ARSI UNIVERSITY, COLLEGE OF HEALTH SCIENCES,
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

MATERNAL SATISFACTION WITH CESAREAN SECTION PAIN MANAGEMENT AND ITS ASSOCIATED FACTORS AT ASELLA REFERRAL AND TEACHING HOSPITAL, ETHIOPIA, 2026.

BY: DR. WORKENAH KASSAYE (MD)

A THESIS TO BE SUBMITTED TO ARSI UNIVERSITY, COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE SPECIALTY CERTIFICATE IN OBSTETRICS AND GYNECOLOGY

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ABSTRACT

Background: Cesarean section is a common obstetric procedure that reduces maternal and neonatal morbidity and mortality when indicated. However, postoperative pain remains a major challenge, particularly in low and middle-income countries, and may negatively affect recovery and maternal satisfaction. Maternal satisfaction with postoperative pain management is an important indicator of obstetric care quality, yet evidence on its determinants is limited in Ethiopia.

Objective; This study aimed at assessing maternal satisfaction with postoperative pain management following cesarean section and factor associated with it.

Methods: Facility based cross-sectional study was conducted from July1,2025 to November 30,2025 among women who underwent cesarean section at Asella referral and teaching hospital in Ethiopia. A total of 309 participants were selected using systematic random sampling. Data were collected using a structured, pretested, interviewer-administered questionnaire. Postoperative pain was assessed using a standardized pain scale, and maternal satisfaction was measured using validated tools. Data were analyzed using descriptive statistics and multivariable logistic regression, with statistical significance set at $p < 0.05$.

Results: A total of 309 participants were enrolled in the study. Overall, 54.5% of women reported being satisfied with postoperative pain management. Factors independently associated with satisfaction included prior surgical experience (AOR = 2.33; 95% CI: 1.27–4.26; p = 0.006), receipt of adequate preoperative information (AOR = 2.48; 95% CI: 1.35–4.56; p = 0.004), alleviation of preoperative anxiety (AOR = 2.60; 95% CI: 1.49–4.53; p = 0.001), use of a nerve block (AOR = 12.20; 95% CI: 2.52–59.09; p = 0.002), midline incision (AOR = 3.36; 95% CI: 1.37–8.20; p = 0.008), regular healthcare worker visits (AOR = 2.49; 95% CI: 1.10–5.65; p = 0.028), and provision of information about pain relief options (AOR = 1.91; 95% CI: 1.11–3.29; p = 0.020).

Conclusion and Recommendations: Improving satisfaction requires a patient-centered, multidimensional approach beyond pain reduction alone. Strengthening preoperative counseling, optimizing multimodal analgesia, enhancing provider–patient communication, and standardizing pain management protocols are essential to improving maternal experience and quality of obstetric care. Hospitals should institutionalize structured postoperative visits and prioritize patient centered care.

Keywords: Cesarean section; Postoperative pain; maternal satisfaction; Pain management; Ethiopia.

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LIST OF ABBREVATION/ACRONYM

C/S -cesarean section

G.C- Gregorian calendar

GP-General practitioner

Dr-doctor

ICU- intensive care unit

ARTH- Asella referral and teaching hospital

ASA- American society of Anesthesia

WHO- world health organization

NPS- Numeric pain score

SPSS-statistical package for the social science software

1. INTRODUCTION

1.1 Background

Cesarean section (CS) is one of the most frequently performed surgical procedures globally and represents a critical intervention for preventing maternal and neonatal morbidity and mortality when vaginal delivery poses a risk to the mother or fetus. Over the past two decades, the global rate of cesarean delivery has increased markedly, rising from approximately 12% in 2000 to more than 21% of all births worldwide in recent years1(1). This increase has been observed across both high-income countries and low- and middle-income countries (LMICs), driven by improved access to surgical services, changing obstetric practices, and increased referrals to higher-level facilities (1).

Although cesarean section is a life-saving procedure, it is a major abdominal surgery and is invariably associated with postoperative pain. Pain following cesarean delivery is often moderate to severe in intensity, particularly during the first 24 to 48 hours after surgery, and may persist beyond hospital discharge if not adequately managed ((2,3). Inadequate postoperative pain control can negatively affect early ambulation, delay recovery, prolong hospital stay, and increase the risk of postoperative complications such as thromboembolism and pulmonary morbidity (4,5).

Effective postoperative pain management is especially important in the obstetric population, as women are expected to care for and bond with their newborns immediately after delivery. Poorly controlled pain can interfere with breastfeeding initiation, maternal infant attachment, and maternal psychological well-being, thereby affecting both short- and long-term outcomes for the mother and child(6,7). Furthermore, untreated or inadequately treated postoperative pain has been shown to increase the risk of chronic pain syndromes and postpartum depression(4).

Maternal satisfaction has emerged as a key indicator of healthcare quality and is increasingly recognized as an essential outcome of obstetric care. According to Donabedian's quality-of-care framework, patient satisfaction reflects not only technical competence but also the interpersonal process of care, including communication, responsiveness, and emotional support(8). In the context of cesarean delivery, maternal satisfaction with postoperative pain management is

influenced by pain relief effectiveness, availability of analgesic options, provider attentiveness, and the degree to which women feel informed and respected during care(9–11).

The World Health Organization emphasizes that respectful, person-centered maternity care is fundamental to improving maternal health outcomes and healthcare utilization (12).Effective pain management is a core component of this framework, as women who perceive their pain as ignored or inadequately treated may develop negative attitudes toward healthcare facilities and may be less likely to seek facility-based delivery services in the future(6,7).

1.2 Statement of the problem

Postoperative pain after cesarean section remains a significant clinical challenge worldwide, particularly in low- and middle-income countries (LMICs). Although cesarean delivery is a life-saving obstetric intervention, postoperative pain management is often inadequate. Evidence indicates that more than 70% of women experience moderate to severe pain in the immediate postoperative period in several countries, including Ethiopia, Brazil, and Indonesia(13–15). In many LMICs, pain assessment is inconsistently performed, analgesia is underutilized, and regional anesthesia techniques such as nerve blocks are routinely employed as part of standard post- operative care(3,16–19). This high burden of pain reflects important gaps in the quality of postoperative and perioperative care.

In Ethiopia, cesarean section rates have increased, particularly in referral and teaching hospitals managing high-risk pregnancies. However, postoperative pain management remains inconsistent due to limited resources, high patient load, and variable implementation of evidence-based guidelines. Reports of high postoperative pain and mixed maternal satisfaction highlight gaps in both clinical care and patient-centered practices (13,20,21).

Inadequately controlled postoperative pain has far-reaching consequences that extend well beyond physical discomfort. Severe postoperative pain can delay early ambulation, increase the risk of postoperative complications such as thromboembolic events, prolong hospital stay, and result in increased healthcare costs(4,5). Within the obstetric context, unmanaged post-operative pain has additional implications, as it may interfere with early breastfeeding initiation, disrupt maternal–infant bonding, and limit a mother's ability to care for her newborn during the critical early postpartum period. Moreover, persistent and poorly managed pain has been associated with

adverse psychological outcomes, including heightened anxiety emotional distress, and an increased risk of postpartum depression(13,22).

