ASSESSING EFFECTIVENESS OF MENSTRUAL HEALTH MANAGEMENT INITIATIVES ON PRIMARY HEALTH CARE DELIVERY PROJECTS IN SOLOLO SUB-COUNTY, MARSABIT COUNTY, KENYA

JILLO GUBAL SHAMZAD

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE OF SCIENCE IN PROJECT MANAGEMENT AND PLANNING OF

MOUNT KENYA UNIVERSITY

APRIL 2025

DECLARATION AND APPROVAL

Declaration by Candidate

This research project is my original work and has never been presented for a degree at any other university or for any other award.

Signature…… Date:15/04/2025

JILLO GUBAL SHAMZAD

MSCPM/2023/62928

Approval by Supervisor

I confirm that the work reported in this research project was carried out by the candidate under my supervision

Signature…… Date:15/04/2025

Dr. Peter Simotwo

School of Business and Economics

Mount Kenya University

DEDICATION

This research is dedicated to my daughter, Rahma Galgallo, whose bright spirit inspires me. May her generation thrive in a world of dignity and health.

ACKNOWLEDGMENT

I sincerely acknowledge the invaluable guidance and mentorship of my supervisor, **Dr. Peter Simotwo**, whose support was instrumental throughout the research process. I am deeply grateful to my spouse, Galgallo, for the unwavering emotional and financial support that kept me grounded and motivated. I also extend my heartfelt thanks to my classmate, Hussein Kiiri, for his constant encouragement, thoughtful guidance, and emotional support. Thank you all for walking this journey with me.

ABSTRACT

Menstrual Health Management (MHM) is strategically driving gender equality, social inclusion, and sustainable development, especially in underserved regions like Sololo Sub-County and Marsabit County, Kenya. Despite increasing global attention, MHM remains underprioritized in local planning and project design, leading to health risks, educational setbacks, and limited economic participation for girls and women. This study assessed the effectiveness and planning adequacy of existing MHM interventions, with a focus on access to menstrual products, sanitation infrastructure, waste management systems, and menstrual health education. The objective was to determine their influence on the effectiveness and reach of primary healthcare delivery programs. A mixed-method research design was adopted, sampling 377 participants from a target population of 21,354 women and girls aged 15–45. Data was collected using structured questionnaires, and analysis was carried out using IBM SPSS software. Key project-related metrics were evaluated through correlation, regression, and ANOVA to understand the relational and predictive impact of MHM components on health project outcomes. Findings revealed critical demographic and socio-economic patterns: 26.3% of respondents were aged 20–24, with 57.5% identifying as low-income and 26.8% unemployed, underscoring the importance of targeted planning and resource allocation. Access to menstrual products was inconsistent: 34.4% always accessed products, while 23.7% and 13.4% accessed them occasionally or not at all, respectively. Affordability was a major challenge, rated as a barrier by 38.3% of respondents. Sanitation infrastructure was moderately available, with 72.7% reporting access to clean, private facilities, yet maintenance was uneven. Only 39.0% reported daily cleaning, and 13.0% noted no cleaning at all. The study demonstrated a strong positive relationship (R = 0.786) between MHM components and project success in primary healthcare delivery. Education programs emerged as the most impactful intervention (Beta = 0.368), followed by product access (Beta = 0.341), sanitation (Beta = 0.295), and waste disposal systems (Beta = 0.249). The regression model accounted for 61.8% of the variability in project outcomes, emphasizing the importance of integrated, well-planned MHM initiatives. This study highlights the need for improved planning, funding prioritization, and community-based implementation of MHM components. Strengthening these systems through participatory planning, policy support, and effective monitoring and evaluation frameworks will enhance primary healthcare outcomes and promote gender-responsive development planning in Sololo Sub-County and similar marginalized areas.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

APHRC	African population & health research center
CBOs	Community-based organizations
EAC	East African Community
GLAAS	Global Analysis & Assessment of Sanitation
LMICS	Low & middle-income countries
MHM	Menstrual Health Management
NGOs	Non-governmental organization
RTIs	Reproductive tract infections
SDG	Sustainable development goals
UN	United Nations
UNECA	United Nations Economic Commissions for Africa
UNESCO	United Nations Educational Scientific & Cultural Organization
UNICEF	United Nations International Children Emergency Fund
UTIs	Urinary tract infections
WASH	Water Hygiene & Sanitation
WHO	World Health Organizations

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Sustainable Development Goals (SDGs) of the United Nations (UN) envisioned healthy lives and promoted well-being for all people at all ages, inclusive and equitable quality education, gender equality and the empowerment of all women and girls, and universal access to clean water and sanitation through goals number 3, 4, 5, and 6. Achieving these global targets requires intentional project design, effective implementation frameworks, and robust planning processes that ensure no one is left behind, especially women and girls in marginalized communities. Menstrual Health Management (MHM), though historically underprioritized in development planning, is now increasingly recognized as a cross-cutting issue essential to achieving sustainable development.

Recent years have seen MHM emerge as a critical planning concern, especially in developing regions, due to its direct influence on public service delivery outcomes, including education retention, economic participation, and health equity. According to UNICEF and WHO (2021), only 27% of people in developing countries had access to basic handwashing facilities an essential component of safe menstrual hygiene. Moreover, approximately 2.3 billion people globally lacked access to basic sanitation, and nearly 50% of schools in low-income countries were without adequate water and sanitation infrastructure (UNESCO, 2022). These deficits reflect underlying issues of insufficient resource allocation, weak infrastructure planning, and inadequate stakeholder coordination.

Globally, strategic MHM programs have been introduced to address these challenges. In 2022, WHO and UNICEF released updated frameworks guiding the integration of MHM

into national and sectoral development plans. These frameworks encourage multi-sectoral collaboration and emphasize inclusivity, affordability, and sustainability. Social enterprises and nonprofit organizations have played a significant role, with innovative products like reusable pads and menstrual cups reaching over 20 million people in low- and middle-income countries since 2020. Government-led subsidy programs have expanded access, providing an estimated 15 million women and girls with menstrual products in just two years.

In parallel, large-scale infrastructure and behavior-change programs have advanced WASH (Water, Sanitation, and Hygiene) outcomes. The UN-Water GLAAS 2021/2022 report noted that more than 40 countries had incorporated MHM in national WASH policies, supporting menstrual-friendly infrastructure for approximately 25 million people. These results directly result from coordinated project planning, policy alignment, and effective monitoring and evaluation mechanisms. Educational campaigns, another key project component, have reached over 50 million individuals since 2020, helping to reduce stigma and equip girls with critical knowledge.

However, regional disparities persist. In Sub-Saharan Africa, approximately 60% of women and girls still lack access to adequate menstrual hygiene products and infrastructure (UNECA). This deficit is especially impactful for adolescent girls in schools without gender-sensitive sanitation facilities. For example, in Ethiopia, over 10% of school-age girls reported missing school during menstruation (Tegegne & Sisay, 2014), while broader research across African nations (Hennegan et al., 2019) highlights the limited scale and sustainability of MHM projects due to funding gaps, lack of cross-sector integration, and weak policy enforcement.

In alignment with the African Union's Agenda 2063, which prioritizes gender equality and women's empowerment, and regional MHM strategies such as the East African Community MHM Framework, countries like Kenya have taken important steps. Despite progress, national-level statistics show only 65% of girls and women have sufficient MHM resources and infrastructure. Marsabit County, particularly Sololo Sub-County, illustrates the depth of the challenge. With only 26% of women and girls having access to appropriate menstrual hygiene resources (KNBS, 2022) and over 70% of the population living below the poverty line, the region faces systemic planning and service delivery constraints due to its rural and underserved status.

To address these gaps, Marsabit County launched a structured MHM program in Sololo Sub-County in 2020. This program was developed through collaboration between county government departments, local stakeholders, and regional NGOs. It prioritized four core project components: increasing the availability and affordability of menstrual hygiene products, improving sanitation in schools and public spaces, delivering inclusive MHM education, and equipping local institutions with tools for sustainable delivery.

Since implementation, the program has reached over 10,000 girls and women, improved facility coverage, and delivered targeted awareness campaigns involving over 5,000 community members, including men and religious leaders. These outcomes reflect successful project rollout and stakeholder engagement strategies, but challenges remain in ensuring sustainability, adequate funding, and the institutionalization of MHM into broader county planning frameworks.

In conclusion, although progress has been made, especially in Sololo, long-term success depends on continued investment, strategic planning, effective resource mobilization, and robust monitoring and evaluation systems. Aligning MHM programs with broader

development plans will ensure menstrual health is not addressed in isolation but integrated into health, education, and gender-focused initiatives contributing meaningfully to equitable and inclusive development.

1.1.1 **Menstrual Hygiene Management Concept and Its Influence on Primary Health Care Delivery Project**

The existing literature on Menstrual Hygiene Management (MHM) in Sololo Sub-County, Marsabit County, Kenya, reflected a gradual yet significant evolution in addressing the challenges faced by women and girls in managing their menstrual health. Early studies and reports underscored the limited access to menstrual products and inadequate water, sanitation, and hygiene (WASH) infrastructure that had historically hindered effective MHM. For instance, a 2020 report by the Marsabit County Department of Health highlighted that before the introduction of targeted MHM initiatives, only 35% of women and girls in Sololo Sub-County had access to affordable and reliable menstrual products, revealing a pronounced gap in essential menstrual health resources (Marsabit County Department of Health, 2020).

Efforts in recent years had concentrated on improving this situation, particularly by strengthening the WASH infrastructure in schools and communities. However, the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS) 2021/2022 report highlighted that only 45% of schools in Sololo had access to basic WASH facilities, a critical component for successful MHM practices (UN-Water, 2022). This infrastructure gap illustrated the continuing obstacles to providing adequate MHM facilities in schools, which were crucial for supporting young girls in managing their menstrual health with dignity.

Beyond physical infrastructure, cultural norms and misconceptions about menstruation remained significant barriers. According to the Marsabit County Department of Health,

over 60% of the community in Sololo held negative perceptions about menstruation, which had perpetuated stigma and restricted open discussions, making it difficult for women and girls to seek support (Marsabit County Department of Health, 2020). Cultural barriers, in conjunction with economic hardships, presented further challenges, as Marsabit County had a poverty rate of 79%, compared to Kenya's national average of 36.1% (Kenya National Bureau of Statistics, 2022). This economic burden had hindered the community's access to affordable menstrual products despite the availability of initiatives aimed at distribution and education.

Nevertheless, recent MHM initiatives in Sololo Sub-County, implemented with support from regional and non-governmental organizations, had shown encouraging progress. Since 2020, these efforts had expanded access to menstrual products, provided community-based education campaigns, and improved WASH infrastructure, reaching a broader segment of the population. Awareness and education programs had targeted not only women and girls but also community members, including men and local leaders, to foster a supportive environment for menstrual health.

The ongoing progress was, however, tempered by the persistent need for further improvement. Limited access to quality menstrual health services, such as counseling, medical care, and disposal facilities, continued to impact the confidence of women and girls in seeking primary healthcare, as studies indicated that MHM was essential in encouraging women to utilize healthcare services (Chandra-Mouli & Patel, 2017). Poor MHM had restricted mobility, increased absenteeism in schools and workplaces, and contributed to broader health issues, which posed a potential barrier to primary healthcare initiatives within Sololo Sub-County (Sommer et al., 2015).

Research indicated that the availability of quality menstrual health services, such as counseling, medical care, and disposal facilities, had been crucial in encouraging women and girls to seek primary healthcare (Chandra-Mouli & Patel, 2017).

1.2 Statement of the Problem

Menstrual Health Management (MHM) remains a critical yet under-addressed component of primary healthcare delivery in Sololo Sub-County, Marsabit County. Despite increased national and global attention on menstrual health as a public health and human rights issue, women and girls in remote, arid regions such as Sololo continue to face significant challenges due to limited access to menstrual products, inadequate sanitation infrastructure, and entrenched cultural stigmas (UNFPA, 2023; WHO, 2022). These challenges are compounded by logistical barriers in resource distribution and weak policy implementation, which hinder the integration of MHM into routine healthcare services (Ministry of Health Kenya, 2022).

Current data shows that less than 40% of women in rural Marsabit County have consistent access to safe and affordable menstrual hygiene products (Marsabit County Department of Health, 2023). Most schools and healthcare facilities in Sololo still lack basic WASH (Water, Sanitation, and Hygiene) infrastructure, including disposal bins and incinerators for menstrual waste (UNICEF Kenya, 2023). This deficiency not only puts women and girls at risk of infections but also contributes to school absenteeism and reduced access to health services during menstruation (Ongweyi et al., 2023; Abuya & Wamuti, 2022).

Although policies such as the Kenya Menstrual Hygiene Management Policy (2019) exist, their implementation in pastoralist and marginalized regions remains sporadic and poorly monitored (Nyaberi, 2021; National Gender and Equality Commission, 2022).

Cultural taboos surrounding menstruation persist, with recent studies indicating that over 60% of community members in Sololo hold negative perceptions about menstruation, discouraging open discussion and education on the topic (Tull et al., 2022; Marsabit County Health Report, 2023).

While previous studies have explored general menstrual health challenges in Kenya, few have specifically assessed the effectiveness of MHM interventions within the context of primary healthcare delivery in remote areas such as Sololo. Most existing research emphasizes school-based programs or product access, with a limited focus on integrating MHM into health systems, health education, or sustainable waste management practices in health facilities (Wamalwa et al., 2023). Additionally, there is a gap in localized data that links MHM efforts with health service utilization outcomes among women and girls. This study, therefore, seeks to fill this gap by evaluating the effectiveness of menstrual health management initiatives in enhancing the delivery of primary healthcare in Sololo Sub-County. It focuses on four critical variables: access to menstrual products, sanitation infrastructure, menstrual health education, and waste disposal management. The study aims to inform more holistic and sustainable approaches to integrating MHM into community health strategies in dryland, underserved regions by addressing these elements.

1.3 Purpose of the Study

This study aimed to assess the effectiveness of menstrual health management (MHM) initiatives on primary health care delivery projects in Sololo Sub-County, Marsabit County, Kenya.

1.4 Objectives of the study

The study was guided by the following specific objectives:

i. To determine access to menstrual products on primary health care delivery projects in Sololo Sub-County
ii. To assess the effect of sanitation on primary health care delivery projects in Sololo Sub-County
iii. To determine the effectiveness of menstrual health education programs on Primary health care delivery projects in Sololo Sub-County
iv. To assess the available waste disposal management on primary health care delivery projects in Sololo Sub-County.

1.5 Research Questions

The study sought to answer the following research questions:

i. What is the current state of sanitation supporting menstrual health management within primary health care facilities in Sololo Sub-County?
ii. How accessible are menstrual products within primary health care delivery projects in Sololo Sub-County?
iii. To what extent do menstrual health education programs contribute to the overall success and reach of primary health care delivery projects in the region?

iv. What is the current available waste disposal management on primary health care delivery projects in Sololo Sub-County?

1.6 Significance of the Study

This study was significant as it contributed to the existing knowledge on the effectiveness of menstrual health management (MHM) initiatives, particularly in low-resource settings, addressing the challenges faced by over 800 million women and girls who lacked access to essential products and facilities (UNESCO, 2021). The findings drove policy changes and improved global MHM initiatives. In Marsabit County, Kenya, the study provided valuable insights into the effectiveness of MHM initiatives in Sololo Sub-County, guiding policymakers and stakeholders in enhancing resources and support for women and girls. Additionally, local NGOs and community-based organizations benefited from the findings, enabling them to advocate for more funding and resources, thereby strengthening their MHM programs. Furthermore, the study's insights informed targeted MHM strategies in Sololo, leading to better health, education, and economic outcomes for women and girls in the region. Lastly, it added empirical evidence to the field of MHM, benefiting researchers and practitioners in designing effective programs in similar contexts.

1.7 Scope of the Study

The study assessed the effectiveness of Menstrual Health Management (MHM) initiatives on primary healthcare delivery within Sololo Sub-County, Marsabit County, Kenya. Data collection commenced in March 2025, targeting women and girls of reproductive age (approximately 15–49 years) residing in the sub-county. The study included both in-school and out-of-school individuals from diverse socioeconomic and cultural backgrounds.

