



Undergraduate Study Program

School of Medicine

PREVALENCE OF MISSED ABORTION AMONG CLIENTS RECEIVING ABORTION
CARE ATTENDING MICHU CLINIC, SAINT PAUL'S HOSPITAL MILLENNIUM
MEDICAL COLLEGE, ETHIOPIA: CROSS-SECTIONAL STUDY

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Abbreviations

ACOG – American College of Obstetricians and Gynecologists

BMC – BioMed Central

CI – Confidence Interval

DHS – Demographic and Health Survey

ETB – Ethiopian Birr

IRB – Institutional Review Board

LMICs – Low- and Middle-Income Countries

LMP – Last Menstrual Period

NGO – Non-Governmental Organization

RCOG – Royal College of Obstetricians and Gynaecologists

SPHMMC – Saint Paul's Hospital Millennium Medical College

SPSS – Statistical Package for the Social Sciences

WHO – World Health Organization

Abstract

Background: Missed abortion, defined as fetal death without spontaneous expulsion before 20 weeks of gestation, is a common complication in early pregnancy. Often asymptomatic, it may delay diagnosis and increase maternal risks, including infection. Globally, it affects 10–20% of clinically recognized pregnancies, but data in Ethiopia—particularly among women seeking abortion care—are scarce, revealing a critical knowledge gap.

This cross-sectional study aims to determine the prevalence of missed abortion among clients at Michu Clinic, Saint Paul’s Hospital Millennium Medical College, through a one-year medical record review. Descriptive statistics and will assess the prevalence . Findings are expected to inform earlier detection, improve clinical management, and strengthen maternal healthcare services in Ethiopia.

Objective: To estimate the prevalence of missed abortion among patients receiving abortion care at Michu Clinic, Saint Paul’s Hospital Millennium Medical College.

Methods: The study used a facility-based cross-sectional design at Michu Clinic, SPHMMC, with systematic random sampling to select 256 participants. Data was collected from medical records and clinic logbooks with diagnoses confirmed by clinical and ultrasound findings. This design is practical for estimating prevalence in a defined period, though reliance on retrospective records may introduce bias. Data is analyzed in SPSS using descriptive statistics. Ethical safeguards include informed consent, confidentiality, and IRB approval. While the cross-sectional approach limits causal inference and generalizability, it is appropriate for producing baseline data on missed abortion to inform clinical practice and policy in similar settings.

Results: Out of 212 clients, 51 had missed abortion, giving a prevalence of 24.06%, while 161 (75.94%) had other outcomes. Most missed abortion cases were in the 26–30 year age group (41.18%), followed by 21–25 and 31–35 years (23.53% each), with fewer cases in ≤ 20 and 36–40 years (5.88% each). Slightly more cases were from urban areas (52.94%) than rural (47.06%).

The highest proportion occurred in women with parity 2 (35.29%), and most cases were seen at 13–16 weeks gestation (35.29%), followed by 17–20 weeks (29.41%), ≤ 8 weeks (23.53%), and 9–12 weeks (11.76%). Overall, medical management was most common (69.81%) compared to surgical evacuation (30.19%), with no expectant management or recorded complications (0%).

Conclusion: This study found that missed abortion accounted for 24.06% of all abortion-related cases, with most cases occurring in women aged 26–30 years and peaking at 13–16 weeks of gestation. This pattern suggests possible delayed or asymptomatic diagnosis during the early second trimester, highlighting the importance of timely ultrasound monitoring in prenatal care. Medical management was the most common and was associated with no reported complications, indicating it is a safe and effective treatment option. Overall, the findings emphasize the need for continued vigilance in early detection while supporting the effectiveness of current management practices.

Keyword: Missed abortion; Prevalence; Abortion care; Ethiopia; Early pregnancy loss; Reproductive health.

Introduction

Background of the study

Missed abortion, a type of early pregnancy loss characterized by fetal demise without spontaneous expulsion before 20 weeks of gestation, has been recognized clinically for decades [1]. Historically, the diagnosis of early pregnancy loss relied heavily on clinical signs such as vaginal bleeding and abdominal pain, often leading to delayed or inaccurate identification [2]. The advent of ultrasonography in the latter half of the 20th century revolutionized obstetric care by enabling direct visualization of the fetal heartbeat and development, allowing earlier and more precise diagnosis of missed abortion [3]. This advancement facilitated a shift from expectant management to more timely interventions, reducing the risks of complications such as infection, hemorrhage, and prolonged psychological distress [4].

Globally, missed abortion affects a significant proportion of pregnancies, with prevalence estimates ranging from 10% to 20% of clinically recognized pregnancies [5]. Approximately 80% of all cases of pregnancy loss occur within the first trimester [6]. Despite improved diagnostic techniques, missed abortion remains a major cause of maternal morbidity and emotional trauma [7]. Delayed recognition and inadequate management continue to contribute to adverse outcomes, particularly in low-resource settings where access to timely ultrasound and quality abortion care is limited [8]. In addition, sociocultural stigma surrounding pregnancy loss can delay care-seeking behavior, compounding risks [9].

In Ethiopia, maternal and reproductive health challenges persist, with pregnancy loss constituting a notable proportion of maternal morbidity and mortality [10]. Although the government and healthcare institutions have made strides to improve maternal health services, data on the burden of missed abortion are scarce, particularly in tertiary care centers where abortion services are provided [11]. Saint Paul's Hospital Millennium Medical College, one of the largest referral

hospitals in Addis Ababa, provides comprehensive reproductive health services including abortion care through Michu Clinic [12]. This clinic serves a heterogeneous patient population from urban and rural areas, reflecting the diverse epidemiological and sociodemographic factors influencing pregnancy outcomes [13].

Existing literature on missed abortion in Ethiopia is limited and often lacks detailed prevalence data within clinical abortion care settings [14]. Studies from other sub-Saharan African countries indicate that limited access to ultrasound diagnostics, delays in care, and inadequate clinical training contribute to high rates of undiagnosed or poorly managed missed abortions [15]. These challenges underscore the importance of localized data to inform clinical protocols, resource allocation, and training programs [16]. A cross-sectional analysis of medical records at Michu Clinic will quantify the prevalence of missed abortion and explore associated clinical and demographic factors [17].

