COUNTY

•ndWakare major highlights of the findings r of Bdv(e ion's office.

COUNTY

EDUCATION

Research Authorization 3

**OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR & COORDINATION OF NATIONAL**

Telegrams: "COUNTY", Narok

Telephone: Narok (050) 22433

If calling or telephoning ask for the undersigned

When repl} ing please quote

County Commissioner's office

Narok County

Po Box 4-20500

NAROK

RE: SR.ADM.10/6 VOL.II/170

11th

December, 2023

All Deputy County Commissioners

NAROK COUNTY

RE: AUTHORITY TO CARRY OUT RESEARCH: KADENYI ALUDA

The above named is a PhD student at Kenya Methodist University. She has been authorized to conduct research on the topic "A Health system approach to sexual and reproductive health service utilization by adolescent girls in Kajiado and Narok Counties" from the period starting 26th December, 2023 to December end 2024.

Any assistance accorded to her will be highly appreciated.


ISAAC W. MASINDE, OGW

COUNTY COMMISSIONER

NAROK COUNTY

Wilfrida Aluda

Research Authorization 4



**REPUBLIC OF KENYA
MINISTRY OF EDUCATION**

State Department for Basic Education

FAX NO. 050-22391

When replying please quote;

Ref CDE/NRK/RES/VOL1/313

COUNTY DIRECTOR OF
EDUCATION

NAROK COUNTY

P.O BOX 18

NAROK

DATE: 11TH DECEMBER, 2023

TO WHOM IT MAY CONCERN

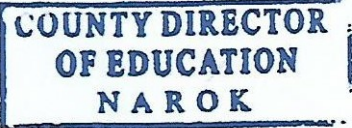
RE: RESEARCH AUTHORIZATION - WILFRIDA ICADENYI ALUDA.

The above named is of Kenya Methodist University.

She has been authorized to carry out research on the topic "A Health System Approach

to Sexual and Reproductive Health Services Utilization by Adolescent Girls "in Narok County, Kenya for the period ending 22/11/2024.

Please accord her necessary assistance.

 
APOLLO APUKU APOLLO AP
COUNTY DIRECTOR OF EDUCATION

NAROK

c.c

- County Commissioner - Narok
- County Director Health - Narok
- Wilfrida Kadenyi Aluda

Research Authorization 5



NAROK COUNTY GOVERNMENT

DEPARTMENT OF HEALTH AND SANITATION

Telegrams: "HEALTH", Narok

cot NTY DIRECTOR OF HEALTH

Telephone: Narok 22300 and 22308

NAROK COUNTY

Fax: (050) 22394

P.O. BOX 11- 20500

Email: countyhealthdirectornarok@gmail.com

NAROK

Mien replying please quote our Ref and date

OUR REF: DIR/NRK CNTY/MOH/60/VOL 11/253

14th December, 2023

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION - WILFRED KADENYI ALUDA NACOSTI
LICENSE NO: NACOST1/P/23/31021.

Refer to your letter dated 9th November, 2023.

Authority has been granted to the above named student of Kenya Methodist University to carry out research on the topic 'A Health System Approach to Sexual and Reproductive Health Services Utilization b)' Adolescent Girls ' In Narok County, Kenya for the period ending 22th November, 2024.

The student is expected to carry out research responsibly and all information provided treated with the confidentiality it deserves.

By copy of this letter. all Medical SuperintendenlŸ and Sub County Medical Officers of Health Narok County Government are requested to accord the student the necessary support.

Regards.



Patrobers P. Sankei

For: County Director of
Health

NAROK COUNTY GOVERNMENT



Research Authorization 6



OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION
COUNTY COMMISSIONER, KAJIADO

Telephone: 0203570295

Fax: 0202064416

Email: kajiadocc2012@gmail.com

When replying please quote

County

Commissioner

Kajiado County

P.O. Box 1-01100

KAJIADO

27th November,
2023

Ref. KJD/CC/ADM/45 VOL. IV (73)

Miss Wilfrida Kadenyi Aluda

Kenya Methodist University

P.O. Box 267-60200

MERV-KENYA

RE: RESEARCH AUTHORIZATION- WILFRIDA
KADENYI

Following the request made on your behalf by National Commission for Science, Technology and Innovation vide letter Ref. No. NACOSTI/P/23/31021 dated 22nd November, 2023.

We have no objection, you are hereby granted authority to carry out research on "A health system approach to sexual and reproductive health services utilization by adolescent girls' in Kajiado County for the period ending; 22nd November, 2024.

It is expected that you adhere to research ethics in doing your study.