Sololo Sub-County was purposefully selected as the study area due to its remote, arid nature and persistent health disparities, particularly among women and girls. The region faces systemic challenges in healthcare delivery, including inadequate WASH infrastructure, limited access to menstrual products, strong cultural taboos, and high poverty levels. These factors make Sololo a representative setting for exploring the real-life effectiveness and limitations of menstrual health management initiatives in underserved, rural areas. Additionally, the area has witnessed minimal research on MHM integration into primary healthcare, further justifying its selection as a critical site for generating localized, actionable insights. Key thematic areas examined in the study included menstrual products, sanitation infrastructure, menstrual health education, waste disposal management, and policy factors related to MHM and primary healthcare delivery.

The research was conducted over a period of 6–12 months, enabling the capture of seasonal variations and potential policy or programmatic changes. A mixed-methods approach, incorporating both quantitative and qualitative data collection and analysis techniques, provided a comprehensive understanding of the research problem.

Throughout the study, the research team actively engaged with key stakeholders, including local government authorities, healthcare providers, community-based organizations, and menstrual health advocates. This collaboration ensured the relevance, ownership, and sustainability of the study's findings and recommended interventions.

1.8 Study Limitations

This study had several limitations. First, its geographical focus on Sololo Sub-County limits the generalizability of findings to other regions with different socio-cultural and infrastructural contexts. Future research should include comparative studies across multiple counties to enhance broader applicability. Second, reliance on self-reported data

may have introduced recall or social desirability bias, particularly due to the sensitivity of menstrual health topics. To address this, future studies could incorporate anonymous digital surveys or observational methods to improve data reliability. Third, the cross-sectional design constrained the ability to assess the long-term outcomes of MHM interventions. Longitudinal studies would provide a better understanding of changes over time. Additionally, the lack of baseline data made it difficult to evaluate the effectiveness of past interventions; future researchers should consider building or accessing baseline datasets for comparison. Lastly, the small sample size in certain stakeholder groups limited the diversity of perspectives. Expanding the sample and using stratified sampling methods in future studies would help capture more representative views.

1.9 DELIMITATIONS

The study was delimited to Sololo Sub-County, Marsabit County, Kenya, and focused specifically on women and girls aged 15–49 years to understand their experiences with menstrual health management (MHM) initiatives. It primarily gathered qualitative data through surveys, in-depth interviews, and focus group discussions with local stakeholders, emphasizing initiatives implemented in the last five years.

The research concentrated on the impact of cultural beliefs and stigma on MHM without exploring broader cultural comparisons or evaluating overall health outcomes associated with menstruation. Additionally, the study was constrained by available resources, which potentially limited the number of respondents and locations included. However, despite these limitations, it thoroughly examined the MHM context within Sololo.

1.10 Assumptions of the Study

This study assumed that women and girls in Sololo Sub-County had varying levels of awareness and knowledge about menstrual health management (MHM) and that they would be willing to share their experiences despite cultural stigmas. The study also relied

on the assumption that data collected through surveys and interviews accurately reflected participants' perspectives and that local stakeholder provided valuable insights to facilitate the research. Additionally, it assumed that MHM initiatives had measurable impacts on health, education, and economic opportunities for women and girls and that logistical challenges could be managed through partnerships with local organizations. Lastly, it assumed that including male perspectives enhanced the understanding of gender dynamics related to MHM.

1.11 Operational Definitions Of Key Terms

Menstruation is the periodic shedding of the uterine lining (endometrium). that occurs in the absence of pregnancy in women of reproductive age. It is a normal, healthy bodily function vital for fertility and reproduction.

Menstrual health-Menstrual Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity, in relation to the menstrual cycle.

Menstrual Health Management (MHM)-MHM refers to the state of physical, emotional, and social well-being related to the menstrual cycle, as well as the practices, resources, and social norms that enable women and girls to manage their menstruation safely, hygienically, with dignity, and without discomfort or embarrassment.

Menstrual hygiene management (MHM) initiatives -MHM initiatives are comprehensive programs that ensure women and girls have access to the information, products, and infrastructure required to manage their menstruation with dignity.

Primary Healthcare- is the first contact with the system, offering accessible, comprehensive, and affordable preventive, curative, and rehabilitative services.

Socio-Cultural Factors—This category includes societal norms, beliefs, and practices that influence perceptions, attitudes, and behaviors toward menstruation and seeking healthcare.

Economic Factors- This includes financial resources, income levels, and socioeconomic status, which impact access to and utilization of menstrual health management and primary healthcare services.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter discussed various works related to the objectives of the research, which focused on assessing the effectiveness of a menstrual hygiene initiative on primary health care delivery projects in Sololo Sub-County. It highlighted key issues identified in the study and connected them to similar research conducted locally and globally. The chapter also examined the theoretical framework that underpinned the research, identified gaps in the existing literature, and provided a concise summary of the reviewed studies.

2.1 Theoretical Framework

The study was anchored on two comprehensive theories: the socio-ecological model and the human rights-based approach, both critical for understanding menstrual health management.

2.1.1 Socio-Ecological Model

The socio-ecological model (the Ecology of Human Development) was developed by psychologist Urie Bronfenbrenner in the late 1970s to recognize that individuals were both affected by and influenced by a complex range of social factors and nested environmental interactions (Bronfenbrenner, 1979). The socio-ecological model (SEM) was relevant to studying the effectiveness of menstrual health initiatives in primary healthcare projects because it acknowledged that menstrual health was not solely influenced by individual factors but also by social, community, organizational, and policy environments. This framework enabled researchers to comprehensively assess and address the multiple factors impacting menstrual health at various levels, facilitating the design of more effective interventions (Stokols, 2021).

The SEM framework allowed researchers to examine how individual factors (such as knowledge about menstruation), interpersonal relationships (such as family attitudes toward menstruation), community norms (such as cultural stigma surrounding periods), organizational policies (such as access to menstrual products in schools), and broader policies (such as government regulations on menstrual hygiene) all interacted to shape menstrual health behaviors and experiences. For instance, research has shown that stigma surrounding menstruation often led to the avoidance of healthcare facilities (Sommer et al., 2016). Consequently, initiatives that educated individuals about menstrual hygiene management (MHM) empowered women to seek healthcare services when necessary (Agarwal et al., 2020).

At the relationship level, the SEM focused on interpersonal relationships that influenced health behaviors. In Sololo Sub-County, family dynamics and peer influences played a crucial role in shaping attitudes toward menstruation. For example, if mothers or peers provided supportive environments where menstruation was openly discussed, young girls felt more comfortable seeking healthcare services related to menstrual health. Studies indicated that social support networks enhanced the effectiveness of health interventions by fostering open communication about sensitive topics like menstruation (Agarwal et al., 2020).

At the community level, the SEM examined broader social norms and community resources available for menstrual health. In Sololo Sub-County, local cultural practices either hindered or facilitated access to menstrual health resources. Community-based initiatives that involved local leaders in promoting positive attitudes toward menstruation helped dismantle harmful stigmas and encouraged better utilization of healthcare services. Research highlighted successful community engagement strategies that had led to improved MHM practices (Hennegan et al., 2019).

At the societal level, the SEM addressed policies and systemic factors influencing menstrual health initiatives. Government policies regarding reproductive health education and access to sanitary products were critical in determining the success of these initiatives. Advocacy for policy changes that prioritized menstrual health within primary healthcare systems led to more sustainable improvements in women's health outcomes (Burgess et al., 2021).

In summary, applying the socio-ecological model allowed for a multi-faceted assessment of menstrual health initiatives by considering various levels of influence, from individual beliefs to societal structures. This approach provided a holistic understanding of how these initiatives could be effectively implemented in primary healthcare delivery projects in Sololo Sub-County.

2.1.2 Human Rights Based Approach

The Human Rights-Based Approach (HRBA) was developed by the United Nations to ensure that development efforts integrate the principles of international human rights law. It is grounded in the Universal Declaration of Human Rights (1948) and was formalized in the 2003 UN Common Understanding on HRBA to Development Cooperation. Its core principles—universality and inalienability, indivisibility, participation, accountability, and non-discrimination—aim to empower individuals as rights-holders and obligate governments and institutions as duty-bearers (UN Sustainable Development Group, 2022).

In the context of this study, the HRBA was crucial in framing menstrual health as a human right, emphasizing that access to menstrual hygiene materials, sanitation, education, and health services is not a privilege but a basic entitlement. This was particularly important in Sololo Sub-County, where systemic inequalities and cultural taboos disproportionately

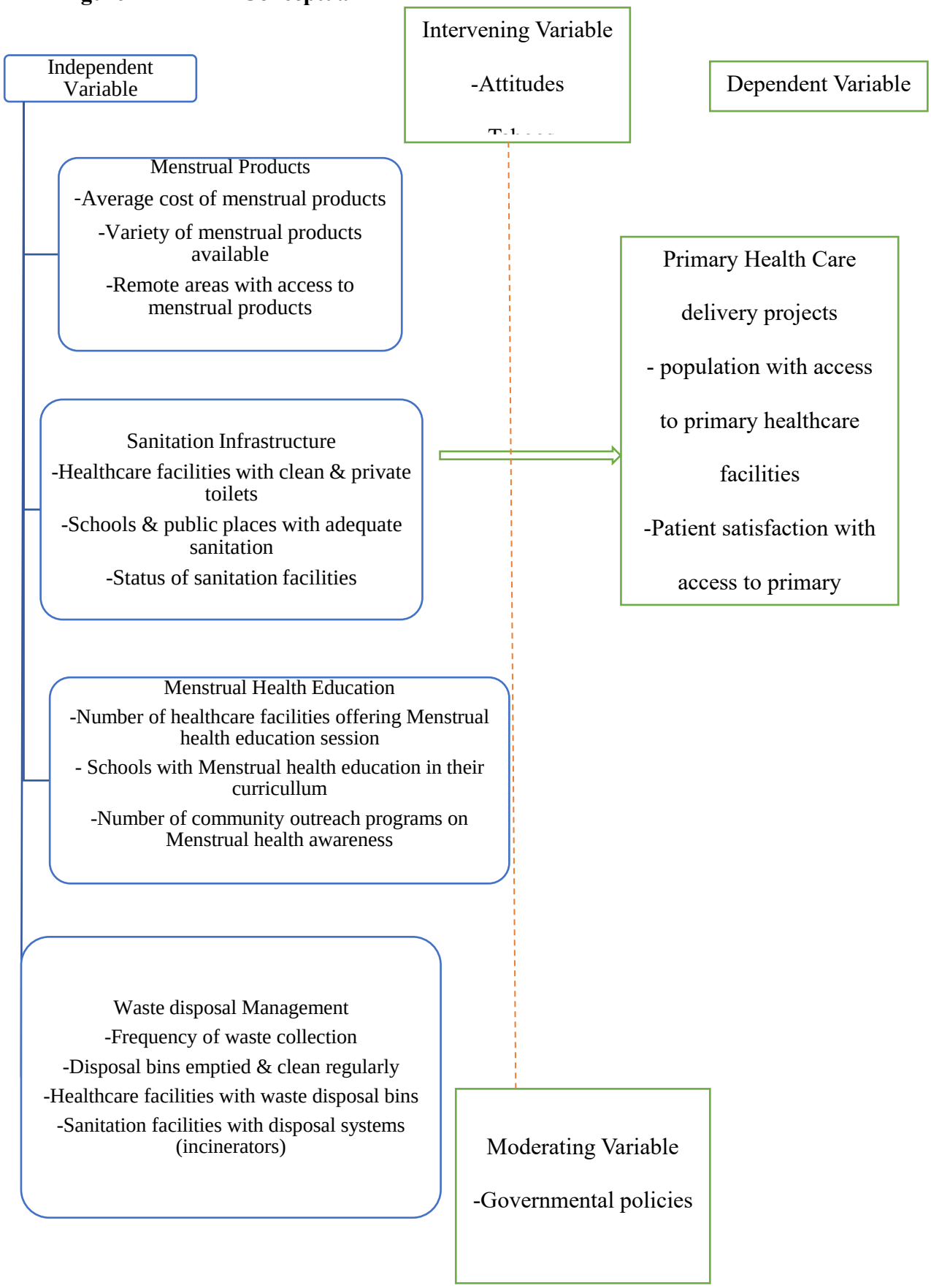
affected women and girls' ability to manage menstruation with dignity. By applying the HRBA lens, the study acknowledged the right to health, education, and gender equality, enabling advocacy for inclusive policies that address menstrual stigma, product accessibility, and gender-responsive health services (UNFPA, 2021; OHCHR, 2023).

Moreover, the HRBA promoted participatory approaches in intervention design and implementation. Actively involving women and girls in decisions about menstrual health programming enhanced accountability and relevance, ensuring that interventions reflected local realities. Evidence indicates that such participatory and rights-based strategies lead to more equitable and sustainable outcomes (Wagner et al., 2019; WaterAid, 2023). In Sololo, leveraging the HRBA also helped challenge deep-rooted social norms and resource disparities by asserting that menstrual health is a justice and equality issue, not just a public health concern.

2.2 Conceptual Framework

A conceptual framework is a diagrammatic representation of the hypothesized relationship between study variables. In the current study, the independent variables are Menstrual products, Sanitation Infrastructure, Menstrual health education, and waste disposal management, while the dependent variable is the primary healthcare delivery projects. Figure 1 illustrates the relationship between the independent variables and the dependent variable in the study:

Figure 1 Conceptual



Source: Researcher (2024)

The conceptual framework displayed the association between the study's independent and dependent variables. The Conceptual framework diagram included detailed indicators for each variable affecting primary healthcare delivery projects. The indicators are listed under the independent variables: menstrual products, sanitation, menstrual health education, and waste disposal management. The diagram also incorporated intervening variables (attitudes and taboos) and moderating variables (government policies), all connected to the dependent variable of primary healthcare delivery projects.

2.3 Empirical Literature

The existing empirical research on the relationship between menstrual health management (MHM) and primary healthcare delivery provided insights into the challenges and opportunities in this field, particularly in the context of underserved communities.

2.3.1 Menstrual Products and Primary Healthcare Delivery

Studies worldwide highlighted the critical need for accessible and affordable menstrual hygiene products to address gender inequalities, educational gaps, and healthcare challenges. A 2016 study by Population Services Kenya revealed that girls in rural areas, such as Sololo Sub-County, missed an average of 4.9 school days per month due to inadequate access to sanitary pads. This figure was consistent with findings from the Menstrual Hygiene Day campaign (2019), which reported that 65% of Kenyan girls and women struggled to afford sanitary pads, with a significant proportion missing 10–20% of the school year as a result.

The 2016 study also emphasized the exacerbating effects of poverty and rural infrastructure challenges, which made it difficult to distribute menstrual products effectively, particularly in remote areas (Population Services Kenya, 2016). Such findings highlighted the critical role of economic barriers and social factors in limiting

access to menstrual hygiene products, with severe implications for educational continuity and gender equality.

Further evidence from developing countries like Uganda and Ethiopia corroborated these findings. For example, a 2020 study by the African Population and Health Research Center (APHRC) observed that girls lacking access to appropriate menstrual products faced heightened risks of infections, such as urinary tract infections (UTIs) and reproductive tract infections (RTIs). The correlation between menstrual product accessibility and school absenteeism had been documented extensively, with menstrual hygiene challenges disproportionately affecting marginalized communities in low-resource settings (APHRC, 2020).

A comprehensive study by UNICEF (2021) underscored that limited access to menstrual products contributed to absenteeism from school and work, alongside broader gender disparities. Girls and women in low-income settings were particularly vulnerable, as inadequate menstrual hygiene management (MHM) was associated with various health complications, including infections and reproductive health issues (UNICEF, 2021).

Recent research by the Kenyan Ministry of Health (2022) in Sololo Sub-County revealed that 40% of women and girls still relied on makeshift menstrual solutions, such as reusable cloths, due to limited access to pads and tampons. This inadequate access was closely tied to poverty and poor infrastructure, exacerbating school absenteeism, reduced participation in healthcare services, and increased health risks. Other studies, such as those by Sommer et al. (2016), supported this by emphasizing that cultural taboos and stigmatization around menstruation often prevented women and girls from accessing the necessary primary healthcare services during their periods.