Maternal satisfaction has increasingly been recognized as a critical indicator of healthcare quality and is now widely used to evaluate the effectiveness of obstetric services. According to Donabedian's quality-of-care framework, patient satisfaction reflects not only clinical outcomes but also the interpersonal dimensions of care, including communication, responsiveness, and emotional support (8). In the setting of cesarean section, maternal satisfaction with postoperative pain management is influenced by a range of interrelated factors, including the effectiveness of pain relief, the adequacy of preoperative information, psychological preparedness, and the level of engagement and attentiveness demonstrated by healthcare providers(9,21,23).

Furthermore, maternal satisfaction is shaped not only by the intensity of pain but also by psycho- logical and contextual factors such as fear, anxiety, previous surgical experience, and the quality of information provided before surgery(24,25). Studies conducted in several African countries have shown that women may report high levels of satisfaction despite experiencing significant postoperative pain, particularly when care is perceived as respectful and healthcare providers are responsive to their concerns and needs(6,7). These findings emphasize the importance of conceptualizing maternal satisfaction as a complex and multidimensional construct rather than viewing it solely as a direct reflection of pain severity.

In resource-limited settings, high reported satisfaction despite significant pain has been attributed to low baseline expectations, normalization of pain, and gratitude for life-saving surgical care, necessitating cautious interpretation of satisfaction findings(6,26). To address these challenges, various interventions have been implemented, including the adoption of standardized pain management protocols, use of multimodal analgesia, incorporation of regional anesthesia techniques, routine pain assessment, and promotion of person-centered maternity care, all of which have been shown to improve postoperative pain control and maternal satisfaction following cesarean section(4,19,27–29). Without a clear understanding of the determinants of maternal satisfaction, initiatives to improve postoperative pain management may fail to address the aspects of care that are most meaningful to women. Most available studies have concentrated primarily on the prevalence and severity of postoperative pain, with relatively little emphasis

placed on women's perceptions, experiences, and satisfaction with pain management practices(13,20,21). Therefore, there is a critical need to assess maternal satisfaction with postoperative pain management following cesarean section and to identify factors associated with satisfaction within the Ethiopian context. Generating such evidence is essential for informing evidence-based clinical practice, strengthening patient-centered care approaches, and ultimately enhancing maternal experience and outcomes in referral and teaching hospitals.

1.3 Significance of the study

The purpose of this research was to determine the impact of insufficient pain treatment as well as other potential related variables among parturients delivered by cesarean section at ARTH facilities in the North West Arsi Zone of Oromia, Ethiopia. As a result, the findings of this study will contribute to the knowledge gap on the impact of insufficient pain management and related factors, perhaps aiding decision making and intervention planning. The findings of this study will give appropriate feedback to health care professionals and other stakeholders. As a result, this research may be useful for health-care practitioners in identifying and correcting modifiable variables during routine treatment, counseling, and screening to improve patient survival. They may utilize the findings of this study as a baseline in their health education, policymaking, and other activities to adopt suitable interventions aimed at lowering mortality and morbidity among women who deliver via cesarean section. Researchers and academic institutions may use the findings of this study as a baseline or reference for future studies or meta-analyses, and students can use the results of this research paper as a reference or guide while writing their essay/paper

2. LITERATURE REVIEW

2.1 Overview of Postoperative Pain

Pain is defined by the International Association for the Study of Pain (IASP) as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage”(30). This definition underscores that pain is not merely a physical sensation but also an emotional experience, highlighting its subjective and multifaceted nature. In the postoperative setting, pain represents a complex physiological and psychological response to surgical trauma, tissue injury, and inflammatory processes. When inadequately managed, postoperative pain may trigger systemic stress responses that negatively affect multiple organ systems, delay recovery, and impair functional outcomes (4).

Post-cesarean pain is particularly complex because it consists of both visceral and somatic components. Visceral pain primarily arises from uterine contraction, stretching, and manipulation during surgery and is transmitted through afferent nerve fibers entering the spinal cord at the T10–L1 levels. Somatic pain originates from the surgical incision and trauma to the abdominal wall and is transmitted through anterior divisions of spinal nerves(31,32). The coexistence of these pain pathways explains why post-cesarean pain is often intense and difficult to control using a single analgesic modality. Consequently, effective pain management following cesarean section requires multimodal approaches that address both visceral and somatic pain to improve maternal comfort, facilitate early ambulation, promote recovery, and enhance postoperative outcomes(16,33).

2.2 Incidence of Postoperative Pain following cesarean section

A cross-sectional analytical study conducted in Brazil in 2023 among 321 women who underwent cesarean section reported an incidence of acute post-cesarean pain of 72.3%. Among women that experienced postoperative pain, 47.4% reported mild pain, 32.3% experienced moderate pain, and 20.3% suffered from severe pain. These findings indicate that although mild pain was most common, a substantial proportion of women experienced clinically significant moderate to severe pain that could interfere with recovery and daily functioning(14).

Similarly, a study carried out in northern Mexico in 2021 involving 259 participants found that 61.4% of women reported experiencing severe pain within the first 24 hours following cesarean section. Importantly, 69.5% of respondents indicated that pain management was initiated within 10 minutes of reporting discomfort, suggesting that prompt clinical intervention alone may not always be sufficient to prevent severe postoperative pain(23). In Indonesia, a cross-sectional study conducted at RSUD Dr. Soehadi Prijonegoro Hospital in Sragen between October and December 2022 revealed that 12 hours after cesarean surgery, 60% of patients experienced moderate pain, while 30% reported severe pain. These findings under- score the persistence of significant pain during the early postoperative period despite ongoing hospital care(15).

In Zambia, a cross-sectional study conducted in 2019 involving 246 participants reported that 34.1% of women experienced no pain following cesarean section. However, 28.9% had mild pain, 25.6% reported moderate pain, and 11.3% suffered from severe pain. These findings indicate that while a considerable proportion experienced minimal pain, a notable number of women continued to experience moderate to severe postoperative pain(34). A study conducted in 2020 at a referral hospital in Kigali, Rwanda, involving 385 participants, found that 90.1% of women experienced effective pain control with low pain scores throughout the first 24 hours following cesarean section. However, during the immediate recovery period, 46.8% reported higher pain levels. Overall, 76.1% of participants expressed satisfaction with their postoperative pain management, suggesting that effective pain control may vary across different postoperative phases(10). Additionally, a cross-sectional study conducted in Kenya in 2019 among 246 participants revealed that 95.9% of women experienced pain following cesarean section(6).

In Ethiopia, studies consistently demonstrate a high burden of post-cesarean pain. Research conducted in Northwest Ethiopia reported that 85.5% of women experienced postoperative pain(21), while a study in Addis Ababa found that 76.2% of women experienced moderate to severe pain despite spinal anesthesia(35). These variations across institutions and regions suggest differences in pain management practices, resource availability, and implementation of evidence-based protocols.