ONE-SMUS KAMAU

FOR: COUNTY
COMMISSIONER KAJIADO COUNTY



cc

County Director of Health
KAJIADO COUNTY

County Director of Education
KAJIADO COUNTY

Deputy County Commissioners
KAJIADO COUNT(

Appendix IV: Letter of Introduction

Dear Sir/ Madam,

RE: REQUEST TO CARRY OUT RESEARCH IN KAJIADO COUNTY

I respectfully seek permission to conduct the aforementioned study within the sub-county. I am a Kenya Methodist University PhD student (Student Number) researching on **A HEALTH SYSTEMS APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH SERVICE UTILIZATION BY ADOLESCENT GIRLS IN KAJIADO COUNTY, KENYA.**

This study will be carried out only for academic purposes. However, when the study is completed, the study results may be made public to assist future researchers and other key parties in their work. The data collecting method will be carefully scrutinized to verify that it adheres to ethical guidelines.

Thank you in advance for your cooperation.

Yours Faithfully,

Wilfrida Aluda

Nairobi

11th January 2023

Kenya Methodist University

P. O Box 267-60200

MERU, Kenya

Appendix V: Informed Consent

Dear Respondent,

My name is Wilfrida Aluda PhD student from Kenya Methodist University. I am conducting a study titled: **A HEALTH SYSTEMS APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH SERVICE UTILIZATION BY ADOLESCENT GIRLS IN KAJIADO COUNTY, KENYA**. As a result, enhanced healthcare services will benefit nations, regions, and people. This study project is essential to the improvement of health systems because it will create new information in this area, allowing decision makers to make research-based choices.

Procedure to be followed

To take part in this study, I'll need to ask you some questions and gain access to all of the hospital's sections. I'll keep track of your responses in a questionnaire and check list. You have the option of declining to participate in this study. You will not be fined or persecuted for declining to participate in the study, and your decision will not be used against you or have an impact on your job. Please keep in mind that participation in the study is optional. You are free to ask any questions about the study at any time. You have the right to decline to answer any questions and to end an interview at any moment. You are free to leave the study at any moment without affecting the services you are providing.

Discomforts and risks

Some of the questions you'll be asked will be about personal matters, which may be humiliating or make you feel uneasy. If this occurs, you have the option of refusing to respond. You have the option to end the interview at any moment. It's possible that the interview will take around 40 minutes to finish.

Benefits

By taking part in this study, you will aid in the strengthening of health systems in Kenya and other low-income African nations. As a result, enhanced healthcare services will benefit countries, communities, and people. This field attachment is essential to the health-care system's strengthening since it will create new information in this area, allowing decision-makers to make research-based decisions.

Rewards

There is no reward for anyone who chooses to participate in the study.

Confidentiality

The interviews will take place in a secluded area. Your name will not appear on the questionnaire, and it will be held in a secure location at the University.

Contact Information

If you have any questions you may contact the following supervisors:

Dr. Job Okoko Mapesa or Dr Kezia Njoroge,

Department of Health Systems Management, Kenya Methodist University.

Email: or kezia.njoroge@kemu.ac.ke

Tel. No.: +2547..... or Dr Kezia Njoroge +254738970746

Participant's Statement

I understand the aforementioned declaration regarding my participation in the study. I was given the opportunity to ask questions, and my queries were well answered. It is totally up to me whether I participate in this study. I accept that my information will be kept confidential and that I am free to exit the study at any time. I realize that whether I quit the study or not, I will not be mistreated at work, and that my decision will have no impact on how I am treated at work.

Participant Signature..... Date.....

Investigator's Statement

I, the undersigned, have described the procedures to be followed in the research, as well as the risks and rewards associated, to the participant in a language he or she understands.

Name of Interviewer Date.....

Interviewer Signature

Appendix VI: Revised questionnaire after pilot test

1. Questionnaire: Adolescents Background characteristics

N o	Question	Coding Categories	INDICATE
			TICKBOX
1 . 1	Age	Below 10	
		10 - 16	
		16 - 17	
		17 -18	
		18 - 19	
1 . 2	Current level of education	No Formal Education	
		Primary	
		Secondary	
		College/University	
1 . 3	Marital Status	Single	
		Married	
		Separated	
		Widowed	

2. ASRH Knowledge

N o	Question	Coding categories	TIC K	
2 . 1	Do you understand the term sexual and reproductive	Yes	[1]	
		No If No go to 2.5	[0]	

	health?			
Enumerator's note: Please read the standard definition to the respondent before proceeding with the interview. "The term 'sexual and reproductive health' can be defined as a person's right to a healthy body and the autonomy, education, and healthcare to freely decide who to have sex with and how to avoid sexually transmitted infections or unintended pregnancy."				
2	From the given list, choose the sexual reproductive health issues you are facing/faced. Where 1 = Yes and 0 = No	Early forced marriages	[1]	[0]
.		Unwanted pregnancies	[1]	[0]
2		Female genital mutilation	[1]	[0]
		Unsafe abortions	[1]	[0]
		Sexually transmitted infections HIV	[1]	[0]
		Other (please specify)	[1]	[0]
		None		