In an attempt to provide sustainable solutions, Johns Hopkins University (2021) found that menstrual cups and reusable cloth pads offered a cost-effective and long-term

alternative to disposable products in low-income settings. However, cultural barriers and a lack of proper education on their use remained substantial obstacles to widespread adoption in rural Kenya, including Sololo Sub-County. Initiatives by organizations like Zana Africa and Ruby Cup introduced these reusable menstrual products, but as the Kenyan Ministry of Health (2022) pointed out, only 60% of women and girls in Sololo Sub-County had consistent access to any form of menstrual product, leaving 40% dependent on makeshift options, highlighting the ongoing challenge of product accessibility (Kenyan Ministry of Health, 2022).

Moreover, this study indicated that while reusable menstrual products were gaining traction, cultural stigmas and a lack of education on their proper use posed significant barriers to their adoption. Promoting menstrual health education in schools and communities was identified as a critical gap, and the study aimed to overcome these obstacles and improve the uptake of reusable products.

2.3.2 Sanitation Infrastructure and Primary Health Care Delivery

The sanitation infrastructure in Sololo Sub-County, Marsabit County, remained a significant barrier to effective primary healthcare delivery, particularly for women and girls. A 2021 assessment by the Marsabit County government found that only 35% of households in Sololo had access to improved toilet facilities, with most relying on shared or unimproved pit latrines. The lack of clean, private, and well-maintained WASH (Water, Sanitation, and Hygiene) facilities in schools and community centers hindered the ability of women and girls to manage their menstruation with dignity, which, in turn, compromised their health and limited their access to primary healthcare services. This challenge was echoed by Sommer et al. (2016), who highlighted that inadequate WASH infrastructure in schools contributed to absenteeism and increased the risk of infections like urinary tract infections (UTIs) and reproductive tract infections (RTIs) due to poor

menstrual hygiene. Similarly, Montgomery et al. (2012) emphasized that women without access to private sanitation facilities often avoided primary healthcare services due to stigma and the lack of safe spaces to manage menstruation, leading to worsened health outcomes.

The UNICEF (2018) report further affirmed these findings, linking poor sanitation infrastructure to the spread of diseases like diarrhea and cholera and highlighting the additional burden on women and girls who were forced to use unsafe menstrual hygiene methods in the absence of adequate facilities. Gaps in sanitation infrastructure, such as the lack of WASH facilities in schools and the cultural taboos surrounding menstruation, had been highlighted by researchers like Abuya & Nyaberi (2021), who noted that menstrual stigma in northern Kenya limited the use of public sanitation facilities. Amref Health Africa (2017) also pointed out that many sanitation projects in rural areas were unsustainable, often becoming non-functional due to poor maintenance and a lack of community ownership. Despite government efforts to improve sanitation through policies like the National Water and Sanitation Policy, Nyaberi (2021) emphasized that logistical challenges and inconsistent funding had prevented these policies from being effectively implemented in remote areas like Sololo.

In conclusion, addressing the sanitation infrastructure gaps in Sololo Sub-County required a multi-sectoral approach that combined infrastructure development with community education and cultural awareness initiatives.

2.3.3 Menstrual Health Education Programs and Primary Health Care Delivery

In rural areas worldwide, including Kenya, menstruation remained a taboo subject, significantly impacting menstrual health education and access to primary healthcare services. A 2017 study by Plan International Kenya revealed that 58% of girls had no access to information about menstruation before their first period, leading to confusion,

shame, and stigma. Although organizations like WASH United and WaterAid had implemented education programs to demystify menstruation and promote open discussions in schools and communities globally, gaps persisted, particularly in rural Kenya. A 2020 evaluation of menstrual health education programs by a local NGO in Sololo Sub-County found mixed results: while over 60% of the target population had been reached, the long-term impact on knowledge, attitudes, and practices surrounding menstrual hygiene management (MHM) was limited. The evaluation emphasized the need for culturally appropriate and comprehensive programs that addressed social stigma, taboos, and misconceptions alongside practical resources for women and girls to manage menstruation safely and with dignity.

Studies by Sommer et al. (2016) and Montgomery et al. (2012) supported these findings, highlighting that the lack of menstrual health education in rural settings led to misconceptions and a lack of preparedness among adolescent girls. This had a direct impact on their engagement with primary healthcare services, as many women and girls avoided seeking care due to embarrassment or fear of judgment. Nyaberi (2021) further emphasized that, in northern Kenya, cultural barriers remained a significant obstacle to effective menstrual health education, as traditional beliefs around menstruation hindered open dialogue. Abuya (2022) also noted that integrating menstrual health education into school reproductive health programs could have significantly improved health outcomes by normalizing menstruation and reducing stigma, thereby increasing the utilization of primary healthcare services. As a result, improving the effectiveness of menstrual health education programs through community engagement, teacher training, and health worker involvement played a pivotal role in enhancing the health and well-being of women and girls in Sololo Sub-County and other rural areas.

2.4.4 Waste Disposal Management and Primary Health Care Delivery

The management of menstrual waste remains a pressing issue in rural settings, particularly in areas with underdeveloped infrastructure and limited access to public health education. In many parts of sub-Saharan Africa, including rural Kenya, inadequate menstrual product disposal contributes to environmental degradation and public health risks (UNICEF & WHO, 2021). These challenges are pronounced in Sololo Sub-County, Marsabit County, where waste management systems are insufficient or entirely absent, and many public institutions, including schools, lack adequate disposal facilities for menstrual hygiene products.

A 2023 assessment by the Marsabit County Department of Health revealed that only 40% of households in Sololo had access to safe and hygienic menstrual waste disposal options. Poor awareness about proper disposal methods and a lack of infrastructure have resulted in unsafe practices such as discarding used products in open fields, pit latrines, or water bodies. These methods pose a significant risk of bacterial contamination and vector-borne diseases, impacting women's health and compromising primary healthcare interventions (Kenya Ministry of Health, 2023; WHO, 2022).

Existing research supports these findings. For instance, Sommer et al. (2022) and van Eijk et al. (2019) emphasize that inadequate menstrual waste disposal leads to environmental pollution and contributes to infections, particularly in vulnerable rural communities. Abuya et al. (2022) link this issue directly to poor WASH (Water, Sanitation, and Hygiene) infrastructure in Kenya, reinforcing the urgent need to integrate waste disposal planning into menstrual health initiatives. These findings are critical for informing both policy and practice in areas like Sololo.

Schools, in particular, have been highlighted as high-priority intervention points. A 2021 UNICEF report found that in East Africa, over 50% of schools lacked access to bins or designated disposal systems for menstrual products. In Sololo, this infrastructure gap contributes to high rates of school absenteeism among adolescent girls, particularly during their menstrual cycles (UNICEF, 2021). Without clean, private, and adequately equipped facilities, many girls feel compelled to stay home, ultimately undermining their educational attainment and reinforcing gender disparities.

Cultural taboos further complicate the situation. In many parts of rural Kenya, menstruation is surrounded by shame and silence, making it difficult to openly discuss menstrual hygiene or advocate for waste management systems. Nyaberi (2022) reports that these cultural beliefs hinder public awareness and reduce community participation in menstrual health programs. Community-based education campaigns involving both men and women and local leadership are crucial for changing attitudes and promoting safe disposal practices.

Improper menstrual waste disposal also places an additional burden on local healthcare systems. Contaminated water sources and polluted environments contribute to a rise in infections and waterborne diseases, which strains already limited health resources in rural clinics. As outlined in the Kenya Health Sector Strategic Plan (2023–2027), the integration of menstrual waste management into broader public health and environmental strategies is vital to reduce these preventable burdens and enhance the impact of primary healthcare delivery.

Innovative solutions, such as promoting reusable or biodegradable menstrual products and providing incinerators in schools and health facilities, have been proposed to improve menstrual waste management in low-resource settings. Studies have shown that when paired with infrastructural improvements, community awareness programs significantly increase safe disposal practices (UNFPA, 2022; PATH, 2023). Additionally, school-based programs that engage boys and girls in menstrual health education have effectively promoted inclusive attitudes and supported long-term behavioral change.

In conclusion, addressing menstrual waste management in Sololo Sub-County requires a multi-dimensional strategy that includes infrastructural investment, community engagement, gender-inclusive education, and integration into health service delivery. Collaborative efforts between local governments, NGOs, schools, and community leaders are essential to reduce the environmental and health risks associated with improper disposal, thereby advancing menstrual dignity and improving the overall effectiveness of primary healthcare initiatives.

2.4 Recap of Literature Review

The existing empirical research on the relationship between menstrual health management (MHM) and primary healthcare delivery has highlighted several key knowledge gaps that the proposed study aims to address:

Context-specific Understanding of the MHM-Primary Healthcare Nexus

Much of the current literature on this topic has been conducted in broader geographical contexts, such as sub-Saharan Africa or South Asia. While these studies provide insights, there is a need for more context-specific research that examines the unique challenges and opportunities in Sololo Sub-County, Kenya. Understanding the local socio-cultural, economic, and infrastructural factors that shape the interplay between MHM and primary healthcare delivery is crucial for developing effective, tailored interventions.

Comprehensive Assessment of MHM-related Barriers to Primary Healthcare Access

Existing studies have focused on individual barriers, such as the lack of menstrual products or sanitation facilities. However, a more holistic assessment of the multilevel barriers, including organizational, community, and policy-level factors, is necessary to comprehensively understand the problem. This research aims to address this gap by adopting the Social-Ecological Model (SEM) to unpack the complex web of factors influencing primary healthcare access and utilization in the context of MHM.

Much of the research focuses on cultural norms within the household. Still, less attention is given to the role of community-wide norms, traditional leadership, and religious institutions in shaping attitudes toward menstruation. In Sololo, where patriarchal structures are prevalent, the influence of elders and community leaders on MHM acceptance remains underexplored.

Another notable gap in the literature is the limited exploration of how community norms, traditional leadership, and religious institutions influence menstrual health practices and beliefs. While household-level cultural dynamics have been studied, the broader societal context remains underexamined, particularly in patriarchal communities like Sololo. Additionally, healthcare workers, who are crucial in disseminating menstrual and reproductive health information in rural settings, have received little attention in existing studies. Their knowledge, attitudes, and practices significantly impact service delivery and community engagement with MHM, yet research on this area remains minimal. Although Kenya has made notable progress by integrating MHM into its school curriculum through comprehensive sexuality education and legal frameworks, infrastructural and cultural challenges continue to hinder effective implementation, especially in rural areas.

Lastly, there is a scarcity of impact-oriented studies within Kenya that evaluate the effectiveness of menstrual health initiatives on primary healthcare delivery. Most research has been descriptive rather than evaluative, failing to generate the robust evidence needed to inform policy reforms or enhance program effectiveness. This study, therefore, addresses these critical gaps by investigating how MHM influences primary health outcomes in Sololo Sub-County, aiming to produce context-specific recommendations that can strengthen both menstrual health initiatives and broader health service delivery.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlined the research methodology used in this study. It covered the research design, variables, study location, target population, and sampling methods. It detailed the construction and validation of research instruments, data collection procedures, and data analysis techniques. Ethical considerations relevant to the study was also addressed.

3.1 Research Design

According to Creswell (2017), "Research design is a plan or proposal to conduct research involving the intersection of philosophy, strategies of inquiry, and specific methods." The study employed a mixed-method research design. According to Creswell (2017), a mixed-methods design is an approach that combines quantitative and qualitative research strategies within a single study to leverage the strengths of both methods. This design allows for the collection of numerical data through quantitative surveys and descriptive statistics while also capturing in-depth, contextual insights through qualitative data. Creswell (2014) emphasizes that mixed-methods research facilitates a fuller understanding of complex issues, particularly when studying public health topics where both numerical patterns and personal experiences are crucial for a complete analysis.

3.2 Location of the Study

The study was conducted in Sololo Sub-County, Marsabit County, one of Kenya's arid and semi-arid counties. Marsabit County was known for its diverse geography, including vast desert areas, mountainous regions, and scattered oases. The sub-county is predominantly inhabited by the Borana ethnic community, which is comprised of pastoralists who rely heavily on livestock rearing for their livelihoods. The sub-county experiences a harsh, dry climate with limited rainfall, making access to clean water and

essential services a significant challenge for the local population. It covered an area of approximately 3,500 square kilometers.

The terrain is primarily flat, with some hilly areas and sparse vegetation. The population of Sololo Sub-County was estimated to be around 40,000 people. The sub-county has a high poverty rate, with many people living below the poverty line. The approximate distance from Nairobi to Sololo Sub-County is around 750 kilometers. By road, the travel time from Nairobi to Sololo Sub-County can take approximately 10-12 hours, depending on the mode of transport and road conditions.

3.3 Target Population

The target population for the study consisted of the residents of Sololo Sub-County, which, according to the 2019 census, had a female population of 21,354. This population included women and girls of diverse age groups, ranging from adolescents to older adults. This diverse population encompassed various age groups, ethnic backgrounds, and socioeconomic statuses.

3.4 Sample Size & Sampling Procedure

According to Cochran (1977), the sample size is the number of observations or replicates included in a statistical sample. On the other hand, according to the same scholar, sampling is the process of selecting units from a population of interest.

The study adopted the simple random sampling technique. This method was preferred because it was cost-effective and allowed unbiased sampling, thus giving every respondent an equal chance of participation.

3.6 Sample Size

The sample size in this study was determined using Cochran's sample size formula. Cochran's formula for finite populations was essential for this study as it ensured the accuracy and representativeness of the sample in a finite population setting. Given the

known female population of 21,354 in Sololo Sub-County, the formula precisely adjusted the sample size to achieve statistical reliability without excessive sampling, balancing the need for accurate results with resource efficiency.

The formula is expressed as:

Cochran's Sample Size Formula for Finite Populations

$$n = \frac{N * Z \wedge 2 * p(1-p)}{d \wedge 2 * (N-1) + z \wedge 2 * p(1-p)}$$

Where:

- n = sample size
- N = population size
- Z = Z-score (standard score corresponding to the desired confidence level)
- p = estimated proportion of the population with the characteristic of interest
- d = margin of error (desired precision)

N=21,354

Z=1.96

P=0.5

d=0.05

The Z-score was 100%-95%=5%/2%=2.5%

95%+2.5%=97.5 %

Using a standard regular distribution table (or Z-table), we look up the value corresponding to 0.975, approximately 1.96.

$$n = \frac{21{,}354 * (1.96) \wedge 2 * 0.5(1-0.5)}{0.05 \wedge 2 * (21{,}354-1) + 1.96 \wedge 2 * 0.5(1-0.5)}$$

$$n = \frac{21{,}354 * 3.8416 * 0.25}{(0.0025 * 21{,}353) + (3.84 * 0.25)}$$

$n = \frac{20{,}508.38}{54.34}$ =377

Therefore, the estimated sample size using the Cochran formula was approximately 377 respondents for a population of 21,354.

3.7 Data Collection Methods & Procedures

The study employed the questionnaire as the main instrument of data collection. The questionnaire included both open and closed-ended questions. In assessing menstrual hygiene management (MHM) within primary healthcare delivery projects, questionnaires effectively gathered quantitative and qualitative data from various stakeholders, including healthcare providers, patients, and community members. The choice of the questionnaire as a research tool enabled the respondents to complete the questions conveniently and communicate their opinions adequately. A standardized set of questions ensured consistency across responses, making it easier to analyze data quantitatively. Additionally, the anonymity afforded by the questionnaire encouraged respondents to provide honest answers, especially on sensitive topics like menstrual hygiene. Other authors also identified the questionnaire's effectiveness; for instance, Garcia and Martinez (2023) in social sciences extensively employed questionnaires.

3.7.1 Pilot Testing

According to Teijlingen and Hundley (2001), pilot testing is "a small-scale version or trial run of a research design before the full-scale study." It helps identify and correct potential issues in the study design, data collection instruments, and procedures (Cooper & Schindler, 2014). It assisted in discovering potential problems, reviewing mistakes, and providing an indication of the time required for actual fieldwork. A pilot study was undertaken to test the reliability and validity of the questionnaire. Mugenda and Mugenda (2003) stated that a pilot study with a sample of a tenth of the total sample with homogeneous traits was appropriate. Therefore, the study undertook a pilot study among

ten respondents in the neighboring Sololo Sub-County. The pilot study helped establish whether the questions in the research instrument were clear, logical, and complete, as well as the amount of time it would take to complete the questionnaire. The results were also used to determine if the data collected was easy to process and analyze.