2.3 Maternal Satisfaction with Pain Management

Maternal satisfaction with postoperative pain management reflects women's perceptions of pain relief, communication, emotional support, and responsiveness of healthcare providers. Studies from high and middle-income countries report satisfaction rates ranging from 70% to 80%, despite persistent postoperative pain(36). In Saudi Arabia, 76.6% of women reported satisfaction with post-cesarean pain management, while nearly one-quarter expressed dissatisfaction, indicating variability in pain control and patient expectations(9).

Similar patterns are observed in sub-Saharan Africa. In Rwanda, 76.1% of women expressed satisfaction with pain management, despite reporting substantial pain during early recovery(10). In Kenya, 85% of women reported satisfaction despite a high prevalence of postoperative pain, suggesting that satisfaction may be influenced by factors beyond pain intensity alone, such as expectations, communication, and perceived quality of care(37).

In Ethiopia, studies reveal mixed satisfaction levels. Research from Debre Markos Comprehensive Specialized Hospital found that 86.2% of women were satisfied with spinal anesthesia(38), whereas a study in the Somali region reported an overall maternal satisfaction rate of only 61.5%, considered low by national standards(39). These findings indicate persistent challenges in achieving consistent, patient-centered pain management across different healthcare settings.

2.4 Factors Associated with Maternal Satisfaction with Pain Management

Maternal satisfaction with post-cesarean pain management is influenced by a complex interaction of patient characteristics, clinical factors, and health system processes. To strengthen theoretical coherence, these determinants can be conceptualized using Donabedian's structure–process–outcome framework(8).

Within this framework, structural (largely non-modifiable) factors include socio-demographic characteristics and baseline obstetric conditions that shape expectations and vulnerability to pain. Process-related (modifiable) factors reflect the quality of care delivery and directly influence

satisfaction outcomes. Surgical factors occupy an intermediate position, reflecting both patient condition and provider decision-making.

2.4.1 Socio demographic Factors

Retrospective studies conducted among 400 participants identified several socio demographic factors that significantly influenced maternal satisfaction with postoperative pain management. Specifically, a body mass index (BMI) greater than 30 was found to be an independent predictor of lower satisfaction, possibly due to increased technical difficulty during surgery and challenges in pain control. Additionally, being single was also identified as an independent predictor of lower satisfaction levels, which may reflect differences in social support during the postoperative period(40).

Similarly, a cross-sectional study conducted in 2023 at a comprehensive specialized hospital in northwestern Ethiopia revealed that women residing in urban areas were significantly more likely to report higher satisfaction with postoperative pain management compared to women from rural areas. This difference may be attributed to variations in health literacy, expectations, and access to healthcare services(21).

2.4.2 Obstetric and Preoperative Factors

Several obstetric and preoperative factors have been identified as independent predictors of maternal satisfaction with post-cesarean pain management. These include prior cesarean delivery, adequacy of antenatal care follow-up, provision of preoperative counseling, presence of preoperative anxiety, and the adequacy of perioperative pain management, all of which shape maternal expectations and perceptions of care quality (21,39).

Evidence further indicates that effective preoperative counseling and psychological preparation reduce anxiety and enhance women’s perceptions of postoperative pain control and overall care experience(25). Conversely, elevated preoperative anxiety and maladaptive psychological responses, such as pain catastrophizing, are associated with poorer satisfaction and increased postoperative pain perception(24).

2.4.3 Intraoperative and Anesthesia-Related Factors

Intraoperative and anesthesia-related factors are consistently identified as key determinants of maternal satisfaction with post-cesarean pain management. Evidence shows that the use of intrathecal opioids as adjuvants to spinal anesthesia, appropriate selection of anesthesia type, and application of regional nerve blocks significantly enhance analgesic effectiveness and maternal comfort, thereby improving satisfaction (18,19,33). Ethiopian studies further demonstrate that anesthesia modality and the use of adjunct analgesic techniques are strong predictors of higher maternal satisfaction, underscoring the importance of optimizing intra-operative pain management practices in resource-limited settings(20,21).

2.4.4 Intraoperative Surgical Factors

Surgical factors, particularly the duration of surgery and the length of the skin incision, have been identified as significant predictors of maternal satisfaction with post-cesarean pain management. Evidence from a study conducted at Gandhi Women and Child Care Memorial Hospital in Addis Ababa demonstrated that longer operative times and larger incisions were independently associated with increased tissue trauma, greater postoperative discomfort, and lower maternal satisfaction(13,20,21,41).