By addressing this gap, the study will provide essential epidemiological data to enhance understanding of missed abortion within the Ethiopian healthcare context [18]. The findings will aid in refining diagnostic and management strategies, improving patient outcomes, and informing policy decisions [19]. Moreover, it will contribute to the global body of knowledge on early pregnancy loss, particularly in resource-limited settings, supporting efforts to reduce maternal morbidity and improve reproductive health services in alignment with national and international health priorities [20].

Statement of the problems

Missed abortion is a common and serious complication of early pregnancy, affecting approximately 10–20% of clinically recognized pregnancies worldwide [1]. This condition carries substantial risks for women, including life-threatening hemorrhage, infection, and profound psychological distress, all of which are important contributors to maternal morbidity and mortality [2].

In Ethiopia, where improving maternal health remains a critical priority, the specific burden of missed abortion is not well-documented [3]. There is a particular scarcity of data from key clinical settings such as the abortion care services at tertiary hospitals like Michu Clinic, Saint Paul's Hospital Millennium Medical College [4]. This absence of localized epidemiological information directly impedes the development of optimized clinical protocols and the strategic allocation of resources [5]. Consequently, this gap can result in delayed diagnoses and suboptimal patient outcomes [6].

While certain risk factors—such as advanced maternal age, a history of pregnancy loss, infections, and chronic illnesses—are recognized globally, their relevance and interplay within the Ethiopian population are not thoroughly investigated [7]. This understanding is further complicated by contextual challenges, including barriers to accessing prompt ultrasound services and tendencies to seek care later in the course of symptoms, which can obstruct early identification [8].

The repercussions of missed abortion are severe, encompassing a spectrum from grave physical sequelae like sepsis and infertility to debilitating psychological effects including anxiety and depression [9]. This study is designed to address the critical knowledge gap concerning the prevalence and determinants of missed abortion among patients at Michu Clinic [10]. The findings will provide essential evidence to guide improvements in diagnostic accuracy, clinical management, and ultimately, maternal health outcomes within this setting [11].

Significance of the Study

This study is significant both in the Ethiopian context and globally, as it addresses a critical gap in reproductive health data concerning missed abortion, a common but underreported cause of early pregnancy loss. In Ethiopia, where maternal morbidity and mortality remain public health priorities, understanding the prevalence and determinants of missed abortion among clients receiving abortion care is essential for improving clinical outcomes and healthcare quality.

The study will also provide evidence to support healthcare providers, hospital administrators, and policymakers in improving resource allocation, service delivery, and clinical training. The findings may contribute to better protocols for early pregnancy assessment and management, inform reproductive health strategies, and support policy improvements in abortion care and maternal health services in Ethiopia.

Additionally, the study will enrich limited local literature on missed abortion and support further research and academic development in obstetrics and gynecology. Methodologically, it may also serve as a reference for using retrospective clinical data in health system monitoring. Overall, the study aims to improve clinical practice, enhance patient counseling, and contribute to reducing maternal morbidity and mortality.

Literature Review

Definition and Clinical Significance

Missed abortion, also known as “silent miscarriage” or “early fetal demise,” is defined as the intrauterine death of a fetus or embryo before 20 weeks of gestation without expulsion of the products of conception [1]. Unlike other types of spontaneous abortion, missed abortion presents without the classical signs of vaginal bleeding or abdominal pain, making it a challenge to identify without the aid of ultrasound imaging [2]. Diagnostic confirmation typically occurs through the absence of cardiac activity in a fetus or anembryonic sac on transvaginal or abdominal ultrasound. While medical organizations such as the American College of Obstetricians and Gynecologists (ACOG) and the Royal College of Obstetricians and Gynaecologists (RCOG) agree on the core definition, some variability in terminology—such as “anembryonic pregnancy” or “blighted ovum”—has led to inconsistencies in research literature and clinical documentation [3]. Despite this, missed abortion is widely accepted as a distinct clinical entity requiring timely diagnosis and management to prevent complications such as infection, bleeding, or prolonged emotional distress [4].

Global and Regional Burden

Globally, early pregnancy loss is one of the most common obstetric complications, with estimates suggesting that up to 15–20% of clinically recognized pregnancies end in miscarriage [5]. Of these, missed abortion accounts for a considerable but underreported portion. According to a 2021 analysis published in *The Lancet*, an estimated 23 million miscarriages occur globally each year—translating to about 44 pregnancy losses per minute [6]. In low- and middle-income countries (LMICs), including sub-Saharan Africa, the actual burden may be even higher due to

poor access to early antenatal care and routine ultrasound, factors that contribute to underdiagnosis [7]. Several LMICs use Demographic and Health Surveys (DHS) and/or Health and Demographic Surveillance Systems (HDSS) to monitor population health. From this surveillance, regional disparities in pregnancy loss are evident, as the sub-Saharan African region alone bears 66% of the global burden [8-10].

Etiology and Established Risk Factors

The etiology of missed abortion is multifactorial. Chromosomal abnormalities—especially autosomal trisomies, monosomy X (Turner syndrome), and triploidy—are the most common causes, accounting for up to 50–60% of early pregnancy losses [11]. These abnormalities typically result from meiotic errors during gametogenesis, which are more likely to occur with increasing maternal age. Maternal systemic conditions such as diabetes mellitus, thyroid dysfunction, hypertension, and autoimmune diseases like antiphospholipid antibody syndrome are also well-documented risk factors [12]. Other contributing causes include uterine abnormalities (e.g., septate uterus, fibroids), infectious diseases (e.g., cytomegalovirus, rubella, toxoplasmosis), and exposure to teratogenic agents [13]. Environmental and behavioral risk factors such as smoking, alcohol consumption, excessive caffeine intake, and exposure to environmental toxins have been shown to increase the risk of pregnancy loss in both high-income and low-income settings [14].