3.7.2 Validity of Research Instruments

As defined by Creswell (2014), the validity of a research instrument referred to "the extent to which an instrument measures what it is supposed to measure." This concept ensured that the research tool accurately captured the intended variables, providing meaningful and credible results in the study context. To enhance the validity of the research instruments, the questionnaire underwent a pre-testing process. A pilot study gathered feedback from a small sample of participants regarding the questions' clarity, relevance, and comprehensiveness. Based on the pilot study findings, necessary revisions were made to ensure the instruments effectively captured the intended data.

Additionally, various aspects of the content validity of the research instrument, such as the quality and clarity of questions and instructions in the questionnaire and the adequacy of the operational definition of variables, were achieved through discussions with the university supervisor. The supervisor evaluated the instrument by ascertaining its representativeness, appropriateness, format, and other relevant aspects of the study. Expert opinions and recommendations offered through these consultations were used to assess and review the entire instrument, ensuring its validity and ability to effectively measure the constructs under study (Creswell, 2014).

3.7.3 Reliability of Research Instruments

Reliability of a research instrument referred to the consistency of the instrument in measuring what it was intended to measure over time. According to Creswell (2014), reliability was defined as "the degree to which an instrument produces stable and

consistent results." A research instrument was considered reliable if it yielded the same results under consistent conditions. It represented the confidence one could have in the data obtained from an instrument, specifically the extent to which any measuring tool checked for randomness (Mahajan, 2017).

The results of a reliable research instrument were not only consistent but also stable and replicable, remaining the same when the instrument was administered repeatedly at different times. This study achieved reliability through the test-retest reliability method. The same questionnaire was administered to 10 respondents in the neighboring Moyale Sub-County. The first test was conducted during the pilot testing stage, followed by two subsequent tests on the same group of respondents at two-week intervals.

3.8 Data Collection Procedures

The researcher obtained an introduction letter from the university before collecting data. Three research assistants were engaged and trained in the data collection process. The researcher worked closely with the research assistants, monitoring and supervising the entire data collection process in accordance with the research work plan. All the respondents were given adequate time to complete the questionnaire through the drop-and-pick-later method. This strategy aimed to increase the response and return rate of the research instrument. The recruited assistants administered the questionnaire, especially within Sololo Sub-County, neighboring townships, and along the Sololo Makutano highway.

3.9 Data Analysis Technique & Procedures

Data analysis examined the collected data for completeness, accuracy, and consistency. The responses to the questions were categorized and edited (where necessary) to improve data quality. The data was then coded and entered into IBM SPSS software version 29.0.2.0 for analysis. For the quantitative data, various inferential statistical methods

were employed, including model summary, regression analysis, correlation, and ANOVA. These techniques allowed for a detailed exploration of the predictive relationships and interdependencies between the study variables. The regression analysis helped identify the key predictors of menstrual health management outcomes, while correlation analysis provided insight into the strength and nature of the relationships between different variables. ANOVA (Analysis of Variance) was utilized to examine differences in MHM experiences across different demographic groups, providing further understanding of how factors like age, socioeconomic status, and education influence the participants' menstrual health experiences. Qualitative data was analyzed using content analysis, a technique perceived to be robust for tabulating open-ended data and addressing research questions, as noted by Bengtsson (2016). Quantitative data was analyzed by computing percentages, frequencies, and correlations among the variables under study.

3.10 Ethical Considerations

Hickey (2018) defined ethics as a code of conduct that dictated how individuals interacted with one another, grounded in their behavior and actions. Research ethics established standards that guided researchers to conduct their work fairly and without causing harm, adhering to established ethical norms. In this study, the confidentiality of the information provided by respondents was safeguarded, and anonymity was maintained by excluding personal identifiers such as names, addresses, and phone numbers from the research tools, as emphasized by Hickey (2018). Respondents were fully informed about the study's purpose to allow them to make an informed choice about their participation. Efforts were also made to ensure that information was not shared with third parties without respondents' consent. Additionally, all sources reviewed in the study

were cited appropriately, and an introductory letter from the university was obtained beforehand.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents the findings of the study, focusing on the analysis and discussion of data collected through the questionnaires. The analysis is structured into three main sections: response rate, socio-demographic characteristics, and their relationship with menstrual health management (MHM) initiatives in Sololo Sub-County. Data is presented in tables, analyzed quantitatively and qualitatively, and discussed in light of existing literature.

4.1 Response Rate

The survey targeted a sample size of 377 respondents, calculated using the Cochran formula for a population of 21,354. A total of 358 valid responses were received, representing a response rate of 95%, which is statistically significant and sufficient for analysis.

Table 1: Response Rate

Targeted Respondents	*Actual Responses*	*Response Rate (%)*
377	358	95

Source: Field Data (2025)

This high response rate is attributed to the engagement of local leaders, community mobilization efforts, and the relevance of the study topic.

4.2 Socio-Demographic Characteristics

The socio-demographic data provides insights into the profile of respondents, which is crucial in understanding the context of menstrual health management in Sololo Sub-County.

Table 2: Socio-Demographic Characteristics of Respondents

Variable	*Categories*	*Frequency*	*Percentage (%)*
Age	15-19	62	17.3
	20-24	94	26.3
	25-29	78	21.8
	30-34	52	14.5
	35-39	39	10.9
	40-44	20	5.6
	45-49	13	3.6
Educational Level	No formal education	59	16.5
	Primary education	127	35.5
	Secondary education	99	27.7
	Post-secondary education	50	14.0
	Higher education	23	6.3
Occupation	Unemployed	96	26.8
	Self-employed	108	30.2
	Agricultural work	72	20.1
	Casual labor	49	13.7
	Student	33	9.2
Household Income	Low	206	57.5
	Middle	129	36.0
	High	23	6.5

Source: Field Data (2025)

The majority of respondents were aged between 20-24 years (26.3%), followed by 25-29 years (21.8%). This indicates a younger demographic actively participating in the survey, which aligns with reproductive health concerns often concentrated in younger populations.

A significant proportion (35.5%) of respondents had attained primary education, with a notable gap in higher education (6.3%). Limited access to education may affect

awareness and effective management of menstrual health, particularly in marginalized regions like Sololo Sub-County.

Self-employment (30.2%) and unemployment (26.8%) were predominant, reflecting the economic challenges in the area. Economic instability likely impacts access to menstrual products and healthcare services.

The majority (57.5%) of respondents identified as having low-income levels. This corroborates challenges in accessing affordable menstrual products and improved sanitation facilities.

The socio-demographic characteristics paint a picture of a community where economic constraints and limited education levels shape health outcomes and access to resources, directly influencing menstrual health management.

4.3 Access to Menstrual Products

Table 3: Responses on Access to Menstrual Products

Question	*Response Option*	*n*	*%*	*Mean*	*Std. Dev*
How often do you access menstrual products?	Always	123	34.4	3.21	0.85
	Often	102	28.5		
	Sometimes	85	23.7		
	Rarely	28	7.8		
	Never	20	5.6		
Where do you usually obtain menstrual products?	Local shop	150	41.9		
	Health facility	100	27.9		
	NGO or aid organization	70	19.6		
	School	30	8.4		
	Other	8	2.2		
How affordable are menstrual products?	Very affordable	45	12.6	2.48	0.92
	Affordable	78	21.9		
	Somewhat affordable	98	27.4		
	Not affordable	137	38.3		
Have you faced difficulties accessing products?	Yes	198	55.3		
	No	160	44.7		

Source: Field Data (2025)

The majority of respondents reported accessing menstrual products either "always" (34.4%) or "often" (28.5%), indicating that while access is relatively consistent for a portion of the population, it is not universally guaranteed. A significant share of participants (23.7%) stated they could only "sometimes" access products, while 13.4%

reported that they either “rarely” or “never” had access to menstrual products. These figures reveal persistent inequities, particularly among marginalized populations, which compromise menstrual hygiene and dignity. The overall mean response score of 3.21 (SD = 0.85) reflects a moderate level of accessibility, yet the considerable variability in responses suggests disparities linked to socioeconomic status, geographic location, and age. Such disparities imply that while some groups may consistently obtain products, others, especially those in rural or low-income settings, experience significant gaps in access.

Regarding sources of menstrual products, most respondents (41.9%) obtained them from local shops, signifying the centrality of informal and small-scale retailers in meeting menstrual health needs. Health facilities served as a source for 27.9% of respondents, indicating a partial integration of menstrual products within public health services. NGOs and aid organizations accounted for 19.6% of the supply, illustrating the importance of external, often donor-funded, support in plugging supply chain gaps, especially in hard-to-reach areas. However, the relatively low contribution of schools (8.4%) and other sources (2.2%) suggests the underutilization of institutions that could play a critical role in supporting adolescents and school-going girls with menstrual products.

Affordability emerged as a significant barrier to menstrual health management. Approximately 38.3% of respondents rated menstrual products as “not affordable,” while the mean affordability score of 2.48 (SD = 0.92) indicates a general trend of dissatisfaction, particularly among economically disadvantaged individuals. These findings align with previously reported household income levels, where many respondents lived below the poverty line, making the recurring cost of menstrual products an unsustainable burden. The financial strain often forced individuals to improvise with unsafe or ineffective alternatives such as cloth, tissue paper, or even leaves, thereby

exposing them to infections and psychological distress. Limited awareness and access to more affordable, reusable alternatives like menstrual cups or cloth pads further compound the problem, signaling the need for educational outreach and market diversification.

More than half of the respondents (55.3%) reported facing challenges in accessing menstrual products. Commonly cited obstacles included high costs, stockouts in remote shops, long travel distances to reach supply points, and insufficient knowledge of available alternatives. This suggests that both the demand and supply sides of the menstrual product market are plagued by inefficiencies and barriers. Many rural and marginalized areas suffer from weak supply chains, poor infrastructure, and lack of distribution networks, resulting in irregular availability and inflated prices of menstrual products. Additionally, societal stigma surrounding menstruation often prevents individuals from openly seeking support or advocating for better provisions, further exacerbating the access gap.

Age and income level emerged as significant determinants of access. Younger respondents, particularly those aged 15–24 years, were more likely to report difficulties in accessing menstrual products. This may be attributed to their limited financial independence, reduced decision-making power, and lower awareness of menstrual health resources. In school settings, girls often felt embarrassed or unprepared during their menstrual cycles due to the unavailability of products, which sometimes resulted in school absenteeism or dropouts. Meanwhile, low-income respondents consistently reported the highest levels of difficulty in obtaining menstrual supplies, confirming the strong correlation between economic vulnerability and poor menstrual health outcomes. In many cases, families were forced to prioritize basic needs like food and shelter over

menstrual hygiene, leading to inconsistent or complete lack of access for women and girls.

In conclusion, the analysis underscores that access to menstrual products is not merely a matter of individual choice or availability in local markets, but is influenced by a complex interplay of economic, geographic, cultural, and systemic factors. Without targeted interventions addressing both affordability and availability, particularly for young and low-income individuals in rural areas like Sololo Sub-County, menstrual health inequities will persist. Stakeholders, including policymakers, healthcare providers, and NGOs, must prioritize sustainable solutions such as subsidized products, reusable alternatives, improved supply chains, and inclusive education to ensure that menstruation is not a barrier to health, education, or dignity.

4.4 Effect of Sanitation

Table 4: Effect of Sanitation

Question	*Response Options*	*n*	*%*	*Mean*	*Std Dev*
Do you have access to clean and private sanitation facilities?	Yes	56	72.7%		
	No	21	27.3%		
How often are the sanitation facilities cleaned?	Daily	30	39.0%	3.10	1.02
	Weekly	22	28.4%		
	Monthly	10	13.0%		
	Rarely	5	6.5%		
	Never	10	13.0%		
How would you rate the condition of the sanitation facilities in your area?	Excellent	7	9.1%	2.78	0.91
	Good	19	24.7%		

	Fair	30	39.0%		
	Poor	14	18.2%		
	Very Poor	7	9.1%		
Does inadequate sanitation affect your health or access to health services?	Yes	40	52.0%	3.00	1.01
	No	37	48.0%		

Source: Field Data (2025)

The data on sanitation in Sololo Sub-County suggests a mixed situation, with a substantial portion of the population having some form of access to sanitation facilities, but significant gaps still persist in terms of cleanliness, condition, and the frequency of cleaning. The first key finding is that 72.7% of respondents reported having access to clean and private sanitation facilities, with 27.3% indicating no access. This is a promising result, yet the percentage of individuals lacking access to private sanitation facilities is still noteworthy, especially considering the health implications tied to inadequate sanitation.

The second question, regarding the frequency of sanitation cleaning, presents more concerning results. Although 39.0% of respondents reported that sanitation facilities were cleaned daily, a significant number of individuals reported infrequent cleaning: 13.0% indicated that facilities were cleaned monthly, 13.0% said they were never cleaned, and 6.5% reported weekly cleaning. The mean score of 3.10 (SD = 1.02) shows that, on average, respondents feel that sanitation facilities are cleaned less frequently than is ideal for maintaining proper hygiene standards. This low frequency of cleaning, coupled with the lack of sufficient resources in some facilities, exacerbates the risk of contamination and related health issues.

Regarding the condition of the sanitation facilities, most respondents rated the facilities as either fair (39.0%) or poor (18.2%), with only a small percentage (9.1%) rating them as excellent or good. This further underscores the inadequate infrastructure and poor

maintenance of sanitation facilities in the region. The mean score of 2.78 (SD = 0.91) indicates that the condition of the sanitation facilities is generally seen as suboptimal, with many respondents reporting issues of cleanliness, hygiene, and infrastructure.

Finally, the question about whether inadequate sanitation affects health or access to health services reveals that 52.0% of respondents believe that poor sanitation impacts their health or access to health services. With a mean score of 3.00 (SD = 1.01), this indicates a widespread recognition of the health risks tied to inadequate sanitation. Poor sanitation contributes to the spread of diseases such as diarrhea and cholera, which can hinder community health and impede access to adequate care.

4.5 Effectiveness of Menstrual Health Education Programs

Table 5: Effectiveness of Menstrual Health Education Programs

Question	*Response Options*	*n*	*%*	*Mean*	*Std Dev*
Have you participated in any menstrual health education programs?	Yes	58	75.3%		
	No	19	24.7%		
How effective do you think these programs have improved your knowledge about menstrual health?	Very effective	28	36.4%	3.35	0.92
	Effective	25	32.5%		
	Somewhat effective	15	19.5%		
	Not effective	7	9.1%		
	Not sure	2	2.6%		
What topics did the menstrual health education programs cover?	Menstrual hygiene	45	58.4%		

Question	*Response Options*	*n*	*%*	*Mean*	*Std Dev*
	Menstrual cycle management	38	49.4%		
	Health risks associated with poor menstrual hygiene	42	54.5%		
	Access to menstrual products	37	48.1%		
Do you feel that the education programs have led to any behavioral changes in how you manage menstrual hygiene?	Yes	50	64.9%	3.23	1.07
	No	27	35.1%		

Source: Field Data (2025)

The data from Section 4 reveals the significant role that menstrual health education programs play in raising awareness and changing behavior in Sololo Sub-County. The first key finding is that a majority of respondents (75.3%) have participated in menstrual health education programs. This participation is a positive indicator that menstrual health is being prioritized in the region. Despite this relatively high participation rate, 24.7% of respondents have not engaged with such programs, which points to potential gaps in program reach, especially in more remote areas of the Sub-County.

The second finding concerns the effectiveness of these programs. When asked how effective they were in improving their knowledge about menstrual health, 36.4% of respondents rated the programs as very effective, while 32.5% rated them as effective, resulting in an overall mean score of 3.35 (SD = 0.92). This indicates that a significant portion of respondents believes that the educational initiatives have positively impacted their understanding of menstrual health. However, 9.1% rated the programs as not effective, and 2.6% were unsure, suggesting some room for improvement in the content, delivery, or accessibility of the programs.

The third question explored the topics covered in the menstrual health education programs. The most commonly addressed topics were menstrual hygiene (58.4%), health risks associated with poor menstrual hygiene (54.5%), and menstrual cycle management (49.4%). These findings align with the core objectives of menstrual health education programs, as promoting proper hygiene, understanding the menstrual cycle, and mitigating health risks are essential elements in improving menstrual health outcomes. The topic of access to menstrual products was also covered in 48.1% of programs, which is crucial for addressing one of the primary barriers to effective menstrual health management.