2.5 Conceptual framework of the study

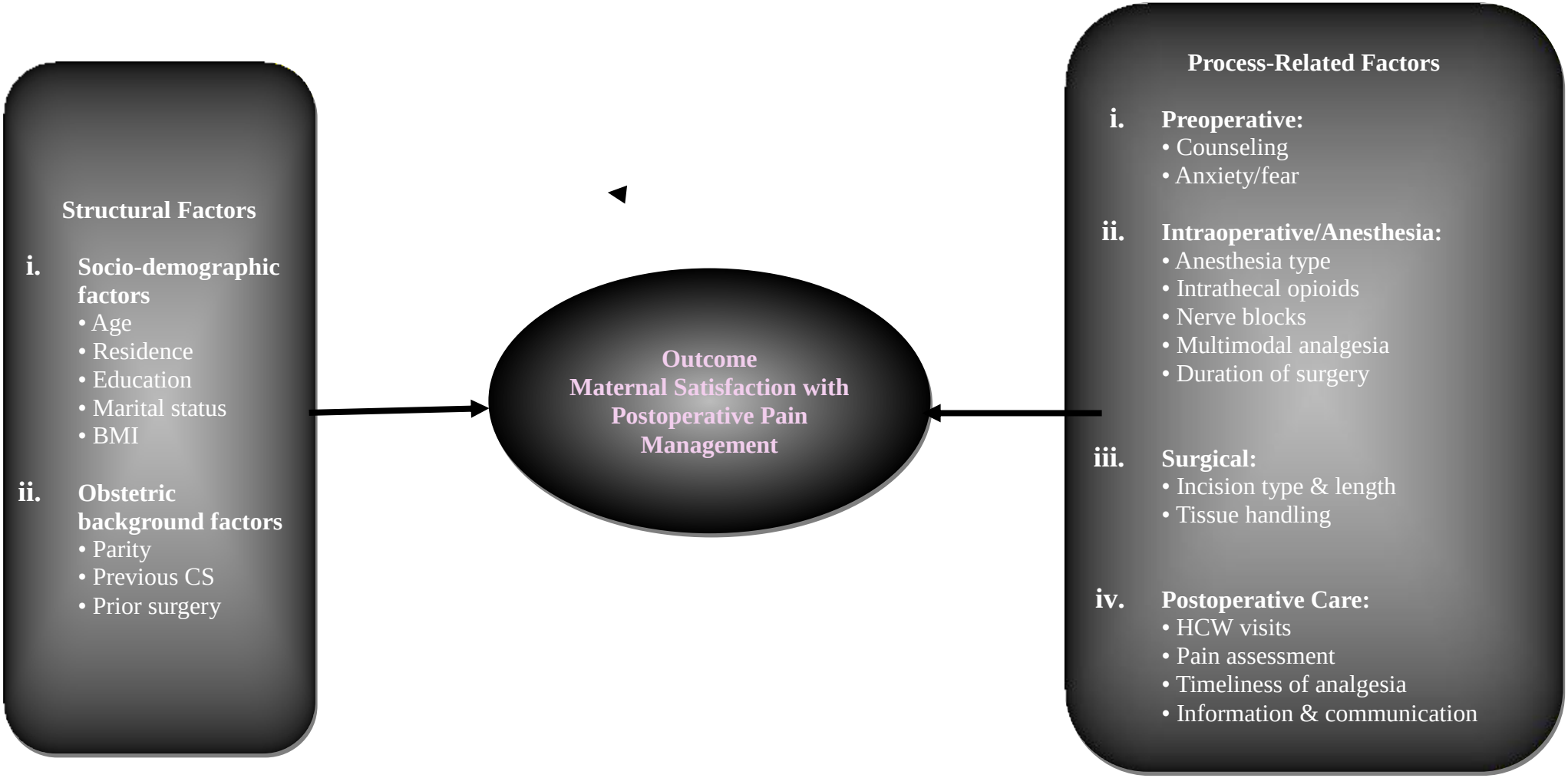

Figure 1:-Conceptual frame work for Maternal Pain Management Satisfaction And Associated Factors Among Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026. (Source: adopted from the Donabedian's structure–process–outcome framework (8))

3. OBJECTIVES OF THE STUDY

3.1 General objective

- To assess maternal satisfaction with postoperative pain management and identify factors associated with satisfaction among women undergoing cesarean section at Arsi University Asella Referral and Teaching Hospital, Ethiopia.

3.2 Specific objectives

- To assess the level of maternal satisfaction with pain management after cesarean section Arsi university Hospital, Asella, Ethiopia.
- To assess factor associated with pain management satisfaction after cesarean section Arsi university Hospital, Asella, Ethiopia.

4. METHOD AND MATERIALS

4.1 Study area

The study was conducted at Arsi University Asella Referral and Teaching Hospital, the only teaching and referral hospital in Arsi Zone, Oromia Regional State, Ethiopia. The hospital is located in Asella Town, approximately 165 kilometers southeast of Addis Ababa, the capital city of Ethiopia. It serves as the main referral center for Arsi Zone, providing comprehensive healthcare services to populations from 28 districts and two town administrations, as well as neighboring zones.

The hospital was established in 1964 G.C. and later reconstructed in 1992 G.C. with support from the Italian government. Since 2014, it has been incorporated under Arsi University as a third-generation public teaching hospital. The hospital has an estimated capacity of 250 beds and employs more than 1,300 healthcare and administrative staff.

The hospital is organized into several clinical departments, including internal medicine, surgery, pediatrics, and obstetrics and gynecology. The Department of Obstetrics and Gynecology is one of the largest units in the hospital, with a total of 75 beds, including 14 high-risk maternity beds, 23 postpartum beds, 13 fistula beds, 5 labor beds, 5 second-stage beds, and 18 gynecology beds. The department is staffed by a multidisciplinary team comprising midwives, general practitioners, approximately 15 senior specialists, 40 residents, and two subspecialists, and provides comprehensive maternal and neonatal care services, including cesarean section.

4.2 Study design

A hospital-based cross-sectional study design was used to assess maternal satisfaction with postoperative pain management among women who underwent cesarean section at Arsi University Asella Referral and Teaching Hospital, Ethiopia, from July to November 2025.

4.3 Study period

- A hospital-based cross-sectional study was conducted from July1,2025 to November30, 2025 at Asella Referral and Teaching Hospital..

4.4 Population

4.4.1 Source Population

- The source population comprised all postpartum women underwent cesarean section at Arsi University ARTH.

4.4.2 Study Population

- The study population included postpartum women who underwent cesarean section at Arsi University ARTH during the study period..

4.4.3 Study unit

- All randomly selected postpartum woman who underwent cesarean section at ARTH during study period.

4.5 Eligibility criteria

4.5.1 Inclusion criteria:

- All women who underwent cesarean section at Arsi University Asella Referral and Teaching Hospital during the study period.

4.5.2 Exclusion criteria:

- Women who were unconscious or unable to communicate at the time of data collection
- Women who were admitted to the intensive care unit (ICU) following cesarean section
- Women with an American Society of Anesthesiologists (ASA) physical status classification of III or higher, indicating severe systemic disease

4.6 Sample size determination

The sample size was determined using the formula for estimating a single population proportion. A study conducted in a resource-limited setting in Addis Ababa with a proportion of 76.2% was used to calculate the sample size, as it provided the maximum sample size among the factors for quality of life(20). With α = 0.05, Z α/2 = 1.96, and a margin of error of 5% (d = 0.05), the sample size was calculated as follows:

$$n = \frac{Z(\frac{\alpha}{2})^2 * P(1-p)}{d^2}$$

Where;

Z = (Standard value for 95% confidence interval) = 1.96

CI = (Confidence interval) = 95%, D = (Marginal error) = 0.05

P = (Single population proportion) = 76.2%, n = 281

And by adding 10% contingency for non-response rate the total sample size was 309

The sample size for the second objective was calculated by taking significantly associated factors

Factor	Proportions (Exposed vs Unexposed)	Required Sample Size	Adjusted for 10% Non-response
Previous CS	80.2% vs 63%	104	115
Preoperative Anxiety	80.6% vs 60.1%	74	82
Transverse Incision	80.4% vs 60%	75	83
Incision Length ≥10 cm	79.6% vs 67.9%	218	240

So as to address both specific objectives of the study, we took the higher sample size. Thus, the sample size for our study was 281. By considering a 10% non-response rate, the final sample size was 309.

4.7 Sampling technique and procedure

Systematic random sampling was employed to select the required number of patients from all post-cesarean section mothers. The total sample size for the study was 309, which was determined using a single population proportion formula. Once the estimated monthly attendance (N) was established from the prior month before the survey (around 162 patients/month), the sampling interval (K) was calculated as N/n, which meant 800/309 = 3; this meant every 3rd patient was selected. Where: N = total population size n = desired sample size

A random starting point between 1 and K was selected using a lottery method. Subsequently, every other woman was approached and invited to participate in the study.

4.8 Study variable

4.8.1 Dependent variable

- Maternal satisfaction with postoperative pain management after cesarean section

4.8.2 Independent variable

- Age
- Education
- surgery type
- Anesthesia type
- ASA status
- anesthesia modality
- pain scoring
- waiting time
- number of c/s
- patient residentially
- Type c/s
- Duration of surgery
- Preoperative anxiety

4.9 Operational definition

Cesarean Section (CS):

A cesarean section is a surgical procedure in which a fetus is delivered through an incision made in the mother's abdominal wall (laparotomy) and the uterine wall (hysterotomy)(42). In this study, all women who delivered through surgical abdominal and uterine incision are classified as cesarean section cases.

Postoperative Pain:

Postoperative pain refers to pain experienced following a surgical procedure, particularly within the first 24 hours after surgery. In this study, a woman is classified as having postoperative pain if her Numeric Rating Scale (NRS) score is **4 or above** during the first 24-hour postoperative period(4,32,43,44).