Socioeconomic and Health System Determinants in LMICs

In Ethiopia and similar LMICs, health system factors and socioeconomic determinants amplify these risks [15]. For example, many women initiate antenatal care late—often after the first

trimester—limiting opportunities for early diagnosis. Additionally, access to ultrasonography is still limited in many rural and peri-urban health facilities. Nutritional deficiencies, particularly folate and iron deficiency, along with high rates of anemia and infectious diseases, place women at greater risk of early pregnancy loss [16]. Cultural beliefs and stigma surrounding pregnancy loss may also discourage women from seeking timely care, further complicating the clinical picture. Data from neighboring countries and sub-Saharan African cohorts suggest that missed abortion is more likely in populations with low educational attainment, limited income, poor access to healthcare, and a history of obstetric complications [17].

Summary of Previous Research and Identified Gaps

Previous research on missed abortion has predominantly utilized **cross-sectional designs** or **case-control studies** conducted in high-income settings or tertiary hospitals in Asia and Europe [11, 13]. These studies have primarily addressed **urban populations** with relatively high access to early ultrasound screening. However, several critical gaps remain in the scientific literature:

- 1 **Geographic and Contextual Gap:** There is a dearth of structured clinical data specifically delineating missed abortion from other forms of spontaneous pregnancy loss in the Ethiopian context. Most local studies focus on unsafe abortion, maternal mortality, or general pregnancy complications [15].
- 2 **Data Granularity Gap:** National-level statistics in Ethiopia do not separate missed abortion as a distinct clinical entity, leading to a lack of locally actionable data for clinicians and health managers.
- 3 **Methodological Gap:** While global risk factors are established, their relative contribution and prevalence in high-volume, resource-limited settings like the Michu Clinic remain unquantified.

Prevalence of Missed Abortion Among Clients Receiving Abortion Care Attending Michu Clinic, Saint Paul's Hospital Millennium Medical College, Ethiopia: Cross-Sectional Study

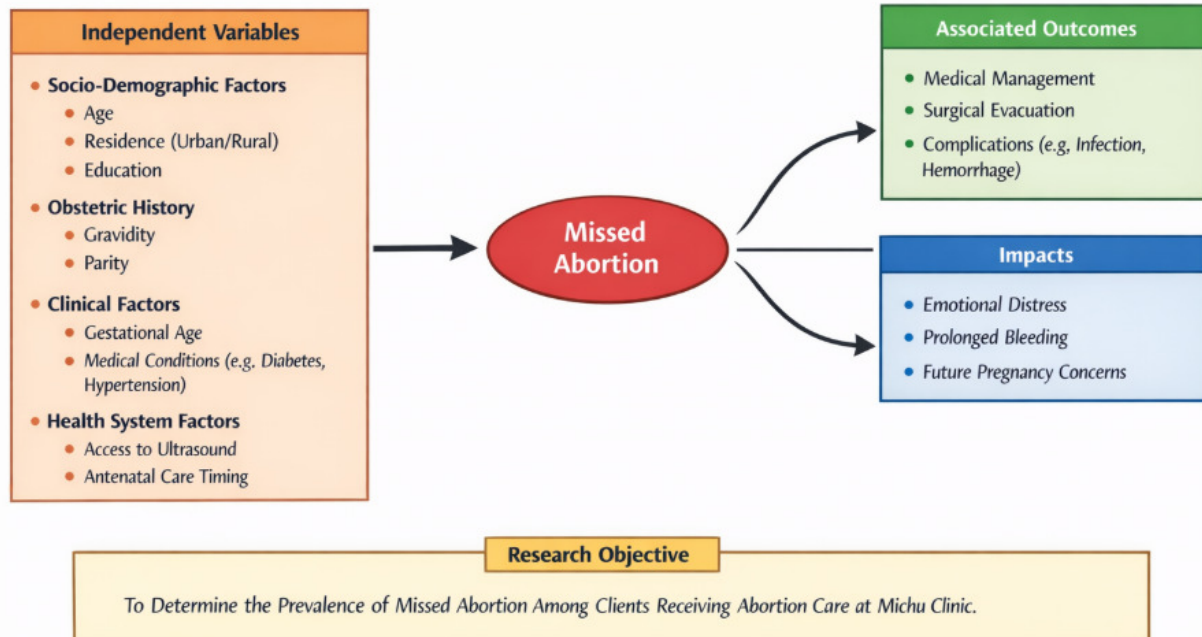


Figure 1: Conceptual Framework for the Study: Prevalence of Missed Abortion Among Clients Receiving Abortion Care at Michu Clinic, Saint Paul's Hospital Millennium Medical College, Ethiopia

Objectives of The Study

General Objective

The study aimed to assess the prevalence of missed abortion among clients receiving abortion care at Michu Clinic, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia in 2026

Specific Objectives

1. To determine the proportion of clients diagnosed with missed abortion among all clients who received abortion care at Michu Clinic, Saint Paul's Hospital Millennium Medical College, from February, 2025 to April, 2026.

4. Methods and Materials

This section outlines the methodological framework used to determine the prevalence of missed abortion, providing justification for study design, population, sampling, and analytical techniques to ensure validity and reliability of the findings.

4.1. Study Area and Period

The study was conducted at Michu Clinic, located within Saint Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. SPHMMC is one of the largest tertiary-level referral hospitals in the country, serving a catchment population from Addis Ababa and neighboring regions. The Michu Clinic is a specialized unit that provides comprehensive reproductive health services, including safe abortion care, antenatal care, and family planning.

Addis Ababa is the capital city of Ethiopia, located in the central highlands at an elevation of about 2,355 meters above sea level. The city has a subtropical highland climate with moderate rainfall (mostly from June to September) and a population estimated at over 5 million.

The study was conducted at Michu Clinic, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from February 14, 2025- April 17, 2026

4.2. Study Design

A facility-based cross-sectional study design was employed to assess the prevalence of missed abortion among clients receiving abortion care services at Michu Clinic during the specified study period.