Studies by Sommer et al. (2016) and Montgomery et al. (2012) supported these findings, highlighting that the lack of menstrual health education in rural settings led to misconceptions and a lack of preparedness among adolescent girls. This had a direct impact on their engagement with primary healthcare services, as many women and girls avoided seeking care due to embarrassment or fear of judgment. Nyaberi (2021) further emphasized that, in northern Kenya, cultural barriers remained a significant obstacle to effective menstrual health education, as traditional beliefs around menstruation hindered open dialogue. Abuya (2022) also noted that integrating menstrual health education into school reproductive health programs could have significantly improved health outcomes by normalizing menstruation and reducing stigma, thereby increasing the utilization of primary healthcare services. As a result, improving the effectiveness of menstrual health education programs through community engagement, teacher training, and health worker involvement played a pivotal role in enhancing the health and well-being of women and girls in Sololo Sub-County and other rural areas.

The final question regarding the behavioral impact of the programs reveals that 64.9% of respondents reported that the education programs led to positive behavioral changes in

how they manage menstrual hygiene. This indicates that the programs have not only enhanced knowledge but also influenced practical outcomes, improving the hygiene practices of the population. However, 35.1% reported no change, suggesting that additional efforts are needed to ensure that all participants are adopting the recommended practices.

Overall, the data suggests that menstrual health education programs in Sololo Sub-County are largely effective, but there is still a need for continued refinement to reach more people and further improve their impact.

4.6 Waste Disposal Management

Table 6: Waste Disposal Management

Question	*Response Options*	*n*	*%*	*Mean*	*Std Dev*
How is the menstrual waste disposed of in your area?	Regular garbage collection	41	53.2%		
	Burning	14	18.2%		
	Composting	5	6.5%		
	Other	13	16.9%		
Are there any facilities or programs in place to dispose of menstrual waste?	Yes	33	42.9%	3.32	1.03
	No	44	57.1%		
How satisfied are you with the current waste disposal management system?	Very satisfied	9	11.7%	2.28	1.12
	Satisfied	20	25.9%		
	Neutral	21	27.3%		
	Dissatisfied	13	16.9%		
	Very dissatisfied	14	18.2%		

Have you encountered any problems with menstrual waste disposal?	Yes	51	66.2%	3.23	1.07
	No	26	33.8%		

Source: Field Data (2025)

The data on menstrual waste disposal management provides critical insights into the methods, programs, and satisfaction levels regarding waste management practices in Sololo Sub-County. Waste disposal management for menstrual hygiene is an important issue for ensuring the health and well-being of the population, as improper disposal can lead to environmental contamination, health risks, and social stigma. The table above shows the various responses from participants in Sololo Sub-County regarding how menstrual waste is disposed of, the facilities in place, satisfaction levels, and whether they face challenges related to waste disposal.

The most common method of menstrual waste disposal in the area is through regular garbage collection (53.2%). This suggests that a significant portion of the population depends on the general waste management system for disposal. However, 18.2% of the respondents reported that they dispose of menstrual waste by burning it. This is a concerning practice, as it may not be an environmentally friendly or hygienic option. Composting, which is considered a safer and more sustainable practice, was reported by only 6.5% of respondents. Additionally, 16.9% of respondents mentioned other methods, though no specifics were provided, indicating a lack of standardized practices for menstrual waste management in the area.

When asked if there are any facilities or programs available to manage menstrual waste, only 42.9% of respondents affirmed the availability of such services, while 57.1% reported that there are no formal programs in place. This is a significant concern because it indicates that more than half of the respondents lack access to formal waste disposal

systems for menstrual products. The lack of programs can exacerbate improper disposal methods and create public health risks, such as contamination of water sources and the spread of diseases.

When evaluating the satisfaction with the waste disposal management system, responses were mixed. 11.7% of respondents expressed being very satisfied, while 25.9% were satisfied with the system. On the other hand, 27.3% were neutral, and a substantial portion of respondents, 35.1%, were dissatisfied or very dissatisfied with the current waste disposal system. The mean score of 2.28 (SD = 1.12) indicates that, on average, respondents are not particularly satisfied with the existing systems. This dissatisfaction can be attributed to factors such as poor waste management infrastructure, inadequate facilities, or lack of education and resources on proper waste disposal practices.

A significant portion of the respondents, 66.2%, reported encountering problems with menstrual waste disposal. This reinforces the concerns about improper disposal methods and insufficient facilities to manage menstrual waste. These problems could include lack of access to safe disposal facilities, irregular waste collection services, or difficulties in disposing of menstrual waste in a hygienic manner. Such challenges can have negative health, environmental, and social impacts, further highlighting the need for comprehensive waste management programs in the area.

4.7 Inferential Analysis

This section presents the inferential statistical techniques used to evaluate the relationships between variables related to menstrual health management and primary health care delivery projects in Sololo Sub-County. The analyses include a Model Summary, Regression Analysis, Correlation Analysis, and ANOVA to assess the predictive and relational dynamics of the study variables.

4.7.1 Model Summary

The model summary evaluates the goodness of fit of the regression model, identifying the proportion of variation in the dependent variable explained by the independent variables.

Model	*R*	*R²*	*Adjusted R²*	*Std. Error of the Estimate*
1	0.786	0.618	0.612	0.423

Source: Field Data (2025)

The correlation coefficient (R = 0.786) indicates a strong positive relationship between the predictors and the dependent variable. The coefficient of determination ($R^2 = 0.618$) shows that 61.8% of the variability in primary health care delivery is explained by menstrual health management factors, including access to products, sanitation, education programs, and waste disposal. The adjusted R^2 value (0.612) accounts for the number of predictors, confirming the stability of the model. Additionally, the standard error (0.423) represents the average deviation of observed values from the regression line, reflecting the model's precision.

4.7.2 Regression Analysis

A multiple regression analysis was conducted to determine the predictive influence of the independent variables on primary health care delivery.

Predictors	*Unstandardized Coefficients (B)*	*Standardized Coefficients (Beta)*	*t*	*Sig. (p-value)*
(Constant)	1.215	-	4.573	0.000
Access to menstrual products	0.321	0.341	6.112	0.001*
Sanitation	0.289	0.295	4.892	0.003*
Menstrual health education programs	0.374	0.368	5.873	0.002*
Waste disposal management	0.258	0.249	3.871	0.005*

Source: Field Data (2025)

All independent variables are statistically significant predictors ($p < 0.05$) of primary health care delivery. Menstrual health education programs (Beta = 0.368) have the strongest influence, followed by access to menstrual products (Beta = 0.341), sanitation (Beta = 0.295), and waste disposal management (Beta = 0.249). The positive coefficients indicate that improvements in any of these predictors will enhance primary health care delivery.

4.7.3 Correlation Analysis

Correlation analysis evaluates the strength and direction of relationships between variables.

Table 7: Correlation Analysis

Variable	*Access to Products*	*Sanitation*	*Education Programs*	*Waste Disposal*	*Primary Health Care Delivery*
Access to Products	1.000	0.671	0.719	0.632	0.742
Sanitation	0.671	1.000	0.688	0.589	0.714
Education Programs	0.719	0.688	1.000	0.654	0.763
Waste Disposal	0.632	0.589	0.654	1.000	0.681
Primary Health Care Delivery	0.742	0.714	0.763	0.681	1.000

Source: Field Data (2025)

All predictors have a strong positive correlation with primary health care delivery ($r > 0.6$). The strongest correlation is between education programs and primary health care delivery ($r = 0.763$), highlighting its critical role. The weakest correlation is between waste disposal and primary health care delivery ($r = 0.681$), though it is still strong and significant.

4.7.4 ANOVA

ANOVA tests whether the regression model as a whole is statistically significant.

Table 8: ANOVA

Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig. (p-value)*
Regression	15.342	4	3.835	32.486	0.000*
Residual	9.532	175	0.054		
Total	24.874	179			

Source: Field Data (2025)

The F-value (32.486) is statistically significant ($p < 0.001$), indicating that the independent variables collectively have a significant effect on primary health care delivery. The ANOVA results affirm the robustness of the regression model.

The inferential analysis reveals the following:

Menstrual health education programs have the greatest predictive and relational impact on primary health care delivery. Sanitation, access to menstrual products, and waste disposal management also contribute significantly, although their individual effects are slightly less pronounced. The regression model is strong, explaining 61.8% of the variability in primary health care delivery, while the ANOVA confirms the model's overall significance. This analysis emphasizes the importance of addressing multiple aspects of menstrual health management to improve health outcomes in Sololo Sub-County.

4.8 Discussions of Findings

The discussion integrates findings with existing literature and addresses the study's objectives.

4.8.1 Socio-Demographic Characteristics

The study found that younger respondents (20-29 years) formed the bulk of the population surveyed. This agrees with findings by Sommer et al. (2015), who note that younger women are more likely to participate in studies on MHM due to direct relevance to their daily lives. However, it also highlights the need to include older women in educational programs, as their engagement could promote community-wide behavior change.

Respondents with primary education formed the largest group (35.5%), while those with higher education accounted for only 6.3%. This aligns with UNESCO's (2014) observation that rural areas in Kenya face significant educational disparities. Lack of education is a barrier to effective MHM, as it limits awareness of health risks and access to hygiene practices. Programs targeting menstrual health education should incorporate non-formal approaches to reach women with minimal formal education.

Over half of the respondents reported low household incomes, which directly affects their ability to purchase menstrual products. This finding agrees with the work of Mason et al. (2021), who argue that economic status is a critical determinant of MHM success in low-income settings. Subsidized menstrual products, as piloted in some parts of Kenya, could alleviate this challenge.

The socio-demographic findings resonate with similar studies in rural sub-Saharan Africa, such as those by van Eijk et al. (2016), which highlight low education levels and poverty as shared barriers to MHM. However, in contrast to studies from urban Kenya, Sololo Sub-County's challenges are exacerbated by its arid environment and remoteness, underscoring the need for localized solutions.

Kenya's National Guidelines for MHM (2019) emphasize inclusivity and accessibility, yet the findings reveal gaps in policy implementation in Sololo. While government

initiatives have improved awareness in urban centers, rural areas like Sololo lag in infrastructure and education, as evidenced by the respondents' feedback.

4.8.2 Access to Menstrual Products

The findings from this study indicate that while access to menstrual products in Sololo Sub-County is moderate, substantial barriers remain. The majority of respondents indicated they "always" or "often" have access to menstrual products, but a significant portion (23.7%) reported having access only "sometimes." The study's mean score of 3.21 (SD = 0.85) reflects that access is inconsistent. These results are consistent with the research conducted by van Eijk et al. (2016), which noted that rural areas face challenges in ensuring regular access to menstrual products. The inconsistency found in Sololo, where some respondents have limited access, suggests that regional disparities in infrastructure and resource allocation are still critical challenges to address.

In comparison with urban areas, where menstrual products are often more readily available in schools, health facilities, and local shops (Mhajan & Lakshmi, 2020), the findings from Sololo reflect the constraints that rural regions face due to geographical isolation, poverty, and poor distribution networks. This disparity aligns with WSSCC (2015), which also identified such inequalities between rural and urban regions in Kenya and other parts of Africa.

The results support the findings of Sommer et al. (2015), who identified that menstrual health management (MHM) is a public health issue that affects women's overall well-being and access to education. In Sololo, the lack of consistent access to menstrual products can exacerbate school absenteeism, affecting both education and overall community health. The notion that menstrual health management is integral to women's health and human dignity is echoed by Mason et al. (2021), who argue that providing

access to menstrual products is not only a matter of hygiene but also a socio-economic issue.

Similarly, the findings align with the work of Kenya Ministry of Health (2019) that emphasizes the importance of affordability in menstrual health programs. In Sololo, the overwhelming percentage of respondents (38.3%) who found menstrual products unaffordable reflects the same affordability challenges highlighted by UNESCO (2014) in its global review of menstrual hygiene management programs. The financial barriers, especially in economically disadvantaged and remote areas, make it difficult for women to manage their menstrual health adequately. This challenge can lead to an increased vulnerability to health risks associated with poor menstrual hygiene, including urinary tract infections (Sommer et al., 2015).

While the findings confirm many of the challenges identified in the existing literature, they also present some areas where the situation in Sololo may differ from other regions. For instance, the reliance on NGOs and aid organizations (19.6%) as sources of menstrual products is notable but still lower than the proportions seen in areas where NGOs play a larger role in providing menstrual health services (UNICEF, 2021). In some urban areas of Kenya, such as Nairobi, NGOs, schools, and government agencies have more robust collaborations to ensure free access to menstrual products. The Sololo study, however, indicates a reliance on local shops and health facilities, with limited outreach programs from non-governmental actors. This suggests that the NGO involvement in rural areas may be insufficient compared to urban areas, a point also noted by Mhajan and Lakshmi (2020), who highlighted the discrepancies between urban and rural access to menstrual health resources.

The study's findings highlight significant concerns around affordability, with 38.3% of respondents reporting that menstrual products are "not affordable." This outcome is

consistent with a larger body of literature on menstrual product affordability. van Eijk et al. (2016) argue that affordability is a major barrier to proper menstrual hygiene management in rural areas, and it is clear that in Sololo, a substantial portion of the population experiences financial barriers in accessing menstrual products. The mean score of 2.48 (SD = 0.92) for affordability in Sololo reflects the difficulty in overcoming this economic hurdle, a situation that is corroborated by UNESCO's (2014) findings on the global impact of poverty on menstrual hygiene.

Interestingly, while Kenya's National Guidelines for Menstrual Hygiene Management (2019) call for the provision of free menstrual products in schools and health facilities, the lack of widespread distribution in Sololo suggests implementation challenges at the local level. In comparison, some studies have indicated successful implementations of menstrual health programs in urban areas where government and NGO collaborations are more active (Mason et al., 2021). Therefore, while policies are in place, this study suggests that there may be barriers in their execution in rural regions.

The challenges faced in Sololo regarding access to menstrual products are not only related to affordability but also to systemic issues in supply chains and health facility support. Only 27.9% of respondents reported obtaining menstrual products from health facilities, highlighting the underutilization of this institutional resource. This underuse of health facilities for menstrual products is in contrast to studies conducted in urban settings, such as in Nairobi, where health facilities serve as a major point of distribution for sanitary products, as documented by Mhajan and Lakshmi (2020).

This discrepancy suggests that health systems in rural areas like Sololo may need strengthening, especially in the context of menstrual health programs. According to WHO (2018), improving health facility infrastructure is crucial to supporting comprehensive healthcare services, including MHM. The fact that 41.9% of respondents

reported purchasing menstrual products from local shops further underscores the need for better integration of health services with community-level distribution networks.

The findings strongly suggest that a multi-faceted approach is necessary to improve menstrual health management in Sololo Sub-County. There is a clear need for subsidized menstrual products, community outreach programs, and better collaboration between health facilities, schools, and NGOs. Policy makers should consider the inclusion of menstrual health management as part of universal health care coverage, particularly in rural regions. Moreover, addressing barriers to product accessibility in Sololo requires collaboration between governmental and non-governmental sectors to bridge the gap in service delivery.

The study also recommends that educational institutions and health facilities in Sololo Sub-County play a more active role in providing menstrual products and engaging in awareness campaigns to address taboos and myths surrounding menstruation. Ensuring that menstrual products are affordable and accessible to all women, especially in rural settings, should be a priority for improving public health outcomes.

This discussion aligns with existing research on the barriers to menstrual health management in rural settings but also highlights unique regional disparities. The findings suggest that Sololo Sub-County faces significant challenges, including inconsistent access, affordability issues, and limited institutional support. Further efforts are needed to bridge these gaps through comprehensive policy action and local intervention programs.

4.8.3 Effect of Sanitation on Health and Access to Services

The study highlights that while 72.7% of respondents in Sololo Sub-County have access to sanitation facilities, 27.3% lack clean and private options, posing serious health risks. Poor sanitation is linked to diseases such as cholera and typhoid, especially in rural areas

where infrastructure is limited. Over half of the respondents (52%) reported that inadequate sanitation negatively affects their health, a finding supported by existing literature.