		If none go to 2.5		
2	Choose the sexual and reproductive health services you know from the given list?	Voluntary testing and counseling	[1]	[0]
.		Condoms for family planning	[1]	[0]
3		Pills for family planning	[1]	[0]
		Injections for family planning	[1]	[0]

	Where 1 = Yes and 0 = No	Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		School	[1]	[0]
		Others (please specify)	[1]	[0]
		I don't know.	[1]	[0]
		If you Don 't Know skip to 2.5		
		TICK MULTIPLE OPTIONS		
2 . 4	Choose from the given list where you learnt about these services. Where 1 = Yes and 0 = No	Parents	[1]	[0]
		Friends	[1]	[0]
		Health facility	[1]	[0]
		Other (please specify)	[1]	[0]
		If you don't Know skip to 2.5		
2 . 5	Are you aware of any health service provider that offers sexual and reproductive health services for adolescent girls in your area? Where 1 = Yes and 0 = No	Yes	[1]	[0]
		No If No skip to 3.1		
		Not sure	[1]	[0]
2 . 6	What services are offered in this health facility by the health service provider? Where 1 = Yes and 0 = No	Voluntary testing and counseling	[1]	[0]
		Information on sexual and reproductive health	[1]	[0]
		Condoms	[1]	[0]
		Pills for family planning	[1]	[0]

		Injections for family	[1]	[0]
		planning	[1]	[0]
		Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		Comprehensive Sexuality Education	[1]	[0]
		Others (please specify)		
		I don't know the services provided in this health facility Skip to 3.1 if you selected, I don't know		

3. ASRH Client Centeredness

3.1	I have participated in a forum where ASRH issues were discussed	Yes	[1]	
		No	[0]	
		If 3.1=No skip to 4.1		
3.2	Choose one of the forums you participated in. Where 1 = Yes and 0 = No	School education programs	[1]	[0]
		Community dialogues	[1]	[0]
		Church meetings	[1]	[0]
		Peer to peer educational programs	[1]	[0]
3.3	Choose the organizer of the forum from the list provided. Where 1 = Yes and 0 = No	Health Providers	[1]	[0]
		NGOs	[1]	[0]
		FBOs Teacher	[1]	[0]
		Government and community leaders	[1]	[0]

		CBOs	[1]	[0]
		Others	[1]	[0]
		If None go to 3.4		
3. 4	In the meeting, my views were put into consideration. Where 1 = Yes and 0 = No	Yes		
		No If No go to 3.7		
3. 5	I have visited a health facility for SRH services. Where 1 = Yes and 0 = No	Yes		
		No If 3.4==No skip to 3.11		
3. 6	These service/s were offered there. Where 1 = Yes and 0 = No	Voluntary testing and counseling	[1]	[0]
		Information on sexual and reproductive health Condoms	[1]	[0]
		Pills for family planning	[1]	[0]
		Injections for family planning	[1]	[0]
		Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		Others (please specify)	[1]	[0]
		I don't know the services provided in this health facility If None go to 3.10		
3. 7	I was treated with dignity when I visited SRH services provider	Yes	[1]	
		No	[0]	

	Where 1 = Yes and 0 = No			
3.8	During the counselling the provider listened to my concerns Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
3.9	I received the services of my choice Where 1 = Yes and 0 = No	Yes	[1]	

		No	[1]	[0]
3.10	The healthcare provider's attitude towards me was. Where 1 = Yes and 0 = No	Very good	[1]	[0]
		Good	[1]	[0]
		Average	[1]	[0]
		Bad	[1]	[0]
3.11	I am aware of places where you can obtain such services in my area. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	

4. Health Financing

No.	Question	Coding categories	TICK	
4.1	I have sought sexual	Yes	[1]	

	and reproductive health services in the past. Where 1 = Yes and 0 = No	→		
		No If No go to 4.6	[0]	
4.2	If yes select the fees, you paid to access the services. Where 1 = Yes and 0 = No	Transportation	[1]	[0]
		Communication	[1]	[0]
		Consultation fee	[1]	[0]
		Commodity fee	[1]	[0]
		Laboratory tests fee	[1]	[0]
		No cost	[1]	[0]
		Others	[1]	[0]
4.3	Which method/s did you use to pay for the services? Where 1 = Yes and 0 = No	Insurance cover	[1]	[0]
		Out of pocket	[1]	[0]
		Voucher	[1]	[0]
		Not applicable	[1]	[0]
4.4	I afforded SRH services Where 1 = Yes and 0 = No	Yes If NO go to 4.6	[1]	
		No	[0]	
4.5	I afforded these services Where 1 = Yes and 0 = No	Transportation Yes	[1]	
		No	[0]	