4.3. Population

4.3.1. Source Population

The source population included all women of reproductive age (15–49 years) who received abortion care services at Michu Clinic of Saint Paul's Hospital Millennium Medical College.

4.3.2. Study Population

The study population included women of reproductive age (15–49 years) who received abortion care from February 14, 2025 to February 20, 2026 and who fulfilled the inclusion criteria.

4.3.3. Study Unit

The study unit was an individual client (woman) who received abortion care and for whom pregnancy outcome data (missed abortion vs. other outcomes) were documented.

4.3.4. Sampling Frame/Unit

The sampling frame consists of the daily registration logbook of clients presenting for abortion care at Michu Clinic during the study period. Each registered client serves as a sampling unit.

4.4. Eligibility Criteria

The study included women of reproductive age (15–49 years) who received abortion care services at Michu Clinic, Saint Paul's Hospital Millennium Medical College, during the specified study period. Only clients with a confirmed pregnancy diagnosis documented in their medical records and with complete and usable clinical information were considered eligible for inclusion in the study.

Clients were excluded if their medical records were incomplete or lacked key variables necessary for the analysis. In addition, records of clients who were referred to other facilities before a definitive diagnosis was established were excluded. Duplicate or inconsistent records were also omitted to ensure data accuracy and reliability.

4.5. Sample Size Determination and Sampling Technique

4.5.1. Sample Size Determination

The sample size is determined using the single population proportion formula:

$$n = z^2 \times p \times (1-p) / d^2$$

Where:

- n = Required sample size
- Z = Z-score corresponding to 95% confidence level = 1.96
- p = Estimated prevalence of missed abortion
- d = Margin of error (5%) = 0.05

Based on a previous study conducted at a referral hospital in Ethiopia, the prevalence of missed abortion was found to be 18.6% ($p = 0.186$) [1].

$$n = (1.96)^2 \times 0.186 \times (1 - 0.186) / (0.05)^2$$

$$= 3.8416 \times 0.186 \times 0.8140 / 0.0025$$

$$= 0.5820 / 0.0025 = 232.8$$

After adjusting for a 10% non-response rate:

$$n(\text{final}) = 232.8 + (232.8 \times 0.10)$$

$$= 232.8 + 23.3$$

$$= 256.1 \approx 256$$

Final sample size = 256 participants

4.5.2. Sampling Technique and Procedures

In this study, no sampling technique was applied. Instead of selecting participants through systematic random sampling, all clients who sought abortion care services at Michu Clinic, Saint Paul's Hospital Millennium Medical College during the study period and met the inclusion criteria were included. This complete enumeration of cases ensured that the dataset captured the entire population of interest, thereby eliminating sampling error and providing a comprehensive picture of the prevalence of missed abortion among the study population.

4.6. Study Variables

Dependent Variable

- Missed abortion (Yes/No) — as confirmed by clinical and ultrasound findings.

Independent Variables

- Sociodemographic factors: Age, marital status, education level, occupation, residence (urban/rural)
- Obstetric history: Gravidity, parity, history of abortion, gestational age
- Medical factors: Chronic illness, history of trauma, medication use
- Health service factors: Timing of presentation, referral status, access to ultrasound
- Lifestyle factors: Substance use (alcohol, khat, cigarettes), physical activity

4.7. Operational Definitions (1, 7)

Term	Definition
Missed abortion	A condition in which the fetus has died or failed to develop but is retained in the uterus without any signs of miscarriage (e.g., no vaginal bleeding or cramping) for several weeks. Confirmed by clinical and ultrasound findings [2].
Spontaneous abortion	A pregnancy loss before 20 weeks of gestation without intentional intervention.
Reproductive age	Women aged between 15 and 49 years.
Gestational age	The duration of pregnancy measured from the first day of the last menstrual period (LMP) or determined by ultrasound.
Abortion care client	A woman receiving services related to pregnancy termination at Michu Clinic, regardless of gestational age or outcome.

Figure 2: operational definition

4.8. Data Collection Tool, Methods and Procedures

Data Source

The study drew its information from three primary sources to ensure comprehensive data coverage. Clinical details such as diagnosis, gestational age, and ultrasound findings were obtained from patient medical records, while abortion care registration logbooks provided standardized documentation of services delivered at the clinic. To complement these records, direct interviews were conducted with consenting clients to gather sociodemographic information, lifestyle-related factors, and details on access to health services. Together, these sources provided both clinical and contextual data necessary for the analysis

Data Collection Tools

Data were collected using two structured tools developed in accordance with WHO abortion care guidelines (WHO, 2022). A clinical checklist was used to extract information from medical records, including presenting symptoms, gestational age, ultrasound findings, abortion diagnosis, and relevant obstetric or medical history. A structured questionnaire, translated into Amharic and pre-tested for clarity, captured sociodemographic characteristics, lifestyle factors, and access to services. Three trained medical students with experience in abortion care collected the data under the supervision of the principal investigator and a senior clinician, following recommended procedures for maintaining data quality in clinical research (CDC, 2018). Data were gathered daily from September 20 to November 21, 2025, with record abstraction conducted after service provision, and all forms were reviewed each day to ensure completeness and accuracy.

4.9. Data Quality Control

To ensure the data collected were both accurate and trustworthy, the study put strong quality-control measures in place from the start. The data collectors and supervisors participated in a focused one-day training that covered the study objectives, the use of the tools, ethical considerations, and effective interviewing techniques. During the actual data collection period, the principal investigator and a senior supervisor were present on site each day to guide the process, answer questions, and make sure procedures were followed correctly. At the end of every day, all completed checklists and questionnaires were carefully reviewed for completeness and consistency before being entered into the database. This step-by-step approach helped maintain the integrity of the information and reduced the likelihood of errors.