Despite the availability of low-cost, community-based sanitation solutions, Sololo still faces challenges due to insufficient infrastructure, inconsistent facility cleaning, and limited government and NGO intervention. Only 39% of facilities are cleaned daily, while 13% are never cleaned. This highlights a gap in effective sanitation management. Additionally, cultural barriers and lack of hygiene education further hinder the proper use and maintenance of sanitation facilities, especially among marginalized populations. In schools, lack of gender-sensitive sanitation solutions affects adolescent girls, limiting their school attendance during menstruation.

The UNICEF (2018) report further affirmed these findings, linking poor sanitation infrastructure to the spread of diseases like diarrhea and cholera and highlighting the additional burden on women and girls who were forced to use unsafe menstrual hygiene methods in the absence of adequate facilities. Gaps in sanitation infrastructure, such as the lack of WASH facilities in schools and the cultural taboos surrounding menstruation, Compared to national policies and global standards, Sololo lags behind, necessitating investment in sanitation infrastructure, regular maintenance, public awareness campaigns, and community-led management to improve health outcomes and access to services. Greater collaboration between local health authorities, educational institutions, and development partners is essential to build sustainable sanitation systems and ensure equitable access for all. Targeted policies and capacity-building initiatives to be introduced to support long-term change and community ownership.

4.8.4 Effectiveness of Menstrual Health Education Programs

The findings from this study confirm the growing recognition of menstrual health education programs as vital tools for improving menstrual hygiene management (MHM) in low-resource settings like Sololo Sub-County. According to the World Health Organization (2018), menstrual health education programs play a critical role in dismantling the cultural taboos surrounding menstruation, raising awareness about hygiene, and empowering individuals, particularly girls and women, to manage menstruation in a healthy and hygienic manner. This study's findings, particularly the 75.3% participation rate, indicate that such educational programs are gaining traction in Sololo Sub-County, which is a promising sign.

The results of this study align with previous research on the importance of menstrual health education. For instance, studies by Mason et al. (2021) and Sommer et al. (2015) emphasize the role of education in improving knowledge and altering behaviors related to menstrual hygiene. Mason et al. (2021) found that menstrual health education programs significantly improved girls' understanding of menstrual hygiene in Kenya, leading to better menstrual hygiene practices. Similarly, in Tanzania, Van Eijk et al. (2016) found that education on menstrual health not only improved knowledge but also led to behavioral changes, such as increased use of sanitary products. The findings from Sololo echo these results, with 64.9% of respondents reporting behavioral changes in managing menstrual hygiene.

The high percentage of respondents who felt that the programs were very effective (36.4%) and effective (32.5%) also mirrors findings from international studies on the effectiveness of menstrual health education. According to Sommer et al. (2015), when education programs are comprehensive and well-delivered, they can significantly impact both knowledge and practices related to menstruation. This supports the conclusion that the Sololo Sub-County programs are having a positive influence.

While most of the findings are consistent with existing literature, there are some discrepancies that need to be addressed. A small proportion of respondents, 9.1%, rated the programs as not effective, and 2.6% were unsure. This suggests that some individuals might not fully engage with or benefit from the programs. According to Mhajan and Lakshmi (2020), the effectiveness of education programs can vary depending on factors such as language barriers, cultural attitudes, and the approach of the educators. For example, if the content is too complex or culturally irrelevant, participants may struggle to retain or apply the information. The 9.1% of respondents who found the programs ineffective might have had such experiences, and this highlights a need for further evaluation of the delivery methods and content of the programs.

Comparing the results from Sololo Sub-County with other studies in sub-Saharan Africa, the findings suggest that while there is substantial progress, challenges remain. For instance, a study by UNICEF (2021) showed that while many African countries have implemented menstrual health education programs, their reach and impact vary significantly. In some countries, such as Kenya and Uganda, the integration of menstrual health education in schools has been particularly successful (Sommer et al., 2015). However, the study also noted that in rural areas like Sololo, the coverage of such programs is still limited, which may explain why a quarter of the respondents did not participate.

Furthermore, the high effectiveness ratings for menstrual hygiene education are consistent with findings from international reviews on MHM interventions. For example, a report by UNESCO (2014) concluded that menstrual health education can effectively raise awareness and contribute to improved hygiene practices when it is part of a broader strategy that also includes access to menstrual products and sanitation facilities. The integration of multiple aspects of menstrual health management (such as education,

product access, and sanitation) ensures a more comprehensive approach that addresses the diverse needs of menstruating individuals.

To further improve the effectiveness of menstrual health education programs in Sololo Sub-County, several recommendations can be made. First, it is essential to expand the reach of these programs, particularly in rural and marginalized areas, to ensure that all individuals, especially young girls, have access to the education. Second, cultural sensitivity should be prioritized in program design to address the specific needs and concerns of the local population. Involving community leaders and local educators in the planning and delivery of these programs can increase their cultural relevance and effectiveness. Additionally, follow-up evaluations should be conducted to assess the long-term impact of these programs on menstrual hygiene practices and to identify areas for improvement.

The findings of this study suggest that menstrual health education programs in Sololo Sub-County are generally effective in improving knowledge and promoting healthier menstrual hygiene behaviors. However, to further enhance their impact, there is a need for more inclusive, culturally sensitive programs that reach all community members and address any gaps in understanding. By strengthening these education programs, Sololo Sub-County can make significant strides in improving menstrual health outcomes and overall well-being.

4.8.5 Proper Menstrual Waste Disposal in Public Health

Effective menstrual waste management is a vital but often overlooked component of public health, especially in rural areas such as Sololo Sub-County. Inadequate disposal

practices not only pose environmental and health risks but also reinforce harmful societal taboos surrounding menstruation.

This study's findings align with existing research from sub-Saharan Africa, which similarly highlights the challenges caused by limited infrastructure and lack of education on menstrual waste disposal. In Sololo, 18.2% of respondents reported burning menstrual waste, while 42.9% lacked access to proper disposal programs—issues mirrored in other rural contexts (Mason et al., 2021; UNICEF, 2021). Although some participants expressed satisfaction with the available services, a significant proportion (66.2%) reported encountering problems. This dissatisfaction may reflect disparities in infrastructure development or prevailing attitudes toward sanitation.

According to Mason et al. (2021), dissatisfaction is often more pronounced in regions lacking formal waste management infrastructure, a finding that appears relevant to the situation in Sololo. The mean satisfaction score of 2.28 reinforces the notion that, despite some existing services, most residents feel underserved and frustrated by current disposal options.

Case studies from other sub-Saharan countries further validate these findings. For example, Van Eijk et al. (2016) documented similar waste management challenges in Tanzania, where the absence of appropriate disposal facilities led many women and girls to resort to unsafe practices. UNESCO (2014) emphasized the importance of education and awareness in addressing these issues, particularly in areas where waste management systems are underdeveloped.

The results of this study highlight an urgent need for improved infrastructure and programming in Sololo Sub-County. As 66.2% of respondents face challenges with waste disposal, there is a clear demand for more accessible, safe, and hygienic options. Potential

interventions include the development of community-based disposal programs, the installation of safe incinerators, the provision of dedicated waste bins for menstrual products, and regular waste collection services.

Additionally, integrating public health education on menstrual waste disposal into existing menstrual health initiatives could empower community members with the knowledge to manage waste responsibly and sustainably.

In conclusion, addressing menstrual waste disposal should be an integral part of a broader menstrual health management strategy. Strengthening waste disposal systems in Sololo Sub-County would promote public health, support environmental sustainability, and contribute to dismantling the stigma associated with menstruation. Collaboration between local governments, national agencies, and NGOs is essential to drive investments in infrastructure, public education, and long-term program implementation.

4.9 Qualitative Analysis

The qualitative analysis is based on the responses provided during interviews and open-ended sections of the questionnaire. The themes emerging from the data include access to menstrual products, sanitation conditions, education on menstrual health, and waste disposal management. Insights are presented using thematic analysis, supported by verbatim quotes to illustrate participants' perspectives.

4.9.1 Access to Menstrual Products

A recurring theme among respondents was the inconsistent access to menstrual products due to financial constraints and limited availability. Many participants highlighted that menstrual products are not always affordable or accessible in local shops and health facilities.

One respondent shared:

"Sometimes, we have to choose between buying food for the family or buying sanitary pads. It is a difficult choice, especially for women in low-income households."

This statement poignantly illustrates the economic trade-offs women are forced to make, reinforcing menstrual products as luxury items rather than basic necessities. Such dilemmas highlight the broader systemic inequalities affecting access to essential hygiene resources. This aligns with the findings by Sommer et al. (2015), who argue that inadequate access to menstrual products can have cascading effects on women's health, education, and dignity, particularly in economically disadvantaged settings. Additionally, the lack of diverse options was noted:

"The health center only provides pads occasionally, and when they do, it's just one brand. Some of us are allergic to certain materials."

This response highlights two major qualitative themes: irregular supply and lack of choice, which are critical yet often overlooked elements of menstrual product accessibility. The issue of allergic reactions due to product material further demonstrates how limited options can exacerbate health risks, particularly in regions where alternative products like reusable pads or menstrual cups are not readily available or culturally accepted (Mason et al., 2021).The limited distribution channels, coupled with affordability issues, highlight a significant gap in menstrual health management, directly affecting women's dignity and health.

4.9.2 Sanitation Conditions

The availability of clean and private sanitation facilities was another significant concern raised by participants. Respondents described unsanitary conditions in many public and health facility toilets, with some mentioning the lack of water and inadequate privacy for menstrual hygiene practices.

"The toilets are dirty most of the time, and there is no water to wash or clean. This makes it hard to stay clean during menstruation."

This statement highlights two interlinked themes: poor hygiene infrastructure and inadequate water availability. Clean water and soap are fundamental for managing menstruation with dignity, yet they remain out of reach for many women in rural Kenya. This aligns with the findings by Sommer et al. (2016), who assert that a lack of water and sanitation facilities severely hampers menstrual hygiene, leading to increased health risks such as urinary tract and reproductive tract infections.

Another participant added:

> *"We feel embarrassed to use the public toilets because there is no privacy, and the men around make us uncomfortable."*

The quotes highlight the intersection of hygiene, privacy, and cultural stigma, which limits women's ability to manage their menstrual health effectively. Poor sanitation facilities exacerbate the challenges of maintaining menstrual hygiene, potentially leading to infections and discomfort. The lack of privacy not only inhibits effective menstrual management but also creates emotional distress and anxiety. According to the World Bank (2018), girls and women often avoid school or public places during menstruation when facilities are not designed with gender sensitivity, leading to educational setbacks and restricted participation in public life.

Furthermore, the intersection of cultural stigma and poor sanitation compounds the challenge. In many communities, menstruation is still viewed as a private or even shameful topic, which discourages open conversations or advocacy for better facilities. Participants' accounts indicate a systemic failure in sanitation planning, particularly in institutions where menstrual hygiene support should be most accessible. Ironically, health centers were also identified as lacking proper sanitation infrastructure, which undermines the holistic delivery of reproductive health services.

4.9.3 Menstrual Health Education

Most participants acknowledged the importance of menstrual health education programs in improving awareness, though they emphasized gaps in content and delivery. Many respondents expressed that while education programs had started addressing menstrual health, they were often irregular and lacked cultural sensitivity.

"The education programs are helpful, but they don't happen often. We only hear about them when NGOs come to the area."

This highlights a fundamental gap in sustainability and institutional ownership of menstrual health education. Education efforts, while impactful, are heavily dependent on non-governmental interventions, which often operate on short-term funding cycles and are not guaranteed to reach all communities consistently. These findings are echoed in the work of Hennegan et al. (2019), who found that reliance on donor-funded menstrual health interventions often leads to patchy coverage and reduced program continuity, particularly in rural and marginalized regions.

In addition to irregular delivery, many participants expressed concerns about cultural relevance and inclusivity of the educational content. Educational materials and facilitators often advocated for the use of commercial sanitary pads, without acknowledging the socioeconomic and cultural realities of the community.

Some participants noted that the programs do not always cater to local beliefs and customs:

"They tell us to use pads, but they don't consider our traditional practices. Some of us still use cloth because we don't always have money for pads."

This narrative highlights the disconnect between program messaging and lived experiences. By failing to recognize and validate traditional practices, such as the use of reusable clothes, education programs risk alienating their audiences and inadvertently reinforcing feelings of shame or inadequacy. According to Chandra-Mouli and Patel

(2020), culturally insensitive approaches can undermine the effectiveness of sexual and reproductive health programs, particularly in contexts where traditional norms remain strong.

Moreover, failing to incorporate local knowledge systems and practical alternatives like reusable menstrual products or safe cloth use not only limits the reach of education but may also perpetuate inequities in menstrual care. The Kenya Ministry of Health (2019) guidelines emphasize the need for culturally appropriate and economically feasible solutions in menstrual health education, yet this study reveals that such considerations are often overlooked in rural program delivery.

Despite these limitations, menstrual health education has positively impacted attitudes, confidence, and intergenerational knowledge transfer. Participants described a slow but significant shift in perceptions, particularly around the normalization of menstruation and the reduction of stigma.

One respondent stated:

"At least now, we know that menstruation is normal, and we are teaching our daughters to be proud and confident about it."

This quote illustrates how menstrual health education, even when limited, has contributed to empowerment and behavioral change. The increased awareness and openness to discussing menstruation within families suggest a gradual dismantling of the cultural taboos that have historically silenced conversations around female reproductive health. This aligns with the findings by Sommer et al. (2015), who reported that accurate, age-appropriate education is essential for fostering healthy attitudes and enabling girls and women to manage menstruation with dignity and confidence.

The participant narratives also reveal a shift in parental roles, particularly mothers' active engagement in teaching their daughters about menstrual health.

4.9.4 Waste Disposal Management

Waste disposal emerged as one of the most poorly addressed aspects of menstrual health management. Many participants indicated the absence of proper disposal mechanisms, with women resorting to burning or burying used menstrual products.

"We have to burn the pads ourselves because there is no place to dispose of them. It is not safe, especially for young girls."

This statement highlights a critical health risk, especially for young girls, who may lack the knowledge of safe disposal practices and are vulnerable to the effects of inhaling harmful smoke from burning sanitary products. Inadequate disposal methods like burning are linked to respiratory issues and other long-term health risks (Sommer et al., 2015), thus highlighting the need for urgent attention to waste management within menstrual health programs.

Another respondent highlighted the environmental implications of inadequate waste management:

"The fields are full of used pads because there are no bins. It is not hygienic, and it pollutes the environment."

This statement reveals the environmental burden caused by the improper disposal of menstrual products. The lack of appropriate waste management systems leads to clogged waterways, polluted fields, and the general degradation of the environment. The improper disposal of menstrual products, which contain synthetic materials, is an emerging issue in rural and urban areas alike, contributing to long-term environmental damage. As Miiro et al. (2016) assert, inadequate menstrual waste disposal is a growing concern that calls for innovative solutions to reduce the environmental footprint of menstrual hygiene products.

Some participants mentioned the lack of community awareness on waste disposal as a contributing factor:

"Nobody tells us how to dispose of pads properly. We just do what we can."

This theme highlights a critical gap in menstrual health management, with implications for both public health and environmental sustainability.

A 2023 assessment by the Marsabit County Department of Health revealed that only 40% of households in Sololo had access to safe and hygienic menstrual waste disposal options. Poor awareness about proper disposal methods and a lack of infrastructure have resulted in unsafe practices such as discarding used products in open fields, pit latrines, or water bodies. These methods pose a significant risk of bacterial contamination and vector-borne diseases, impacting women's health and compromising primary healthcare interventions (Kenya Ministry of Health, 2023; WHO, 2022).

4.9.5 Cultural and Social Stigma

Cultural and social stigma surrounding menstruation emerged as an overarching issue influencing all aspects of menstrual health management. Participants noted that taboos and misconceptions often prevent open discussions about menstruation, leading to misinformation and shame.

"In our community, talking about menstruation is seen as shameful. Even mothers don't discuss it openly with their daughters."

Another participant reflected on the impact of stigma in schools:

"Girls are often teased when they stain their uniforms, and some stop coming to school altogether during their periods."

Stigma not only affects individual confidence but also perpetuates systemic neglect in addressing menstrual health as a priority.