		Communication Yes	[1]	
		No	[0]	
		Consultation fee Yes	[1]	

		No	[0]	
		Commodity fee	[1]	
		Yes		
		No	[0]	
		Laboratory tests	[1]	
		Yes		
		No	[0]	
		Others	[1]	
	Yes			
	No	[0]		
4.6	I would use the SRH services if I had a voucher to pay for the services Where 1 = Yes and 0 = No	Yes If yes, how? (Explain your answer)	[1]	
		No (Explain your answer)	[0]	
4,7	I use the voucher to pay for my SRH services	Yes	[1]	
		No	[0]	
4.8	The voucher-system has allowed me to access ALL the SRH services I require	Yes	[1]	
		No	[0]	
4.9	I can use the SRH services without the Voucher	Yes	[1]	
		No	[0]	

5. Referral system

No.	Question	Coding categories	TICK	
5.1	I was referred for SRH services by a health profession	Yes	[1]	
		No	[0]	
		If No go to 5.5		
5.2	Show the most influential factor in your decision to utilize the ASRH referral service . The referral services are Where 1 = Yes and 0 = No	Accessible	[1]	[0]
		Trusted healthcare profession	[1]	[0]
		Confidentiality	[1]	[0]
		Information provided	[1]	[0]
		Recommendation from Peers	[1]	[0]
		Others	[1]	[0]
5.3	The healthcare professionals were aware of my referral for sexual reproductive health. Where 1 = Yes and 0 = No	Yes	[1]	
		No If No go to 5.5	[0]	
5.4	There was good communication between the referral agent and the health care provider about the ASRH service I required. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
5.4	To sexual reproductive health after receiving a referral? Where 1 = Yes and 0 = No Select the reasons that make it easy for you to use referral ASRH services	Accessible roads	[1]	[0]
		Religion	[1]	[0]
		Stigma from the community	[1]	[0]
		Financial	[1]	[0]
		Distance to the health facility	[1]	[0]

	Where 1 = Yes and 0 = No	attitude of the service provider	[1]	[0]
		Parental influence	[1]	[0]
5.5	Would you recommend a Health referral system for sexual and reproductive health services to other adolescent girls? Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	

6. Ways by which utilization to services can be improved.

For CHVS(community health promoters who are trained members of the community and act as a link between the community and formal health facilities. They also offer promotive, preventive and basic curative services) How would you rate the following reproductive health services about girls in your community?

	Availability	Accessibility	Affordability
Voluntary Counseling and HIV Testing	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Information on SRH	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Condoms	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Pills for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

Injections for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Antenatal care	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Delivery services	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

For Health Care Workers (*Anyone who works in a healthcare setting including frontline healthcare workers and are not necessarily in direct contact with the patient e.g doctors, nurses, technicians, or medical waste handlers*) How would you rate the following reproductive health services about girls in your community?

	Availability	Accessibility	Affordability
Voluntary Counseling and HIV Testing	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Information on SRH	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Condoms	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Pills for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

Injections for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Antenatal care	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Delivery services	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

For Counselors (A person who is trained to give guidance on personal or psychological problems with purpose of helping an individual gain personal insight, develop strategies and come up with real solutions for problems and challenges). How would you rate the following reproductive health services about girls in your community?

	Availability	Accessibility	Affordability
Voluntary Counseling and HIV Testing	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Information on SRH	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Condoms	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Pills for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

Injections for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Antenatal care	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Delivery services	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

For Teachers (A person who educates, instructs, teaches and guides especially as a profession in schools or at home). How would you rate the following reproductive health services about girls in your community?

	Availability	Accessibility	Affordability
Voluntary Counseling and HIV Testing	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Information on SRH	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Condoms	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Pills for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Injections for family planning	Available 1	Accessible.....1	Affordable.....1
	Not available 2		

		Inaccessible....2	Unaffordable.....2
Antenatal care	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2
Delivery services	Available 1	Accessible.....1	Affordable.....1
	Not available 2	Inaccessible....2	Unaffordable.....2

END OF QUESTIONNAIRE

Thank you for taking your time to fill it.

Appendix VII: Revised interview guide

Community Health Volunteers (CHVs):

Can you share your observations in your work of promoting family planning services within the community?