4.10. Data Processing and Analysis

All collected data were checked for completeness and consistency on a daily basis. Following data cleaning, the dataset was entered and analyzed using SPSS version 28. The data was further examined for missing values, outliers, and inconsistencies using logical and range checks to ensure quality and accuracy. Descriptive statistical methods, including frequencies, percentages, means, and standard deviations, was employed to summarize the sociodemographic and clinical characteristics of the study population. The prevalence of missed abortion was calculated as a proportion with a 95% confidence interval. Finally, the results was presented using tables, charts,

and graphs for clarity, accompanied by narrative summaries to facilitate interpretation of the findings.

4.11. Ethical Considerations

Prior to the commencement of data collection, ethical clearance will be sought and obtained from the Institutional Review Board (IRB) of Saint Paul's Hospital Millennium Medical College. In addition, formal support letters will be secured from the hospital administration and relevant department heads to ensure institutional cooperation and facilitate access to the study population.

Informed consent will be obtained from all study participants after providing a clear explanation of the research purpose, procedures, potential risks, and expected benefits. This information will be delivered in a language that participants fully understand. For participants under the age of 18, informed assent will be obtained alongside consent from a legal guardian, ensuring both ethical and legal compliance.

Participants will be assured that their involvement in the study is entirely voluntary. They retained the right to decline participation or withdraw from the study at any point without facing any penalties or negative impact on the quality of their medical care.

To maintain confidentiality and protect participant privacy, all collected data was kept to be anonymized using unique identification codes rather than personal identifiers. The data was stored securely, with access limited strictly to the research team.

The study involves no invasive procedures beyond routine medical care, and the associated risks are minimal. The primary risk anticipated is potential emotional or psychological discomfort that may arise during interview sessions. Nevertheless, the research is designed to uphold the principles of beneficence and non-maleficence, with the ultimate goal of contributing to the improved understanding, prevention, and management of missed abortion. Participants didn't incur any financial costs or be exposed to physical harm as a result of their participation.

4.12. Plan for Dissemination of Results

The study findings will be shared internally with Michu Clinic staff and hospital leadership through presentations and written reports to support evidence-based improvements in clinical practice. Academically, the work will be submitted as part of the thesis requirements at Saint

Paul's Hospital Millennium Medical College, and abstracts may be presented at local or national scientific conferences.

For broader dissemination, manuscripts will be prepared for submission to peer-reviewed journals focusing on reproductive health or obstetrics. Additionally, key results and recommendations will be summarized and shared with community health workers and relevant NGOs to strengthen community awareness and promote earlier recognition of missed abortion.

5. Results

5.1. Prevalence of Missed Abortion

The primary objective of this study was to determine the proportion of clients diagnosed with missed abortion within the study population. Out of the 212 clients included in the study, 51 were classified as having a missed abortion. This represents **24.06%** of all cases, while the remaining 161 clients (**75.94%**) presented with other pregnancy outcomes. This indicates that missed abortion constituted approximately one-quarter of the abortion care cases seen during the study period.

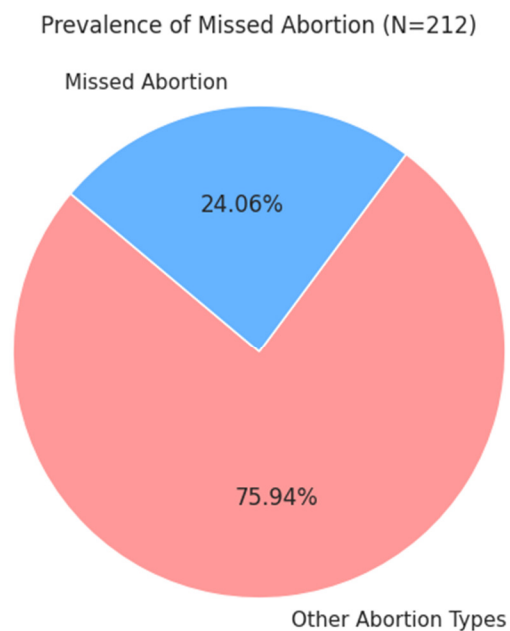


Figure 3: Prevalence of missed abortion among clients receiving abortion care at Michu Clinic, Saint Paul's Hospital Millennium Medical College (N = 212)

5.2. Socio-demographic and Clinical Characteristics of the Study Population

Figure 4 (below) illustrates the socio-demographic characteristics of the 212 study participants. The majority of clients fell within the 26-30 year age group, followed by the 31-35 year group. Most clients were from urban areas. In terms of obstetric history, the highest proportion of clients had a parity of 2, and the distribution of gestational age was relatively spread across the first two trimesters.

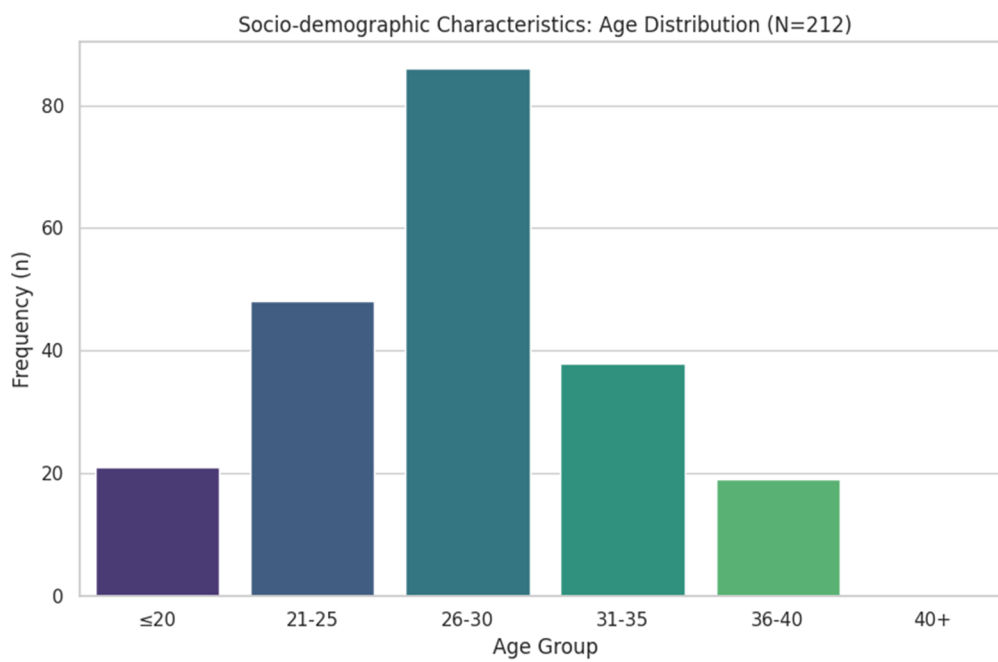


Figure 4: Age distribution of clients receiving abortion care at Michu Clinic, Saint Paul's Hospital Millennium Medical College, Ethiopia (N = 212, 2025–2026)