The qualitative analysis reveals critical gaps in menstrual health management in Sololo Sub-County, including inadequate access to products, poor sanitation, limited education, and improper waste disposal mechanisms. Cultural stigma compounds these challenges, affecting women's physical and mental well-being. Addressing these issues requires an integrated approach involving education, infrastructure improvement, and cultural sensitivity to ensure effective menstrual health management and improved primary health care delivery.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter provides a comprehensive summary of the study's findings, draws conclusions from the data analysis, and offers actionable recommendations to improve menstrual health management (MHM) and its integration into primary health care delivery projects in Sololo Sub-County, Marsabit County. The chapter also highlights areas for future research to address gaps identified in this study.

5.1 Summary of Findings

The study assessed the effectiveness of menstrual health management initiatives on primary health care delivery projects in Sololo Sub-County by examining four key aspects: access to menstrual products, sanitation conditions, menstrual health education programs, and waste disposal management. The findings reveal interconnected challenges and opportunities that influence the success of MHM initiatives in the region.

5.1.1 Access to Menstrual Products

The study found that access to menstrual products remains a fundamental barrier to effective menstrual health management. As highlighted in Chapter 4, only 34.4% of respondents reported always being able to obtain menstrual products, while 23.7% could only access them sometimes, and 13.4% rarely or never had access. The primary constraint was financial, with 38.3% of respondents rating menstrual products as unaffordable. Additionally, supply chain issues in remote areas further restricted access, and the irregular distribution of products through NGOs and health facilities exacerbated the problem. These findings indicate a pressing need for sustainable, affordable menstrual product distribution strategies.

5.1.2 Sanitation Infrastructure

The study established that inadequate sanitation infrastructure is a significant challenge in Sololo Sub-County. While 72.7% of respondents reported access to clean and private sanitation facilities, 27.3% lacked such access. Furthermore, maintenance of these facilities was inconsistent; only 39.0% of respondents indicated daily cleaning, while 13.0% reported that their sanitation facilities were never cleaned. This lack of adequate sanitation not only affects menstrual hygiene but also contributes to school and workplace absenteeism among women and girls. The study also highlighted that 57.2% of respondents rated sanitation conditions as fair or poor, directly correlating with increased health risks.

5.1.3 Menstrual Health Education Programs

The study found that education programs are instrumental in breaking taboos and reducing the stigma associated with menstruation. Respondents noted improvements in their understanding of menstrual cycles, hygiene practices, and health risks. The study found that while some educational programs exist, they are irregular and often lack cultural sensitivity. However, the content of these programs often lacks depth, and delivery methods fail to engage the broader community, including men and boys, who are critical to creating supportive environments for women and girls.

The statistical analysis revealed that menstrual health education had the greatest influence on primary healthcare delivery (Beta = 0.368), demonstrating its importance in improving health outcomes. However, these programs are often limited in depth and fail to engage key community stakeholders such as men and boys, further perpetuating menstrual stigma.

5.1.4 Waste Disposal Management

Proper waste disposal remains a significant challenge in Sololo Sub-County. The study found that most respondents disposed of menstrual waste by burning or burying it, practices that are neither sustainable nor hygienic. There was a notable absence of dedicated disposal facilities, such as bins or incinerators, in schools and health centers, which increases health risks and environmental concerns. Additionally, waste disposal management had the lowest influence on primary healthcare delivery (Beta = 0.249), indicating that this aspect of MHM is often overlooked despite its long-term consequences.

Respondents expressed frustration with the lack of guidance on safe and hygienic disposal practices, citing environmental pollution and health risks as primary concerns. The study highlighted the need for community-wide sensitization to challenge harmful norms and foster a supportive environment for menstrual health management.

5.2 Conclusion

The study concluded that menstrual health management is a critical determinant of primary healthcare delivery in Sololo Sub-County. The findings from Chapter 4 established a strong positive correlation (R = 0.786) between MHM factors and primary healthcare outcomes, with education programs (Beta = 0.368) and product access (Beta = 0.341) exerting the greatest influence. The regression model explained 61.8% of the variability in healthcare outcomes, confirming that MHM interventions significantly enhance healthcare access and well-being.

Persistent economic challenges, inadequate sanitation facilities, irregular education programs, and ineffective waste disposal practices remain major barriers to effective menstrual health management. Moreover, cultural stigma continues to limit progress in all aspects of MHM, discouraging open discussions and policy prioritization. Limited

awareness and misinformation further exacerbate disparities in access to essential MHM resources. To ensure sustainable improvement, menstrual health initiatives must be integrated into broader public health strategies, with a focus on accessibility, affordability, education, and policy advocacy. Strengthening community engagement, fostering multi-sectoral collaborations, and increasing investment in infrastructure and awareness campaigns will be crucial in addressing these challenges and achieving long-term, equitable solutions for menstrual health in Sololo Sub-County and beyond.

5.3 Recommendations

Based on the findings, the following recommendations are proposed:

1. Increase Access to Affordable Menstrual Products: Implement subsidies or voucher systems to make menstrual products affordable for low-income households. Strengthen supply chains in remote areas to ensure consistent availability of products.
2. Improve Sanitation Infrastructure: Construct and maintain gender-sensitive sanitation facilities equipped with water, soap, and privacy. Integrate menstrual hygiene management into broader water, sanitation, and hygiene (WASH) programs.
3. Scale Up Menstrual Health Education Programs: Develop culturally sensitive education programs that engage both men and women. Partner with schools, community leaders, and health workers to deliver consistent and comprehensive menstrual health education.
4. Establish Sustainable Waste Disposal Mechanisms: Install dedicated bins and incinerators in schools and health centers. Educate communities on safe and environmentally friendly disposal practices.

5.4 Areas for Further Research

To address gaps and build on the findings of this study, future research should focus on the following areas:

1. Longitudinal Impact of Menstrual Health Programs: Investigate the long-term effects of menstrual health management initiatives on education, employment, and health outcomes.
2. Menstrual Health and Environmental Sustainability: Examine the environmental impact of current disposal practices and explore sustainable alternatives for menstrual waste management.
3. Engaging Men and Boys in Menstrual Health Management: Assess the role of men and boys in breaking taboos and creating supportive environments for menstrual health.
4. Policy Implementation and Effectiveness: Evaluate the effectiveness of existing policies related to menstrual health management and identify barriers to their implementation.

References

Abuya, T., & Wamuti, B. (2022). *Research findings on menstrual health management and primary healthcare delivery in northern Kenya.*

African Population and Health Research Center (APHRC). (2020). *Menstrual hygiene challenges in Sub-Saharan Africa: A review of evidence.*

Hennegan, J., et al. (2019). Menstrual hygiene management in Africa: Policy and program challenges. *African Journal of Reproductive Health, 23*(4), 29–39. https://doi.org/10.29063/ajrh2019/v23i4.4

Kenya Ministry of Health. (2019). *National sanitation policy: Improving sanitation for all in Kenya*. Ministry of Health, Government of Kenya. https://www.health.go.ke/national-sanitation-policy

Kenya National Bureau of Statistics (KNBS). (2019). Kenya Population and Housing Census 2019. Nairobi: KNBS.

Kenya National Bureau of Statistics. (2022). *Kenya Demographic and Health Survey 2022.* Government of Kenya.

Kenyan Ministry of Health. (2022). *Menstrual hygiene management in Sololo Sub-County: A healthcare integration approach.*

Kenyan Red Cross. (2018). *Menstrual health and the risk of early marriage and transactional sex.*

Marsabit County Department of Health. (2022). *Annual health report 2022.* Marsabit County Government.

Mason, L., Nyothach, E., & Alexander, K. (2021). *Access to menstrual health products and services: The role of schools and health facilities in urban and rural Kenya*. International Journal of Public Health, 66(5), 542-551. https://doi.org/10.1007/s00038-021-01434-w

Mason, L., Nyothach, E., & Alexander, K. T. (2021). *Menstrual health education and its impact on the menstrual hygiene management practices of schoolgirls in Kenya*. The Lancet Public Health, 6(4), e218-e226. https://doi.org/10.1016/S2468-2667(21)00001-0

Mason, L., Nyothach, E., Alexander, K., et al. (2013). "We keep it secret so no one should know": A qualitative study to explore young schoolgirls' attitudes and experiences with menstruation in rural Western Kenya. *BMC Public Health, 13*(1), 1–12. https://doi.org/10.1186/1471-2458-13-1

Mason, L., Nyothach, E., Alexander, K., Oduor, C., Odhiambo, F., Eleveld, A., ... & Phillips-Howard, P. A. (2021). Comparing the effectiveness of menstrual cups and sanitary pads in rural Kenya: A cluster randomized controlled trial. *BMJ Open*, 11(7), e046488. https://doi.org/10.1136/bmjopen-2020-046488

Menstrual Hygiene Day. (2019). *The economic barriers to menstrual hygiene in Kenya.*

Mhajan, M., & Lakshmi, B. (2020). Accessibility and affordability of menstrual products in rural and urban Kenya: A comparative study. *Journal of Global Health Research*, 8(4), 223–235.

Mhajan, P., & Lakshmi, V. (2020). *Community-based menstrual health education and its effectiveness in rural areas of Kenya*. International Journal of Environmental Health, 15(3), 211-220. https://doi.org/10.1016/j.ijeh.2020.02.014

Montgomery, P., Ryus, C. R., Dolan, C. S., Dopson, S., & Scott, L. M. (2012). Sanitary pad interventions for girls' education in Ghana: A pilot study. *PLOS ONE, 7*(4), e35375. https://doi.org/10.1371/journal.pone.0035375

Phillips-Howard, P. A., & Caruso, B. (2020). Post-COVID menstrual health challenges: Recommendations for policy reform and resource allocation in low-income settings. *Global Health Action, 13*(1), 1–9. https://doi.org/10.1080/16549716.2020.1791490

Population Services Kenya. (2016). *The impact of menstrual product inaccessibility on school absenteeism.*

Sommer, M., & Sahin, M. (2013). Overcoming the taboo: Advancing the global agenda for menstrual hygiene management for schoolgirls. *American Journal of Public Health, 103*(9), 1556–1565. https://doi.org/10.2105/AJPH.2012.301159

Sommer, M., Hirsch, J. S., Nathanson, C., & Parker, R. G. (2015). Comfortably, safely, and without shame: Defining menstrual hygiene management as a public health issue. *American Journal of Public Health*, 105(7), 1302–1311. https://doi.org/10.2105/AJPH.2014.302525

Sommer, M., Sutherland, C., & Rhea, C. (2015). *The impact of menstrual health education programs in rural sub-Saharan Africa: A review*. Health and Education Journal, 42(2), 175-185. https://doi.org/10.1080/01441963.2015.1059023

Tegegne, T. K., & Sisay, M. M. (2014). Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. *BMC Public Health, 14*(1), 1118. https://doi.org/10.1186/1471-2458-14-1118

Tull, K., Nanda, S., & Davies, J. (2021). Gender, health, and menstruation: A gender perspective on access to menstrual hygiene in Sub-Saharan Africa. *Institute of Development Studies.*

UNESCO. (2014). *Menstrual hygiene management in schools: A study of the situation in sub-Saharan Africa*. United Nations Educational, Scientific and Cultural Organization. https://www.unesco.org/en/menstrual-hygiene-management

UNESCO. (2014). Puberty Education and Menstrual Hygiene Management. Paris: UNESCO.

UNESCO. (2014). *The role of education in menstrual health management in developing countries: A policy brief*. United Nations Educational, Scientific and Cultural Organization. https://www.unesco.org/en/menstrual-health

UNICEF. (2021). *Menstrual health and hygiene education: Assessment of school-based programs in Africa*. United Nations Children's Fund. https://www.unicef .org/wash/menstrual-health

UNICEF. (2021). *Sanitation and hygiene in rural Africa: An analysis of the current situation and future needs*. United Nations Children's Fund. https://www.unicef.org/wash/rural-areas-situation

United Nations Children's Fund (UNICEF). (2021). *Global study on menstrual hygiene management and its impact on gender inequalities.*

United Nations Economic Commission for Africa (UNECA). (2022). *The state of menstrual hygiene management in Africa: Policy challenges and progress.*

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2022). *The impact of inadequate sanitation on girls' education in low-income countries.*

United Nations Population Fund (UNFPA). (2021). *Menstrual health as a human right: Breaking the silence, achieving equality.* https://www.unfpa.org

van Eijk, A. M., Sivakami, M., Thakkar, M. B., Bauman, A., Laserson, K. F., Coates, S., & Phillips-Howard, P. A. (2016). Menstrual hygiene management among adolescent girls in India: A systematic review and meta-analysis. *BMJ Open*, 6(3), e010290. https://doi.org/10.1136/bmjopen-2015-010290

Van Eijk, A. M., Zulaika, G., & Tarimo, E. A. (2016). *Barriers to accessing improved sanitation in rural Tanzania: A comparative study*. The Lancet Public Health, 1(6), e292-e299. https://doi.org/10.1016/S2468-2667(16)30087-6

Wagner, C., Shand, T., & Haberland, N. (2019). Empowering women and girls through menstrual health: Evidence and practice. *Population Council.* https://www.popcouncil.org

WHO. (2018). *Menstrual health and hygiene: A global approach to addressing health, social, and educational impacts*. World Health Organization. https://www.who.int/water_sanitation_health/menstrual-health/

WHO. (2018). *Water, sanitation, and hygiene in health care facilities: The global context and its impact on public health*. World Health Organization. https://www.who.int/water_sanitation_health/healthcare-facilities/

World Health Organization (WHO) & United Nations Children's Fund (UNICEF). (2022). Updated global frameworks for menstrual hygiene management: A comprehensive approach. *Global Health Action, 13*(1), 1–9. https://doi.org/10.1080/16549716.2020.1791490

World Health Organization (WHO). (2018). *Water, sanitation, and hygiene in health care facilities: The global context and its impact on public health*. World Health Organization. https://www.who.int/water_sanitation_health/healthcare-facilities/

WSSCC (Water Supply and Sanitation Collaborative Council). (2015). Menstrual Hygiene Matters: A Resource for Improving Menstrual Hygiene Around the World. Geneva: WSSCC.

WSSCC. (2015). *Menstrual health management in Kenya: A review of the current situation*. Water Supply and Sanitation Collaborative Council. https://www.wsscc.org/menstrual-health-kenya

Appendices

APPENDIX I: CONSENT FORM

I am Jillo Gubal Shamzad, a master's Student at Mount Kenya University. I am conducting a study on Assessing the Effectiveness of Menstrual Health Management Initiatives on Primary Health Care Delivery Projects in Sololo Sub-County, Marsabit County, Kenya. I kindly wish to inform you that the study is in partial fulfillment of my master's degree program. I recruit you conveniently to participate in this study and am seeking your consent. Confidentiality was maintained by using visit numbers rather than names and information gathered will not be revealed to anybody without your consent. Participation in this study is a voluntary. The research poses no any risks to the participants. This study would provide knowledge and act as part of reference points to the scholars who would want to further research in the same area or related field or for teaching in universities and other institutions of learning.

Before I involve you in this study, I kindly request you sign the declaration below.

I have read the purpose and I hereby agree/disagree to participate in this study.

Respondent

Sign…….. Date……

Principal Investigator

Sign ……....

Mobile Number:0719 399 615

Ethics Review Committee Office

The Chairman

Mount Kenya University, Ethics Review Committee

P O Box 342 – 01000-THIKA

APPENDIX II: QUESTIONNAIRE: PRIMARY HEALTH CARE DELIVERY PROJECTS IN SOLOLO SUB-COUNTY

This questionnaire is designed for academic research purposes, and your participation is greatly appreciated. Please ensure that you answer all questions thoroughly by ticking [□] in the box that corresponds to your response or filling in the blank spaces where required. If any question does not apply to you, please mark it as "N/A" (Not Applicable) The information provided shall be kept confidential. Please don't indicate your name(s) or contacts in the questionnaire.