Prompts and Follow up points

1. What strategies have been effective?
2. Which ones were challenging?
3. What would you say about community members' perception of sexually transmitted infection services for adolescents?
4. In your role as a CHV, how do you address issues related to gender-based violence within the community?
5. Can you share any success stories?
6. What challenges you've faced?
7. What are the common concerns of the community members regarding maternal and child health/ante-natal clinic services
8. How do you address these concerns?
9. How do you gauge the level of awareness and understanding among community members and adolescents regarding family planning, STIs, gender-based violence, and maternal/child health services?
10. What is the impact of cultural or religious beliefs on sexual reproductive health services for adolescent girls?

Counselors:

1. Can you describe some common themes or issues that individuals bring up during counselling sessions related to family planning?
2. How do you tailor your approach to address these concerns of the adolescent?
3. Share the key challenges you experience providing effective counselling for adolescents seeking services related to sexually transmitted infections.
4. How do you navigate these challenges?
5. What would you say about individuals who have experienced gender-based violence?

6. Are there specific techniques or resources you find particularly helpful?
7. What are the main concerns or questions that pregnant women or individuals seeking maternal and child health services typically bring to counseling sessions, and how do you support them?
8. How do you ensure confidentiality and privacy during counseling sessions related to family planning, STIs, gender-based violence, and maternal/child health?
9. What is the impact of cultural or religious beliefs on the utilization of sexual reproductive health services for adolescent girls?

Health Care Workers:

1. What factors influence patients when they decide to seek family planning services at the healthcare facility, and how has the demand for these services evolved over time?
2. From your perspective, what hurdles do you encounter in delivering comprehensive services for sexually transmitted infections at the healthcare facility,
3. how do you navigate these challenges?
4. Can you elaborate on how healthcare workers collaborate with other professionals to address cases of gender-based violence within the community? Could you share any noteworthy interventions or successful strategies?
5. During maternal and child health/ante-natal clinic visits, what are the common concerns or questions raised by patients, and how do you go about addressing them?
6. How do you go about ensuring that patients receive sufficient information about the available services for family planning, STIs, gender-based violence, and maternal/child health during their visits to the healthcare facility?
7. Is there an impact of cultural or religious beliefs on the utilization of sexual reproductive health services for adolescent girls? Please explain.

Teachers:

1. From your perspective, what role do you believe teachers can play in raising awareness about family planning among students and their families? Have you experienced any challenges? Can you share any specific challenges you've faced in this endeavor?
2. How do you approach and handle questions or concerns about sexually transmitted infections that students may bring up? Are there particular educational strategies that you find to be effective?
3. In your experience, what role can teachers play in preventing and addressing gender-based violence among students? Could you discuss any specific programs or initiatives that you have found successful?
4. What are the typical questions or concerns raised by students or parents regarding maternal and child health, and how do you provide information or support in response?
5. How do you incorporate information about family planning, STIs, gender-based violence, and maternal/child health into the curriculum? Additionally, how do you ensure that students receive accurate and age-appropriate information?
6. As teachers, are there challenges you have encountered in the process of integrating reproductive health into the curriculum? What are some of these challenges?
7. Can you say that there is an impact of cultural or religious beliefs on the utilization of sexual reproductive health services for adolescent girls from your perspective as a teacher? Kindly explain.

Thank you for your time

Appendix VIII: Pilot study checklist

Date

S/No		
1.	<i>Did the introduction engage the respondent sufficiently?</i>	Yes [☒] No [☐]
2.	<i>Did the questionnaire flow logically as intended?</i>	Yes [☒] No [☐]
3.	<i>Were the instructions clear and easy to follow?</i>	Yes [☒] No [☐]
4.	<i>Did the target group understand the questions as intended?</i>	Yes [☒] No [☐]
5.	<i>Were the binary scale questions clear and easily understood?</i>	Yes [☒] No [☐]
6.	<i>Was there any duplication of questions or content?</i>	Yes [☐] No [☒]
7.	<i>Were there any important items or constructs that were missed?</i>	Yes [☐] No [☒]
8.	<i>Was the survey too long?</i>	Yes [☐] No [☒]
9.	<i>Are there any questions that are not necessary?</i>	Yes [☐] No [☒]
10.	<i>Did the response options make sense to the respondent and do they cover all possible answer possibilities?</i>	Yes [☒] No [☐]
11.	<i>Did the respondent look uncomfortable when answering some questions?</i>	Yes [☐] No [☒]

Average time taken to fill the questionnaire was 6 minutes and 48 seconds.