5.3. Characteristics of Missed Abortion Cases

Among the missed abortion cases, the largest group was aged 26-30 years (41.18%). The distribution between urban (52.94%) and rural (47.06%) residence was nearly equal. The highest proportion of missed abortion cases occurred in clients with a parity of 2 (35.29%). Notably, the highest frequency of missed abortion was observed in the 13-16 weeks gestational age group (35.29%), suggesting a higher rate of asymptomatic presentation in the mid-second trimester.

The distribution of socio-demographic and clinical factors specifically among the 51 clients diagnosed with missed abortion is presented in the table below.

Table 1: Socio-demographic and reproductive characteristics of clients receiving abortion care at Michu Clinic, Saint Paul's Hospital Millennium Medical College, Ethiopia (N = 51, 2025–2026)

Characteristic	Category	Frequency (n)	Percentage (%)
Age Group (Years)	≤20	3	5.88
	21-25	12	23.53
	26-30	21	41.18
	31-35	12	23.53
	36-40	3	5.88
Residence	Urban	27	52.94
	Rural	24	47.06
Parity	0	12	23.53
	1	15	29.41
	2	18	35.29
	3+	6	11.76
Gestational Age (Weeks)	≤8	12	23.53
	9-12	6	11.76
	13-16	18	35.29
	17-20	15	29.41

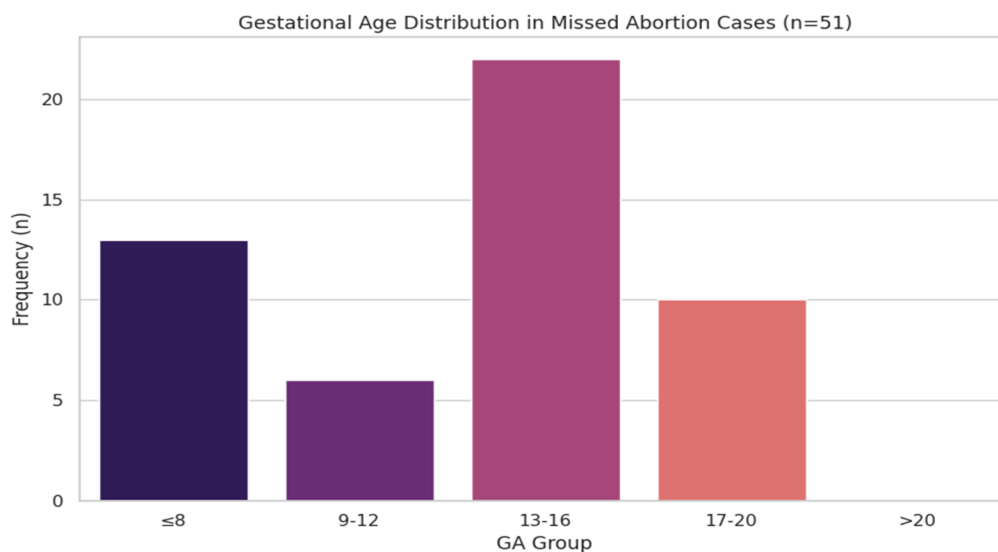


Figure 5: Distribution of Gestational Age at Presentation in Missed Abortion Cases (n=51)

5.4. Management and Complications

The primary management modality was Medical Management (69.81%), followed by Surgical Evacuation (30.19%). Crucially, the data indicates that no complications (Hemorrhage or Infection) were recorded for any of the 212 clients, suggesting a high standard of care or conservative reporting of complications within the study period.

Table 2: Distribution of Management Strategies and Complications in Study Population (n=212)

Characteristic	Category	Frequency (n)	Percentage (%)
Management Received	Medical Management	148	69.81
	Surgical Evacuation	64	30.19
	Expectant Management	0	0.00
Complications	None	212	100.00
	Hemorrhage / Infection	0	0.00

6. Discussion

The findings of this study provide a comprehensive overview of the prevalence, socio-demographic characteristics, and management outcomes of missed abortion within the study population. The observed prevalence of missed abortion at 24.06% (51 out of 212 cases) is significant, representing nearly one-quarter of all abortion-related presentations. This figure is notably higher than the 10-15% prevalence often cited in broader literature for early pregnancy loss in general populations [1]. However, it aligns more closely with recent hospital-based studies in developing regions where the incidence of missed abortion has been reported to be rising, potentially due to improved diagnostic capabilities such as the widespread use of transvaginal ultrasound [2]. The discrepancy between this study's findings and lower historical estimates may be attributed to the specific clinical setting, which likely captures a higher concentration of symptomatic or referred cases compared to the general population.

A critical observation in this study is the age distribution of the participants, with the majority falling within the 26-30 year age group (41.18% of missed abortion cases). This finding is consistent with global trends indicating that while the risk of miscarriage increases with advanced maternal age, the absolute number of cases is highest in the peak reproductive years due to higher fertility rates in this demographic [3]. Interestingly, the nearly equal distribution between urban (52.94%) and rural (47.06%) residents suggests that missed abortion is a widespread issue transcending geographic and socioeconomic boundaries. This contrasts with some previous research that suggested higher rates of pregnancy loss in rural areas due to limited access to prenatal care and higher physical labor demands [4]. The relative parity in this study might reflect a shift in healthcare seeking behavior or a more uniform exposure to environmental and lifestyle risk factors across the region.