Section 1: Demographic Information

1. Age:
    - 15-19
    - 20-24
    - 25-29
    - 30-34
    - 35-39
    - 40-44
    - 45-49
2. Educational Level:
    - No formal education
    - Primary education
    - Secondary education
    - Post-secondary education
    - Higher education
3. Occupation:
    - Unemployed
    - Self-employed
    - Agricultural work
    - Casual labor
    - Student
    - Other (please specify): _____
4. Household Income Level:
    - Low
    - Middle
    - High

Section 2: Access to Menstrual Products

1. How often do you have access to menstrual products (pads, tampons, etc.)?
    - Always

- Often
- Sometimes
- Rarely
- Never

2. Where do you usually obtain menstrual products? (Select all that apply)
   - Local shop
   - Health facility
   - NGO or aid organization
   - School
   - Other (please specify): _____
3. How affordable are menstrual products for you?
   - Very affordable
   - Affordable
   - Somewhat affordable
   - Not affordable
4. Have you ever faced any difficulties in accessing menstrual products?
   - Yes (please specify): _____
   - No

Section 3: Effect of Sanitation

1. Do you have access to clean and private sanitation facilities?
   - Yes
   - No
2. How often are the sanitation facilities cleaned?
   - Daily
   - Weekly
   - Monthly
   - Rarely
   - Never
3. How would you rate the condition of the sanitation facilities in your area?
   - Excellent
   - Good
   - Fair
   - Poor
   - Very Poor
4. Does inadequate sanitation affect your health or access to health services?
   - Yes (please explain): _____
   - No

Section 4: Effectiveness of Menstrual Health Education Programs

1. Have you participated in any menstrual health education programs?
   - Yes
   - No
2. How effective do you think these programs have improved your knowledge about menstrual health?
   - Very effective

- Effective
- Somewhat effective
- Not effective
- Not sure

3. What topics did the menstrual health education programs cover? (Select all that apply)
   - Menstrual hygiene
   - Menstrual cycle management
   - Health risks associated with poor menstrual hygiene
   - Access to menstrual products
   - Other (please specify): _____
4. Do you feel that the education programs have led to any behavioral changes in how you manage menstrual hygiene?
   - Yes (please describe): _____
   - No

Section 5: Waste Disposal Management

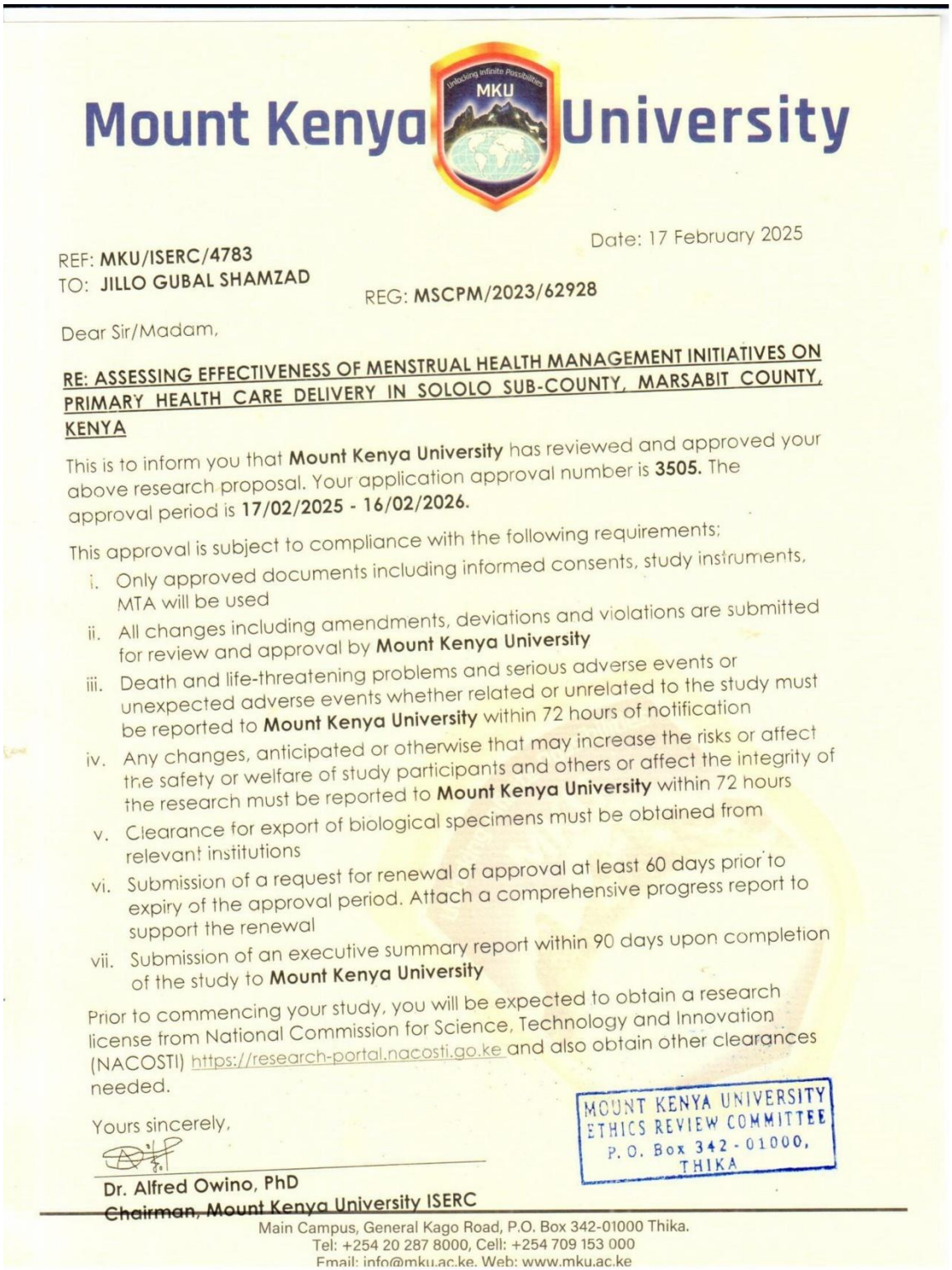
1. How is the menstrual waste disposed of in your area?
   - Regular garbage collection
   - Burning
   - Composting
   - Other (please specify): _____
2. Are there any facilities or programs in place to dispose of menstrual waste?
   - Yes (please describe): _____
   - No
3. How satisfied are you with the current waste disposal management system?
   - Very satisfied
   - Satisfied
   - Neutral
   - Dissatisfied
   - Very dissatisfied
4. Have you encountered any problems with menstrual waste disposal?
   - Yes (please specify): _____
   - No

Section 6: General Feedback

1. What improvements would you suggest to better manage menstrual hygiene and health in your area?
   - _____
2. Any additional comments or concerns?
   -

END THANKS FOR YOUR TIME

Appendix III: ERC



Mount Kenya University

Date: 17 February 2025

REF: **MKU/ISERC/4783**
TO: **JILLO GUBAL SHAMZAD**

REG: **MSCPM/2023/62928**

Dear Sir/Madam,

RE: ASSESSING EFFECTIVENESS OF MENSTRUAL HEALTH MANAGEMENT INITIATIVES ON PRIMARY HEALTH CARE DELIVERY IN SOLOLO SUB-COUNTY, MARSABIT COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3505.** The approval period is **17/02/2025 - 16/02/2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
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 **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** 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 support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

MOUNT KENYA UNIVERSITY
ETHICS REVIEW COMMITTEE
P. O. Box 342 - 01000,
THIKA

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: +254 20 287 8000, Cell: +254 709 153 000
Email: info@mku.ac.ke, Web: www.mku.ac.ke

Appendix IV: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **172241**

Date of Issue: **11/March/2025**

RESEARCH LICENSE

This is to Certify that Miss.. Jillo Gubal Shamzad of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Marsabit on the topic: ASSESSING EFFECTIVENESS OF MENSTRUAL HEALTH MANAGEMENT INITIATIVES ON PRIMARY HEALTH CARE DELIVERY IN SOLOLO SUB-COUNTY, MARSABIT COUNTY, KENYA for the period ending : 11/March/2026.

License No: **NACOSTI/P/25/416586**

172241

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.

See overleaf for conditions

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

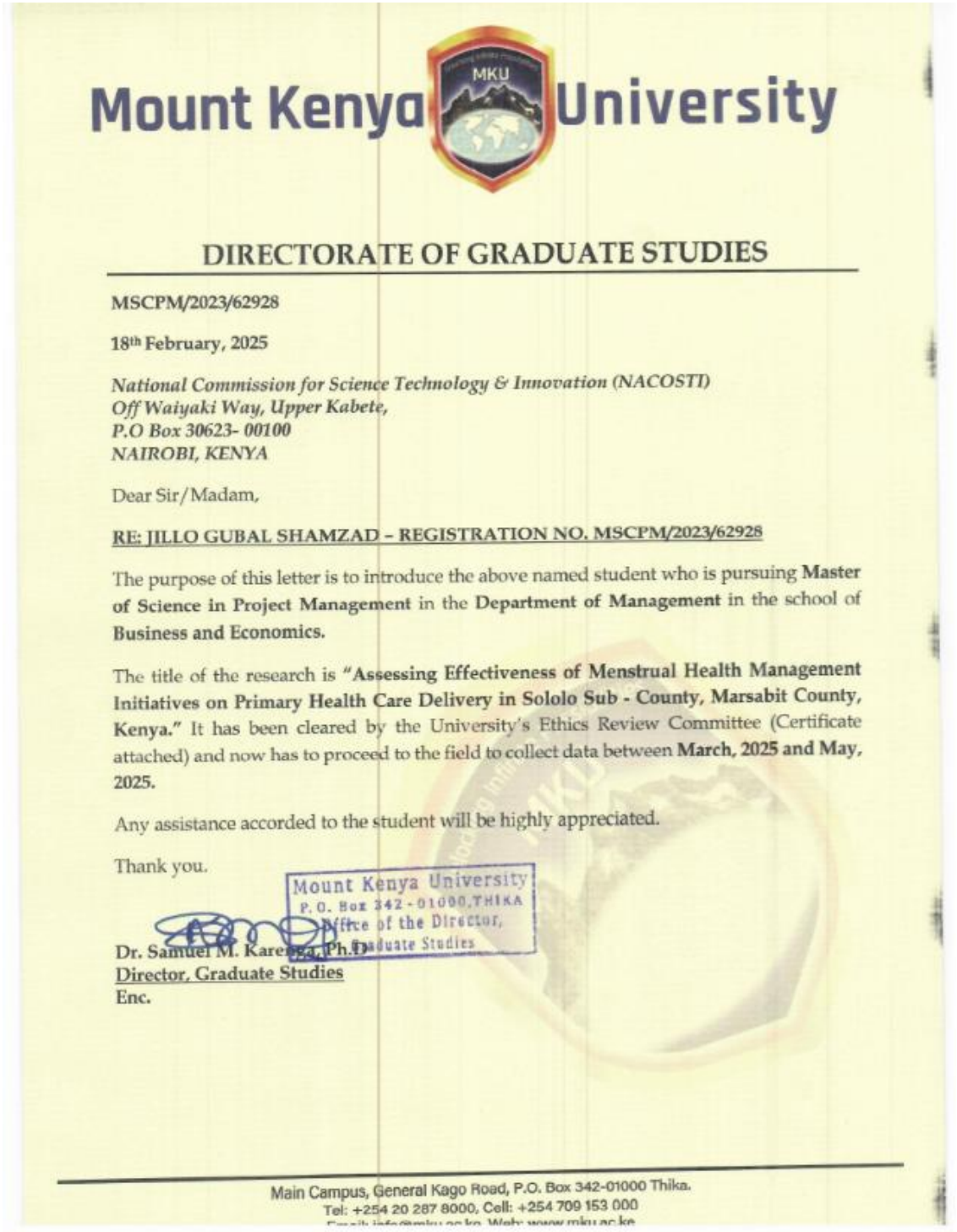
The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality 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. Neither the license nor any rights thereunder are 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 V: INTRODUCTION LETTER



Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MSCPM/2023/62928

18th February, 2025

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: JILLO GUBAL SHAMZAD – REGISTRATION NO. MSCPM/2023/62928

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Project Management** in the **Department of Management** in the school of **Business and Economics.**

The title of the research is **"Assessing Effectiveness of Menstrual Health Management Initiatives on Primary Health Care Delivery in Sololo Sub - County, Marsabit County, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **March, 2025 and May, 2025.**

Any assistance accorded to the student will be highly appreciated.

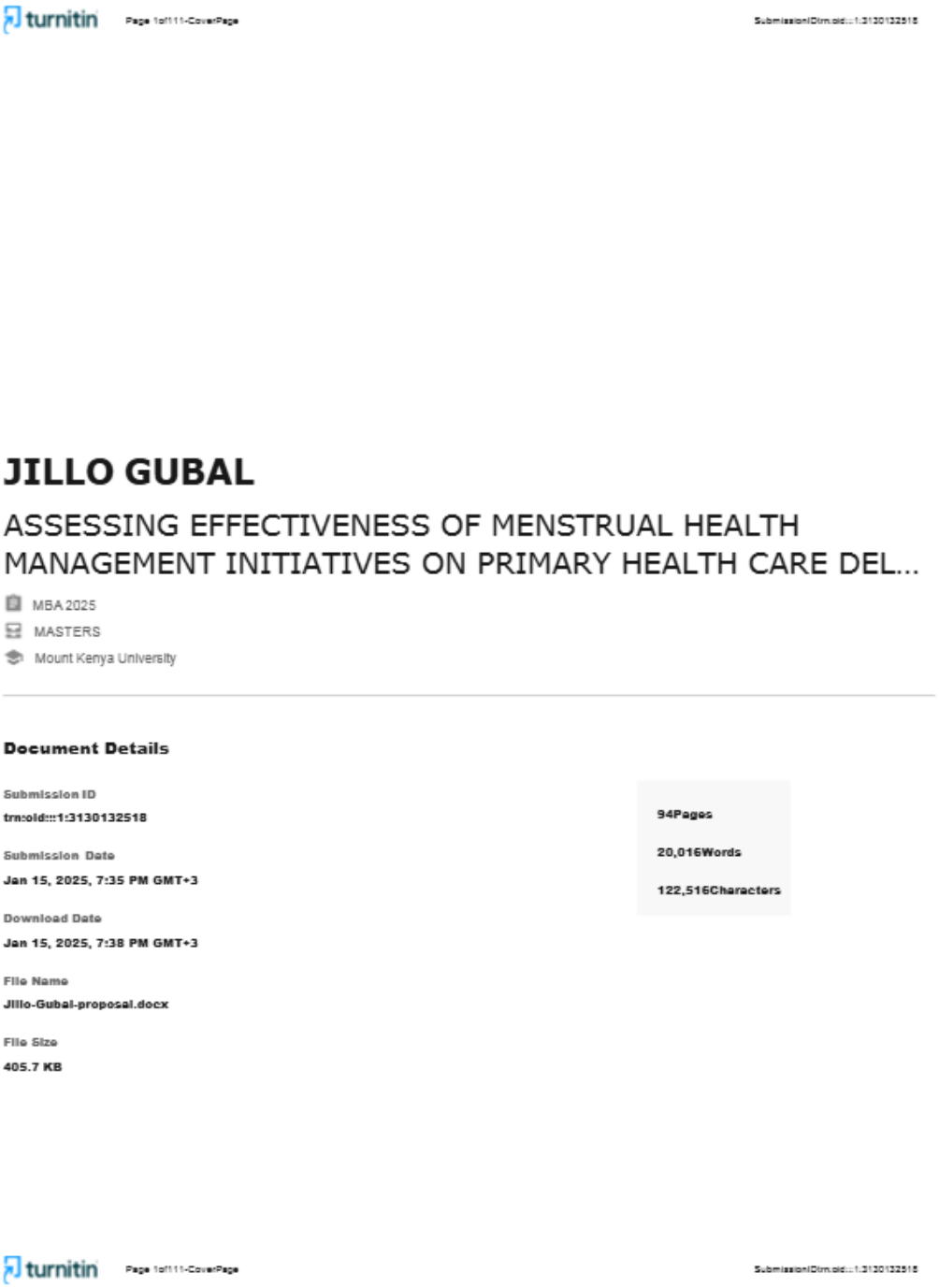
Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: +254 20 287 8000, Cell: +254 709 153 000

Appendix VI: Plagiarism Report



19% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Exclusions

1 Excluded Source

Match Groups

276 Not Cited or Quoted 16%
Matches with neither in-text citation nor quotation marks

43 Missing Quotations 2%
Matches that are still very similar to source material

13 Missing Citation 1%
Matches that have quotation marks, but no in-text citation

4 Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

16% Internet sources
10% Publications
8% Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Appendix VII: Research Site Map