Appendix IX : Semi-Structured Questionnaire

1.Questionnaire: Adolescents Background characteristics

No	Question	Coding Categories	INDICATE
			TICKBOX
1.1	Age	10-10	
		16	
		17	
		18	
		19	
1.2	Current level of education	No Formal Education	
		Primary	
		Secondary	
		College/University	
1.3	Marital Status	Single	
		Married	
		Separated	
		Widowed	

2.Utilization of ASRH services

No.	Question	Coding categories	TICK	
2.1	I have sought sexual and reproductive health services in the past. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	

Q 2.2	I have utilized the following services	
-------	--	--

	Contraception, counseling and provision (Birth control pills, Injections, condoms and implants,)	Yes []	No []
	STI testing and treatment (STI's including HIV/AIDS, Gonorrhea, chlamydia, syphilis and HPV)	Yes []	No []
	Pregnancy testing and counseling	Yes []	No []
	Maternal health services(Prenatal care, post-natal care, and support services for pregnant individuals)	Yes []	No []
	Abortion services	Yes []	No []
	Others e.g. Gynecological care	Yes []	No []
	Sexual health education.	Yes []	No []
	Family planning services	Yes []	No []

3.ASRH Knowledge

N o .	Question	Coding categories	T I C K	
3 . 1	Do you understand the term sexual and reproductive health?	Yes No If No go to 3.5	[1] [0]	
Enumerator's note: Please read the standard definition to the respondent before proceeding with the interview. "The term 'sexual and reproductive health' can be defined as a person's right to a healthy body and the autonomy,				

education, and healthcare to freely decide who to have sex with and how to avoid sexually transmitted infections or unintended pregnancy.”				
3	From the given list, choose the sexual reproductive health issues you are facing/faced. Where 1 = Yes and 0 = No	Early forced marriages	[1]	[0]
.		Unwanted pregnancies	[1]	[0]
2		Female genital mutilation	[1]	[0]
		Unsafe abortions	[1]	[0]
		Sexually transmitted infections HIV	[1]	[0]
		Other (please specify)	[1]	[0]
		None If none go to 3.5		
3	Choose the sexual and reproductive health services you know from the given list? Where 1 = Yes and 0 = No	Voluntary testing and counseling	[1]	[0]
.		Condoms for family planning	[1]	[0]
3		Pills for family planning	[1]	[0]
		Injections for family planning	[1]	[0]
		Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		School	[1]	[0]
		Others (please specify)	[1]	[0]
		I don't know.	[1]	[0]
		If you Don 't Know skip to 3.5		
		TICK MULTIPLE OPTIONS		
3		Parents	[1]	[0]

4	Choose from the given list where you learnt about these services. Where 1 = Yes and 0 = No	Friends	[1]	[0]
		Health facility	[1]	[0]
		Other (please specify)	[1]	[0]
		If you don't Know skip to 3.5		
3 5	Are you aware of any health service provider that offers sexual and reproductive health services for adolescent girls in your area? Where 1 = Yes and 0 = No	Yes	[1]	[0]
		No If No skip to 4.1		
		Not sure	[1]	[0]
3 6	What services are offered in this health facility by the health service provider? Where 1 = Yes and 0 = No	Voluntary testing and counseling	[1]	[0]
		Information on sexual and reproductive health	[1]	[0]
		Condoms	[1]	[0]
		Pills for family planning	[1]	[0]
		Injections for family planning	[1]	[0]
		Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		Comprehensive Sexuality Education	[1]	[0]

		Others (please specify)		
		I don 't know the services provided in this health facility		
		Skip to 4.1 if you selected, I don't know		

4. ASRH Client Centeredness

4.1	I have participated in a forum where ASRH issues were discussed	Yes		[1]
		No		[0]
		If 4.1=No skip to 5.1		
4.2	Choose one of the forums you participated in. Where 1 = Yes and 0 = No	School education programs	[1]	[0]
		Community dialogues	[1]	[0]
		Church meetings	[1]	[0]
		Peer to peer educational programs	[1]	[0]
4.3	Choose the organizer of the forum from the list provided. Where 1 = Yes and 0 = No	Health Providers	[1]	[0]
		NGOs	[1]	[0]
		FBOs	[1]	[0]
		Teacher		
		Government and community leaders	[1]	[0]
		CBOs	[1]	[0]
		Others	[1]	[0]
		If None go to 4.4		
4.4	In the meeting, my views were put into consideration. Where 1 = Yes and 0 = No	Yes		
		No		
		If No go to 4.7		
4.5		Yes		