Numeric Rating Scale (NRS):

The Numeric Rating Scale (NRS) is a standardized pain assessment tool ranging from **0 to 10**, where **0 = no pain** and **10 = worst imaginable pain**. Patients are instructed to select the number that best represents their pain intensity. The NRS is commonly used for patients aged **8 years and above**. In this study, pain intensity is categorized as follows:

- **Mild pain:** 0–3
- **Moderate pain:** 4–6
- **Severe pain:** 7–10 (31,32)

Maternal Satisfaction with Pain Management:

Maternal satisfaction with postoperative pain management was measured using 10 Likert-scale items, each scored from 1 (strongly disagree) to 5 (strongly agree), yielding a total possible score ranging from 10 to 50. For analytical purposes, the outcome variable was dichotomized using the Percentage of Maximum Score (PMS) method, a widely accepted approach in satisfaction and quality-of-care research. Participants who scored ≥75% of the maximum possible score (≥38 out of 50) were classified as satisfied, while those scoring <75% (≤37) were classified as not satisfied.(40) In this study, satisfaction is measured using a structured satisfaction assessment tool and categorized according to predefined scoring criteria.

4.10 Data collection instrument and procedure

A structured, pretested interviewer-administered questionnaire was used to collect data from study participants. The questionnaire was available in both Afaan Oromo and Amharic versions to ensure accessibility for all participants. It was adapted from previous studies with similar objectives and was initially prepared in English. To ensure linguistic and conceptual consistency, the English version was translated into the local languages (Afaan Oromo and Amharic) by two independent bilingual translators with strong proficiency in both languages. The translated versions were then back-translated into English by a separate set of translators to verify consistency. The questionnaire had the following sections: socio-demographic characteristics of mothers, obstetric characteristics and preoperative factors, intraoperative anesthesia and surgery-related factors, post-operative pain management, and Likert scale questions to assess the

satisfaction of mothers with post-cesarean section pain management. In this study, satisfaction with post- cesarean section pain management was dichotomized as satisfied and dissatisfied. Ten items were used to measure maternal satisfaction.

Medical interns, OBGYN residents, and all holding a BSc in Nursing were involved in data collection. The data collectors and supervisor underwent training three days before the actual data collection. The training covered the study's objectives, details of the questionnaire, privacy and confidentiality protocols, and ethical considerations. The supervisor coordinated and oversaw the entire data collection process, ensuring adherence to the protocol and resolving any issues that arose.

4.11 Data quality assurance

To ensure the research's validity, a representative sample of study participants was chosen. Validity and reliability of the tool were objectively assessed (the Pain Treatment Satisfaction Scale (PTSS) is a valid assessment tool for pain treatment satisfaction with Cronbach's alpha of 0.83), and every effort was made to reduce the possibility of bias using the following strategies: Pre-testing was done in August 2025 on 5% of the total sample size, which was two weeks before the first day of data collection. Based on the results of the pre-test, the checklist was amended and modified. Before data collection, training was given to data collectors and supervisors on the en- tire data collection process. During the data collection period, a unique code was given for each selected mother. The supervisors verified the gathered data daily for completeness and consistency. Finally, the principal investigator reviewed the completed questionnaires and provided comments to supervisors on a daily basis.

4.12 Data processing and analysis

Data were entered using Kobo Toolbox and exported to SPSS version 25 for statistical analysis. Data cleaning, coding, and verification were performed prior to analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the characteristics of study participants. Results were presented using text, tables, and figures.

Maternal satisfaction with postoperative pain management was measured using 10 Likert-scale items, each scored from 1 (strongly disagree) to 5 (strongly agree), yielding a total possible score ranging from 10 to 50. For analytical purposes, the outcome variable was dichotomized using the Percentage of Maximum Score (PMS) method, a widely accepted approach in satisfaction and quality-of-care research. Participants who scored ≥75% of the maximum possible score (≥38 out of 50) were classified as satisfied, while those scoring <75% (≤37) were classified as not satisfied.

Multicollinearity among independent variables was assessed using the Variance Inflation Factor (VIF) and tolerance tests. The normality of continuous variables was evaluated using the Shapiro–Wilk test. Bivariable binary logistic regression analysis was conducted to identify candidate variables associated with maternal satisfaction. Variables with a p-value <0.20 in the bivariable analysis were entered into the multivariable binary logistic regression model to control for potential confounders.

The strength of association between maternal satisfaction and independent variables was expressed using adjusted odds ratios (AORs) with 95% confidence intervals (CIs). Statistical significance was declared at a p-value <0.05. The goodness of fit of the final multivariable model was assessed using the Hosmer–Lemeshow test, which indicated an adequate model fit. Finally, the results were presented using text, tables, and figures.

4.13 Ethical consideration

Before data collection, ethical clearance was obtained from the Arsi University .an official letter was written for hospital for their permission to conduct the study in their institution and for possible cooperation and participation. Informed written consent was obtained from each study subject prior to the data collection process, after the purpose of the study had been explained and they had been briefed about the confidentiality of their responses and the importance of providing the right information to help the study achieve its objective. The confidentiality of personal information was strictly preserved. To ensure confidentiality, the name and other identifiers of the patients were not registered. Moreover, the study subjects remained anonymous during and after publication.

4.14 Dissemination of the result

The final report of this study will be written scientifically and submitted to Arsi University, College of Health sciences research and community service directorate, department of obstetrics and gynecology and library. The copy of report analysis result will be disseminated to all relevant bodies like MOH and Arsi University ARTH after the thesis is approved by examiners it will be presented on symposiums to the scientific community and finally it will be published on international reputable journal to reach out international scientific community

5. RESULTS

5.1 Socio-demographic Characteristics

A total of 309 participants were included in the study with a response rate of 95.1%.The mean age was 26.6 ± 4.8 years; most were aged 20–34 years (84.5%). Mean BMI was 23.7 ± 2.3 kg/m², with 74.0% having normal BMI. Most participants were married (93.5%), had primary education (42.7%), and resided in rural areas (52.1%). ***(Table 1)***

Table 1 Socio-Demographic Characteristics Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variables (N=309)	**Category**	**n (n/N%)**
Age group	<19 years	16 (5.1)
(μ=26.57, ±4.82 SD)	20–34 years	261 (84.5)
	35–49 years	32 (10.4)
BMI category	Underweight	6 (2.0)
(μ=23.73, ±2.28 SD)	Normal	225 (74.0)
	Overweight	70 (23.0)
	Obese	3 (1.0)
Educational level	Illiterate	8 (2.6)
	Read and write	48 (15.5)
	Primary education	132 (42.7)
	Secondary/high school	91 (29.4)
	College and above	30 (9.8)
Marital status	Single	5 (1.6)
	Married	289 (93.5)
	Separated	2 (0.6)
	Divorced	8 (2.6)
	Widowed	5 (1.7)
Residence	Urban	148 (47.9)
	Rural	161 (52.1)

Abbreviations: BMI, Body Mass Index;

5.2 Obstetric and Preoperative Characteristics

Regarding obstetric characteristics, multiparous women represented the majority of the study population, accounting for 198 (64.3%) of participants. Majority of cesarean sections were performed on an emergency basis, comprising 241 (78.0%) of cases. Concerning preoperative physical status, 226 women (73.1%) were classified as ASA I, while 83 (26.9%) were classified as ASA II. The vast majority of participants, 280 (90.9%), reported no comorbid medical conditions, whereas 28 women (9.1%) had at least one comorbidity, with diabetes mellitus and hypertensive disorders being the most common. ***(Table 2)***

Table 2 Obstetric And Preoperative Characteristics Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variables (N=309)	Category	**n (n/N%)**
Parity	Nulliparous	110 (35.7)
	Multiparous	198 (64.3)
Type of cesarean section	Elective	68 (22.0)
	Emergency	241 (78.0)
ASA physical status	ASA I	226 (73.1)
	ASA II	83 (26.9)
Any comorbities (i.e,DM,HTN)	No	280 (90.9)
	Yes	28 (9.1)

Abbreviations: ASA; American Society of Anesthesiologists, DM, Diabetes Mellitus; HTN, Hypertension;.