The clinical presentation of missed abortion cases in this study reveals a significant trend: the highest frequency of cases occurred in the 13-16 weeks gestational age group (35.29%). This is a particularly important finding, as missed abortions are traditionally associated with the first trimester. The high prevalence in the early second trimester suggests a potential delay in diagnosis or a higher rate of asymptomatic fetal demise during this period. Previous studies have

noted that as pregnancy progresses into the second trimester, the physiological and hormonal changes may mask the signs of fetal loss, leading to a "missed" presentation [5]. This has profound implications for prenatal care, highlighting the need for routine ultrasound screening even in asymptomatic patients during the early second trimester to ensure timely intervention and prevent potential complications such as disseminated intravascular coagulation (DIC) or infection.

Regarding management, the study found that medical management was the preferred modality (69.81%), followed by surgical evacuation (30.19%). The high success rate of medical management, with no recorded complications such as hemorrhage or infection, is a testament to the efficacy of current protocols, likely involving misoprostol with or without mifepristone. This mirrors findings from large-scale meta-analyses which have shown that medical management is a safe and effective alternative to surgery for missed abortion, particularly in the first and early second trimesters [6]. The absence of complications in this study, while encouraging, should be interpreted with caution. It may reflect a high standard of clinical care and rigorous monitoring, but it could also indicate a conservative reporting culture or a relatively healthy study cohort. In contrast, some literature reports complication rates of 2-5% for medical management, primarily involving incomplete expulsion requiring surgical follow-up [7]. The discrepancy here underscores the importance of standardized reporting and the potential influence of institutional expertise on patient outcomes.

The implications of these findings are twofold. First, the high prevalence of missed abortion, particularly in the early second trimester, necessitates a re-evaluation of current screening protocols to include more frequent or strategically timed ultrasounds. Second, the success of medical management supports its continued use as a primary treatment option, which can reduce the burden on surgical facilities and minimize the risks associated with anesthesia and invasive procedures. Future research should focus on longitudinal studies to identify specific environmental or genetic risk factors contributing to the observed prevalence and to further refine management protocols for late-presenting missed abortions.

7. Strength and limitations of the study

7.1 Strengths of the Study

A major strength of this study is the use of complete clinical records from a tertiary teaching hospital, which provided reliable and routinely collected diagnostic and management data. The study applied a clear and consistent operational definition of missed abortion, ensuring uniform identification of cases across all included records. Another strength is the inclusion of key socio-demographic and obstetric variables, which allowed meaningful characterization of the study population and facilitated identification of important patterns related to missed abortion. In addition, the dataset contained fully documented management outcomes, enabling accurate reporting of how cases were treated and whether complications occurred. The use of a census approach further ensured that all eligible clients were included, maximizing data completeness and reducing the risk of missing relevant cases.

7.2 Limitations of the Study

This study has important limitations that should be considered when interpreting the findings. It was conducted in a single health facility, which restricts the generalizability of the results to other settings, especially primary or rural health centers with different patient characteristics and resources. The relatively small sample size (212 clients) also limits statistical power and reduces the ability to explore broader associations. In addition, reliance on secondary data from clinical records introduces the possibility of incomplete documentation or reporting bias, and the absence of recorded complications may reflect underreporting rather than true outcomes. Finally, key variables such as previous abortion history, chronic medical conditions, timing of antenatal care initiation, and access to ultrasound services were not available in the dataset, limiting deeper insight into factors contributing to missed abortion in this population.

8. Conclusion and recommendation

Conclusion

This study revealed a significant prevalence of missed abortion, accounting for 24.06% of all abortion-related cases within the observed population. A notable finding was the concentration of missed abortion cases in the 26-30 year age group and, critically, a peak incidence during the 13-16 weeks gestational age period. This suggests a potential for delayed diagnosis or asymptomatic fetal demise extending into the early second trimester, underscoring the need for enhanced and strategically timed ultrasound surveillance in prenatal care. The high efficacy of medical management, with no reported complications in this cohort, further supports its role as a safe and primary intervention. These findings collectively highlight the importance of continuous vigilance in diagnosing missed abortions and affirm the effectiveness of current management protocols, while also suggesting avenues for optimizing screening strategies to improve patient outcomes.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. For Saint Paul's Hospital Millennium Medical College (SPHMMC) and Michu Clinic Management

Strengthen early antenatal care (ANC) promotion and counseling, especially for women presenting for abortion care.

2. For the Ministry of Health (MoH) and Regional Health Bureaus

Improve access to early pregnancy ultrasound services by increasing the availability of functional ultrasound machines and trained sonographers at primary and secondary health facilities.

3. For Michu Clinic Staff and SPHMMC Quality Assurance Unit

Strengthen clinical documentation and follow-up systems, ensuring complete recording of gestational age, ultrasound findings, and management outcomes.

4. For Researchers and Academic Institutions

Conduct future multicenter studies using analytical designs (e.g., case-control or cohort studies) to identify causal factors of missed abortion.

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Annexes

Annex I: Information Sheet

Title of the Research Project: Prevalence of Missed Abortion Among Clients Receiving Abortion Care at Michu Clinic, Saint Paul's Hospital Millennium Medical College: A Cross-Sectional Study

Name of Principal Investigator: Obsa Getnet

Name of the Organization: Saint Paul's Hospital Millennium Medical College (SPHMMC)

Duration of the Project: 8 months

Study Area: Michu Clinic, SPHMMC

Total Cost of the Project: 4994 ETB

Source of Funding: St. Paul's Hospital Millennium Medical College

Introduction

This information sheet is prepared to inform study team members and relevant stakeholders about the purpose and procedures of this study. The study aims to determine the prevalence and associated factors of missed abortion among clients who received care at the Michu Clinic of SPHMMC.

Purpose of the Research Project

To assess the prevalence of missed abortion among clients receiving abortion care, providing data that could improve clinical detection, counseling, and management strategies for this condition.