	I have visited a health facility for SRH services. Where 1 = Yes and 0 = No	No If 4.4==No skip to 4.11		
4.6	These service/s were offered there. Where 1 = Yes and 0 = No	Voluntary testing and counseling	[1]	[0]
		Information on sexual and reproductive health Condoms	[1]	[0]
		Pills for family planning	[1]	[0]
		Injections for family planning	[1]	[0]
		Pre-natal care	[1]	[0]
		Delivery services	[1]	[0]
		Others (please specify)	[1]	[0]
		I don't know the services provided in this health facility If None go to 4.10		
4.7	I was treated with dignity when I visited SRH services provider Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
4.8	During the counselling the provider listened to my concerns Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
4.9	I received the services of my choice Where 1 = Yes and 0 = No	Yes	[1]	

		No	[1]	[0]
4.10	The healthcare provider's attitude towards me was. Where 1 = Yes and 0 = No	Very good	[1]	[0]
		Good	[1]	[0]
		Average	[1]	[0]
		Bad	[1]	[0]
4.11	I am aware of places where you can obtain such services in my area. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	

5. Individual Factors

Q5.1	Are there specific religious doctrines that impact access to SRH services for adolescents?	Yes []	No []
		Not sure []	
	If yes which ones		
	Stigma surrounding premarital sex	Yes []	No []
		Not sure []	
	Abstinence-only education	Yes []	No []
		Not sure []	
	Prohibition of contraception	Yes []	No []
		Not sure []	
	Opposition to abortion	Yes []	No []
		Not sure []	
	Placing high value on virginity	Yes []	No []
		Not sure []	
Q5.2	Are there cultural practices that promote or hinder open communication about SRH within families?	Yes []	No []
		Not sure []	
	If yes which ones		
	Cultural norms of openness	Yes []	No []

		Not sure []
	Rites of passage	Yes [] No [] Not sure []
Q5.3	Are there cultural practices or rites of passage related to adolescence that influence SRH service utilization?	Yes [] No [] Not sure []
	If yes which ones	
	Initiation ceremonies	Yes [] No [] Not sure []
	Arranged marriages	Yes [] No [] Not sure []
	Cultural norms regarding virginity	Yes [] No [] Not sure []
	Gender-specific roles and expectations	Yes [] No [] Not sure []
	Cultural Taboos and Silence Surrounding Sexuality	Yes [] No [] Not sure []
Q5.4	Are there stigma or taboo surrounding SRH services for adolescents?	Yes [] No [] Not sure []
	If yes what are the common sources of stigma or taboo surrounding SRH services for adolescents?	
	Cultural beliefs and traditions	Yes [] No [] Not sure []
	Stigma surrounding premarital sex	Yes [] No [] Not sure []
	Societal expectations and gender roles	Yes [] No [] Not sure []
	Lack of comprehensive sex education	Yes [] No [] Not sure []
	Fear of judgment and discrimination	Yes [] No [] Not sure []
	Cultural myths and misconceptions	Yes [] No [] Not sure []
	Concerns about privacy and confidentiality	Yes [] No []

		Not sure []
Q 5.5	Is there a health facilities providing SRH services near you?	Yes [] No [] Not sure []
	The health facilities are well equipped with youth friendly spaces that cater to your needs and preferences	Yes [] No [] Not sure []

6.0 Health Financing

6.1	If yes select the fees, you paid to access the services. Where 1 = Yes and 0 = No	Transportation	[1]	[0]
		Communication	[1]	[0]
		Consultation fee	[1]	[0]
		Commodity fee	[1]	[0]
		Laboratory tests fee	[1]	[0]
		No cost	[1]	[0]
		Others	[1]	[0]
6.2	Which method/s did you use to pay for the services? Where 1 = Yes and 0 = No	Insurance cover	[1]	[0]
		Out of pocket	[1]	[0]
		Voucher	[1]	[0]
		Not applicable	[1]	[0]
6.3	I afforded SRH services Where 1 = Yes and 0 = No	Yes	[1]	
		If NO go to 5.6		
		No	[0]	
6.4	I afforded these services Where 1 = Yes and 0 = No	Transportation	[1]	
		Yes		
		If No go to 5.6		
		No	[0]	

		Communication	[1]	
		Yes		

		No	[0]	
		Consultation fee Yes	[1]	
		No	[0]	
		Commodity fee Yes	[1]	
		No	[0]	
		Laboratory tests Yes	[1]	
		No	[0]	
		Others Yes	[1]	
		No	[0]	
6.5	I would use the SRH services if I had a voucher to pay for the services Where 1 = Yes and 0 = No	Yes If yes, how? (Explain your answer)	[1]	
		No (Explain your answer)	[0]	
6.6	I use the voucher to pay for my SRH services	Yes	[1]	
		No	[0]	
6.7	The voucher—system has allowed me to access ALL the SRH services I require	Yes	[1]	
		No	[0]	