5.3 Preoperative Information Provision and Psychological Preparation

Assessment of preoperative communication revealed that a substantial proportion of participants, 228(74.3%) perceived as self-reported receipt of information regarding their condition and the indication for cesarean section. Regarding emotional preparedness, 148 women (47.9%) reported that their fear and anxiety related to cesarean section were adequately alleviated. Informed consent practices were generally reported favorably. A total of 271 women (87.7%) indicated that they were given sufficient opportunity to provide informed consent. ***(Table 3)***

Table 3 Preoperative Information Provision and Psychological Preparation Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variables (N=309)	Category	n (n/N%)
I was well educated about my condition and the need for caesarean section	Strongly disagree	6 (2.0)
	Disagree	7 (2.3)
	Neutral	66 (21.5)
	Agree	183 (59.6)
	Strongly agree	45 (14.6)
I was well informed about C/S related complication	Strongly disagree	3 (1.0)
	Disagree	13 (4.2)
	Neutral	76 (24.6)
	Agree	164 (53.1)
	Strongly agree	53 (17.1)
My fear and anxiety about c/s allayed before surgery	Strongly disagree	3 (1.0)
	Disagree	42 (13.6)
	Neutral	116 (37.5)
	Agree	113 (36.6)
	Strongly agree	35 (11.3)
I was given opportunity to consent for the procedure to be done	Strongly disagree	1 (0.3)
	Disagree	2 (0.6)
	Neutral	35 (11.3)
	Agree	165 (53.4)
	Strongly agree	106 (34.3)

Abbreviations: C/S, Caesarian Section;

5.4 Analgesic Practices and Intraoperative Pain Experience

Preoperative analgesia was given to 47 (15.4%) women, mainly diclofenac (88.9%). Adjuvant and supplemental analgesia were used in 71 (23.1%) and 67 (21.8%) cases, respectively, predominantly pethidine. Intraoperative pain was absent in 66.0%, mild in 25.9%, and moderate in 8.1%, with high satisfaction (87.4%). Pfannenstiel incision was used in 86.0%, and postoperative TAP block in 7.2%. ***(Table 4)***

Table 4 Analgesic Practices and Intraoperative Pain Experience Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variables (N=309)	**Category**	**n (n/N%)**
Dose of bupivacaine	Standard (10–12.4 mg)	101 (32.8)
(μ=11.84, ±0.94 SD)	High (≥12.5 mg)	207 (67.2)
Adjuvant added	No	236 (76.9)
	Yes	71 (23.1)
Type of Adjuvant added	Pethidine	69 (98.6)
	Morphine	1 (1.4)
Supplemental analgesia given	No	240 (78.2)
	Yes	67 (21.8)
Type of parental analgesia given	Diclofenac	50 (75.8)
	Tramadol	11 (16.7)
	Pethidine	5 (7.6)
Type of incision	Pfannenstiel	265 (86.0)
	Midline	43 (14.0)
Duration of surgery in minutes	<60 minutes	300 (97.4)
(μ=38.77, ±16.62 SD)	60–89 minutes	7 (2.3)
	≥120 minutes	1 (0.3)
Nerve block done at the end of surgery	No	282 (92.8)
	Yes	22 (7.2)
Did you feel any pain during the surgery?	No pain	204 (66.0)
	Mild	80 (25.9)
	Moderate	25 (8.1)
Were you informed about what to expect regarding pain during the surgery?	No	112 (36.2)
	Yes	197 (63.8)
How satisfied were you with intraoperative pain control?	Very dissatisfied	5 (1.6)
	Dissatisfied	6 (1.9)
	Neutral	28 (9.1)
	Satisfied	182 (58.9)
	Very satisfied	88 (28.5)

Abbreviations:

5.5 Postoperative Pain Management

Regarding postoperative pain management, most participants received regular analgesics, 264(85.7%) and had follow-up by healthcare workers, 261(84.5%). Pain medications were administered on time in 138 cases (44.7%), sometimes in 165 (53.4%), and rarely in 6 (1.9%). Pain relief was rated very effective by 138 participants (44.7%) and moderately effective by 157 (50.8%). About half, 156(50.8%) were informed about pain relief options. Side effects were rare, occurring in 18 women (5.9%) ***(Table 5)***

Table 5 Postoperative Pain Management Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variables (N=309)	Category	**n (n/N%)**
Provision of regular anti pain	No	44 (14.3)
	Yes	264 (85.7)
Presence of Regular visit by HCW to address their pain	No	48(15.5)
	Yes	261(84.5)
Were pain medications given on time after surgery?	Rarely	6 (1.9)
	Sometimes	165 (53.4)
	Always	138 (44.7)
Was the pain relief you received effective?	Slightly effective	14 (4.5)
	Moderately effective	157 (50.8)
	Very effective	138 (44.7)
Were you informed about pain relief options?	No	151 (49.2)
	Yes	156 (50.8)
Did you have any side effects from pain medications (e.g., nausea, dizziness)?	No	288 (94.1)
	Yes	18 (5.9)

Abbreviations: HCW, Health Care Workers;

5.6 Pain Management Satisfaction

Postoperative pain management was rated favorably, agreed 200 (64.7), 58 (18.8)strongly agreed pain management they, received after surgery., with timely analgesic administration (79%), effective pain relief (84.1%), and positive provider responsiveness (81.5%). Just over half reported adequate information and involvement in pain management, while most felt their pain concerns were taken seriously (84.4%) and considered postoperative pain acceptable (82.9%). ***(Table 6)***

Table 6 Comprehensive Summary Of Pain Management Satisfaction (Likert Scale Items) Of Women Under Went Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