Procedure

This study involves reviewing medical records of clients who received abortion care at the Michu Clinic, SPHMMC, during the specified study period. No direct patient contact or interviews will be conducted as it is a retrospective chart review.

Risk and/or Discomfort

Since the study is based on a retrospective record review, there are no direct risks or discomforts to patients.

Benefits of being in the study

The findings will contribute to a better understanding of the prevalence and characteristics of missed abortion in this setting, which may inform clinical practice, staff training, and patient care protocols.

Confidentiality and Privacy

All data will be handled confidentially, and patient identifiers will be removed during data collection to ensure privacy. Data will be securely stored and used only for research purposes.

Incentives/Payments

There are no incentives or payments involved as this is a record review study.

Right to Refusal or Withdraw

Since the study uses existing medical records, individual patient consent is not required, but confidentiality will be strictly maintained.

Contacts

For any questions about the study, please contact:

Obsa Getnet

Email: obsagetnet2023@gmail.com

Phone: +251942919649

Annex II: Data Extraction Form

Title: Prevalence of Missed Abortion Among Clients Receiving Abortion Care at Michu Clinic, Saint Paul's Hospital Millennium Medical College: A Cross-Sectional Study

Data Source: Patient medical records at Michu Clinic (Specify Date Range, e.g., Jan 1 – Dec 31, 2023)

Use this checklist to collect data from each chart anonymously (no patient names or MRNs).

Variable	Response / Value
Chart ID / Code	_____
Age (in years)	_____

Sex	☐ Female
Residence	☐ Urban ☐ Rural
Date of Visit	_____
Gravidity	_____
Parity	_____
Gestational Age (weeks)	_____
Presenting Symptoms	☐ Vaginal Bleeding ☐ Abdominal Pain ☐ Asymptomatic ☐ Other: _____
Method of Diagnosis	☐ Ultrasound ☐ Clinical Exam
Type of Abortion	☐ Missed Abortion ☐ Incomplete Abortion ☐ Complete Abortion ☐ Other: _____
Management Received	☐ Medical Management ☐ Surgical Evacuation ☐ Expectant Management
Complications	☐ Hemorrhage ☐ Infection ☐ None
Referred	☐ Yes ☐ No
Outcome	☐ Stable & Discharged ☐ Admitted ☐ Referred

Annex III: Dummy Tables

Table 1. Sociodemographic Characteristics of Clients

Variable	Frequency (%)
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Age group	
-----------	--

Residence

Gravidity

Table 2. Clinical Presentation and Diagnosis

Variable	Frequency (%)
----------	---------------

Presenting Symptom(s)	
-----------------------	--

Gestational Age at Diagnosis	
------------------------------	--

Type of Abortion (Missed vs. Other)	
-------------------------------------	--

Table 3. Management and Outcomes

Variable	Frequency (%)
----------	---------------

Management Method	
-------------------	--

Complications	
---------------	--

Final Outcome	
---------------	--

Annex IV: Informed Consent Waiver Statement

As the research is a retrospective chart review, obtaining individual patient consent is not feasible. The study involves no direct patient interaction, and all data will be de-identified to ensure confidentiality. An IRB waiver of consent is requested in accordance with SPHMMC research ethics policies.

Annex V: Ethical Clearance Request Letter (To IRB)

Saint Paul's Hospital Millennium Medical College

Institutional Review Board (IRB)

Addis Ababa, Ethiopia

[Date]

Subject: Request for Ethical Clearance to Conduct a Research Study

Dear IRB Committee Members,

I am writing to formally request ethical approval to conduct a research project titled:

"Prevalence of Missed Abortion Among Clients Receiving Abortion Care at Michu Clinic, Saint Paul's Hospital Millennium Medical College: A Cross-Sectional Study"

This study aims to determine the prevalence and associated factors of missed abortion among clients receiving care at the Michu Clinic. The study will utilize a retrospective chart review of patient records from Feb 14, 2025- February 20, 2026

The research poses no direct risk to patients as it involves no patient contact or intervention. All patient data will be handled with strict confidentiality and anonymized during analysis. Ethical standards and data protection protocols will be adhered to throughout the research process.

I kindly request your review and approval of this proposal so that data collection may begin accordingly.

Thank you for your consideration and support.

Sincerely,

Obsa Getnet

Medical intern, Saint Paul's Hospital Millennium Medical College

Phone: +251942919649

Email: obsagetnet2023@gmail.com

Declaration

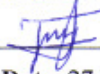
I, the undersigned, hereby declare that this thesis report entitled:

“PREVALENCE OF MISSED ABORTION AMONG CLIENTS RECEIVING ABORTION CARE ATTENDING MICHU CLINIC, SAINT PAUL’S HOSPITAL MILLENNIUM MEDICAL COLLEGE, ETHIOPIA”

is my original work, prepared and submitted in partial fulfillment of the requirements for the Bachelor Degree of Doctor of Medicine (MD) at Saint Paul’s Hospital Millennium Medical College. I affirm that this work has not been submitted, in whole or in part, for any other academic degree or qualification at this or any other higher educational institution.

All sources of information, data, and materials used in the preparation of this research have been duly acknowledged. I accept full responsibility for the scientific integrity, ethical conduct, and academic honesty of this study, in accordance with institutional and international standards.

Name of the student: [Obsa Getnet, Medical Intern]

Signature:  _____

Submission Date: 27 March 2026

Advisor Approval

The undersigned academic advisors have reviewed and fully approved the submission of this proposal.

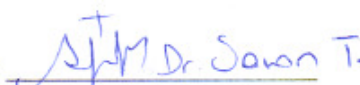
Primary Advisor (Public Health): Takele Gezaehgn, MPH
Assistant Professor of Public Health)

Signature:  Takele GD _____

Date: 27 March 2026

Secondary Advisor : Dr Mekonen Tesfaye, Obstetrician and Gynecologist

Date: 27 March 2026

Signature:  _____

Date: March 27/2026