6.8	I can use the SRH services without the Voucher	Yes	[1]	
		No	[0]	

7. Referral system

No.	Question	Coding categories	TICK	
7.1	I was referred for SRH services by a health profession	Yes	[1]	
		No	[0]	
		If No go to 6.5		
7.2	Show the most influential factor in your decision to utilize the ASRH referral service. The referral services are Where 1 = Yes and 0 = No	Accessible	[1]	[0]
		Trusted healthcare profession	[1]	[0]
		Confidentiality	[1]	[0]
		Information provided	[1]	[0]
		Recommendation from Peers	[1]	[0]
		Others	[1]	[0]
7.3	The healthcare professionals were aware of my referral for sexual reproductive health. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
7.4	There was good communication between the referral agent and the health care provider about the ASRH service I required. Where 1 = Yes and 0 = No	Yes	[1]	
		No	[0]	
7.5	To sexual reproductive health after receiving a referral? Where 1 = Yes and 0 = No Select the reasons that make it easy for you to use referral ASRH services Where 1 = Yes and 0 = No	Accessible roads	[1]	[0]
		Religion	[1]	[0]
		Stigma from the community	[1]	[0]
		Financial	[1]	[0]
		Distance to the health facility	[1]	[0]
		attitude of the service provider	[1]	[0]
		Parental influence	[1]	[0]

7.6	Would you recommend a Health referral system for sexual and reproductive health services to other adolescent girls? Where 1 = Yes and 0 = No	Yes	[1]
		No	[0]

The End

Thank you for your participation

Appendix X: Key Informant Interview guide

1. Where do you work?
2. What health services or products relating to sexual and reproductive health do you offer?
3. Are you providing services targeting adolescents specifically, especially girls?
4. Which of these services do adolescents girls use most?
5. In your opinion what are the stumbling blocks to the access of these services by adolescent girls in this community?
6. How do you think these services could be improved to better serve the adolescents?
7. Do you think that the way the society is structured influences use of sexual and reproductive health services by adolescent girls in this community?

Appendix XI: Focus Group Discussion

1. Describe to me what it means living in this community as an adolescent girl.
2. What would you say sexual and reproductive health means to you or in your community?
3. If a girl wanted to seek SRH services, where will you go?
4. Where do you get information about SRH from?
5. What cultural factors influence access to SRH services and information?
6. What is the role of religion in excess of SRH services and information by adolescent girls in this community.
7. Have you been included in planning for ASRH services in your community?
8. Please, describe to me your experience or that of your friend when seeking SRH services.
9. When seeking SRH services did you get the services you wanted?
10. What are some of the costs associated with seeking SRH services?
11. How did you or your friends meet the costs?
12. Have you or your friends ever been talked to by CHVs, HCP or teachers about SRH services and where you can get the services.
13. In your opinion how will digital health support utilization of SRH services?
14. In developing a digital platform for SRH services for adolescents, how will you like the platform to look like or do?

Thank you.

Appendix XII: SHR indicators by County

1	Percentage of adolescents aged 10-19 years										
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
	1 in 5 people	21%	16 %	18%	20%	25%	22%	22%		24%	24
2	Age of sexual debut and first marriage										
	Half of the women (20-49 years)										
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
	First had sex by age	17	18	18	19	16	17	19	19	18	18
	Half of the men (30-54 years)										
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
	First had sex by age	17	19	18	18	18	10	17	23	16	17
	First Marriage Age										
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National

	Half of the county women (20-49 years)	21	22	21	22	19	20	21	18	21	20
	Half of the county men (30-54)	27	26	28	26	24	25	26	24	26	25
3	Percentage of 1 in 5 girls aged 10-19 years that..										
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
	Have begun child bearing	20%	17%	17%	14%	10%	20%	18%	17%	14% [1 in 7 girls]	18%
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
4	Fertility rates for girls aged 10-19 years (adolescent birth rate) per 1000 girls	118	80	81	47	87	110	69	109	78	96
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National

5	Teenage girls currently married girls aged 10-19 using modern contraceptives	19%	78%	39%	68%	50%	85%	20%	4%	54%	37%
		Kajiado	Nairobi	Mombasa	Kiambu	Kisumu	Meru	Nakuru	Wajir	Machakos	National
6	Unmet need for contraceptives among currently married adolescents	34%	6%	10%	0%	46%	0%	17%	0%	13% [1 in 7 girls]	23%

Source: 2014 Demographic and health survey, 2012 Kenya AIDS indicator Survey and the 2014 Basic Education Statistical bookle