Variable (Likert Item) (N=309)	Category	n (n/N%)
I was adequately informed about what to expect regarding pain after surgery.	Strongly disagree	2 (0.6)
	Disagree	26 (8.4)
	Neutral	109 (35.3)
	Agree	138 (44.7)
	Strongly agree	34 (11.0)
Pain relief medications were administered in a timely manner.	Disagree	11 (3.6)
	Neutral	54 (17.5)
	Agree	194 (62.8)
	Strongly agree	50 (16.2)
The medications I received effectively reduced my pain.	Disagree	7 (2.3)
	Neutral	42 (13.6)
	Agree	201 (65.0)
	Strongly agree	59 (19.1)
The healthcare team responded promptly when I reported pain.	Disagree	4(1.3)
	Neutral	53(17.2)
	Agree	192(62.1)
	Strongly agree	60(19.4)
I was involved in decisions about my pain	Strongly disagree	4 (1.3)

management.	Disagree	38 (12.3)
	Neutral	109 (35.3)
	Agree	125 (40.5)
	Strongly agree	33 (10.7)
I was informed about possible side effects of pain medications.	Strongly disagree	2 (0.6)
	Disagree	37 (12.0)
.	Neutral	121 (39.2)
	Agree	108 (35.0)
	Strongly agree	41 (13.3)
I was satisfied with the non-medication approaches (e.g., positioning, ice packs) used for pain relief	Strongly disagree	2 (0.6)
	Disagree	31 (10.0)
	Neutral	118 (38.2)
	Agree	128 (41.4)
	Strongly agree	30 (9.7)
My concerns about pain were taken seriously by the medical staff.	Strongly disagree	1(0.3)
	Disagree	1(0.3)
	Neutral	46(14.9)
	Agree	209(67.6
	Strongly agree	52(16.8)
The level of pain I experienced was acceptable given the circumstances.		
	Disagree	5 (1.6)
	Neutral	48 (15.5)
	Agree	206 (66.7)
	Strongly agree	50 (16.2)
I am satisfied with the pain management I received after surgery.	Strongly disagree	1 (0.3)
	Disagree	5 (1.6)
	Neutral	45 (14.6)
	Agree	200 (64.7)
	Strongly agree	58 (18.8)

Abbreviations:

Consequently, overall satisfaction with postoperative pain management based on the likert was high, with 168 women (54.4%) that they were satisfied with the care received, and less mothers 141 (45.6%) expressing dissatisfaction. ***(Figure 2)***

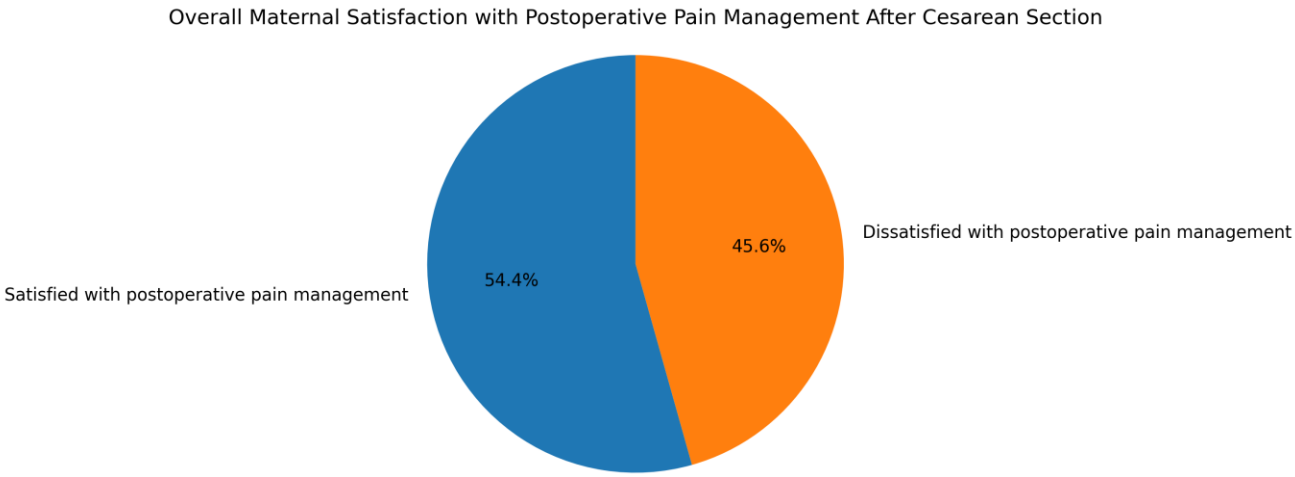

Figure 2: Overall Maternal Satisfaction With Postoperative Pain Management Following Cesarean Section At Arsi University Asella Referral And Teaching Hospital, 2026

5.7 . Factors Associated with Pain Management Satisfaction Following Cesarean Section

Multivariate logistic regression analysis was conducted to identify factors independently associated with patient satisfaction following cesarean section women who underwent the procedure at Arsi University Asella Referral and Teaching Hospital. The model included variables that met the bivariable screening criterion and was fitted using the enter method. The omnibus test of model coefficients demonstrated that the model was statistically significant, indicating that the included predictors collectively improved the model compared with the null model. Patient satisfaction served as the outcome variable, and both crude odds ratios (COR) and adjusted odds ratios (AOR) with 95% confidence intervals (CI) were computed to evaluate the strength of associations while controlling for potential confounders.

Women with a history of previous surgery demonstrated significantly higher satisfaction compared with those without prior surgical experience. Specifically, 90 women (29.1%) reported a previous surgery, and they were more than twice as likely to be satisfied after cesarean section (AOR = 2.33; 95% CI: 1.27–4.26; p = 0.006) compared to the 219 women (70.9%) with no prior surgery. Adequate preoperative information regarding cesarean section related complications was another significant determinant of satisfaction. Among the participants, 217 women (70.2%) who agreed that they were well informed about complications had significantly greater odds of satisfaction than the 92 women (29.8%) who disagreed (AOR = 2.48; 95% CI: 1.35–4.56; p = 0.004). ***(Table 7)***

Similarly, addressing fear and anxiety related to cesarean section prior to surgery was strongly associated with patient satisfaction. Nearly half of the respondents, 148 women (47.9%), reported that their fear and anxiety were allayed before surgery, and these women were 2.6 times more likely to be satisfied compared with the 161 women (52.1%) whose concerns were not addressed (AOR = 2.60; 95% CI: 1.49–4.53; p = 0.001). Although only 22 women (7.2%) received a nerve block at the end of surgery, this intervention demonstrated the strongest association with satisfaction. Women who received a nerve block were over twelve times more likely to be satisfied than those who did not receive one (AOR = 12.20; 95% CI: 2.52–59.09; p = 0.002). ***(Table 7)***

The type of surgical incision was another factor independently associated with satisfaction. While the majority of women, 265 (86.0%), underwent a Pfannenstiel incision, those who

received a midline incision (43 women; 14.0%) had significantly higher odds of satisfaction (AOR = 3.36; 95% CI: 1.37–8.20; p = 0.008). With respect to postoperative care, regular visits by health care workers (HCWs) to address pain were reported by 261 women (84.5%) and these women exhibited higher odds of satisfaction (AOR = 2.49; 95% CI: 1.10–5.65; p = 0.028), The association remained statistically significant after adjustment, indicating that this factor was an independent predictor in the multivariate model. Finally, being informed about pain relief options was significantly associated with patient satisfaction. Of the participants, 156 women (50.8%) reported receiving information about available pain relief methods and were nearly twice as likely to be satisfied compared with the 151 women (49.2%) who were not informed (AOR = 1.91; 95% CI: 1.11–3.29; p = 0.020). ***(Table 7)***

In summary, the multivariate analysis revealed that patient satisfaction following cesarean section was significantly influenced by prior surgical experience, adequate preoperative information, effective management of fear and anxiety, nerve block administration, type of incision, and counseling on pain relief options.

Table 7 Multivariate Logistic Regression Analysis of Factors Associated with Patient Satisfaction After Cesarean Section of Women under Went Cesarean Section at Arsi University Asella Referral and Teaching Hospital, 2026

Variables (N=309)	Category	Patient Outcome	COR (95% CI)	p-value	AOR (95% CI)	p-value

		Satisfied n (n/N%)	Dissatisfied n (n/N%)				
Residence	Urban	56(18.1)	92(29.8)	1.84(1.17-2.89)	0.009	NI	NI
	Rural	85(27.5)	76(24.6)	1	-	-	-
Type of cesarean section	Elective	20(6.5)	48(15.5)	2.42(1.36-4.32)	0.003	NI	NI
	Emergency	121(39.2)	120(38.8)	1	-	-	-
ASA physical status	ASA I	96(31.1)	130(42.1)	1.61(0.97-2.67)	0.067	NI	NI
	ASA II	45(14.6)	38(12.3)	1	-	-	-
Any comorbities (i.e,DM,HTN)	No	133(43.2)	147(47.7)	1	-	-	-
	Yes	7(2.3)	21(6.8)	2.71(1.12-6.59)	0.027	NI	NI
I was well informed about C/S related complication	**Disagree**	**59(19.1)**	**33(10.7)**	**1**	**-**	**1**	**-**
	Agree	**82(26.5)**	**135(43.7)**	**2.94(1.75-4.93)**	**0.000**	**2.48(1.35–4.56)**	**0.004**
I was well educated about my condition and the need for caesarean section	Disagree	43(14)	36(11.7)	1	-	-	-
	Agree	98(31.9)	130(42.3)	1.58(0.95-2.65)	0.080	NI	NI
My fear and anxiety about c/s allayed before surgery	**Disagree**	**97(31.4)**	**64(20.7)**	**1**	**-**	**1**	**-**
	Agree	**44(14.2)**	**104(33.7)**	**3.58(2.10-6.12)**	**0.000**	**2.60(1.49–4.53)**	**0.001**
Previous surgery	**No**	**116(37.5)**	**103(33.3)**	**1**	**-**	**1**	**-**
	Yes	**25(8.1)**	**65(21)**	**2.93(1.70-5.04)**	**0.000**	**2.33(1.27–4.26)**	**0.006**
Supplemental analgesia given	No	122(39.7)	118(38.4)	1	-	-	-
	Yes	19(6.2)	48(15.6)	2.61(1.45-4.71)	0.001	NI	NI
Type of incision	**Pfannenstiel**	**129(41.9)**	**136(44.2)**	**1**	**-**	**1**	**-**

	Midline	**12(3.9)**	**31(10.1)**	**2.45(1.21-4.95)**	**0.013**	**3.36(1.37-8.20)**	**0.008**
Nerve block done at the end of surgery	**No**	**139(45.7)**	**143(47)**	**1**	**-**	**1**	**-**
	Yes	**2(0.7)**	**20(6.6)**	**9.70(2.30-41.01)**	**0.002**	**12.20(2.52–59.09)**	**0.002**
Were you informed about what to expect regarding pain during the surgery?	Disagree	73(23.6)	39(12.6)	1	-	-	-
	Agree	68(22)	129(41.7)	3.55(2.18-5.78)	0.000	NI	NI
Presence of Regular visit by HCW to address their pain	**No**	**32(10.4)**	**16(5.2)**	**1**	**-**	**1**	**-**
	Yes	**109(35.3)**	**152(49.2)**	**2.79(1.45-5.38)**	**0.002**	**2.49(1.10–5.65)**	**0.028**
Were you informed about pain relief options?	**No**	**91(29.6)**	**60(19.5)**	**1**	**-**	**1**	**-**
	Yes	**50(16.3)**	**106(34.5)**	**3.22(1.89-5.50)**	**0.000**	**1.91(1.11–3.29)**	**0.020**

Note: Data shown in bold indicates statistical significance (P<0.05).
Abbreviations: AOR, Adjusted Odd Ratio; COR, Crude Odd Ratio; CI, Confidence Interval; C/S, Cesarean Section ; HCW, Health Care Workers; NI, Not Included

DISCUSSION

This study assessed maternal satisfaction with postoperative pain management following cesarean section at Arsi University Asella Referral and Teaching Hospital and identified factors independently associated with satisfaction. The findings indicate that maternal satisfaction level in this study was 54.5%, lower than the study conducted in government hospitals of Ethiopia like Debremarkos and Addis Ababa study. This might be due different case variety and trained staff ,resource availability(40,41). Regarding the factors associated with maternal satisfaction with post cesarean section pain management, prior surgical experience, and adequate, preoperative information, effective management of fear and anxiety, nerve block administration, type of incision, and counseling on pain relief options are the Variables were statistically, identified.

Women with previous surgical experience were significantly more likely to report satisfaction in this study (Ethiopia: AOR = 2.33; 95% CI: 1.27–4.26). Similar associations have been reported in Ethiopia and other African settings (13,23). Recent studies suggest that prior exposure to surgery enhances psychological preparedness, reduces uncertainty, and promotes realistic expectations regarding postoperative pain and recovery. Women undergoing surgery for the first time often experience heightened anxiety, which has been shown in recent studies to amplify pain perception and negatively affect satisfaction(13,38). These findings underscore the importance of targeted counseling for primiparous and first-time surgical patient

Adequate preoperative information regarding cesarean section–related complications was a strong predictor of satisfaction in this study (Ethiopia: AOR = 2.48; 95% CI: 1.35–4.56). Similar findings have been reported in Kenya and Rwanda(6,36), and reinforced by recent evidence showing that informed patients report higher satisfaction and better pain coping . Providing comprehensive information improves patient autonomy, reduces fear of the unknown, and helps women interpret postoperative pain as a normal and manageable experience rather than a complication(45). Conversely, poor communication has been linked to dissatisfaction and mistrust, even when clinical outcomes are favorable(46).

Fear and anxiety reduction before surgery was also independently associated with satisfaction in this study (Ethiopia: AOR = 2.60; 95% CI: 1.49–4.53). This finding aligns with evidence

demonstrating that preoperative anxiety amplifies postoperative pain perception through neuroendocrine mechanisms and negatively affects satisfaction(24,47). Psychological reassurance and emotional support may therefore improve coping capacity, pain tolerance, and perceived quality of care.

The use of a nerve block at the end of surgery demonstrated the strongest association with satisfaction in this study (Ethiopia: AOR = 12.20; 95% CI: 2.52–59.09). This finding is supported by recent randomized trials and systematic reviews showing that regional anesthesia techniques significantly improve postoperative comfort, reduce opioid consumption, and enhance maternal satisfaction(18,19,48,49). The large magnitude of association observed may reflect the limited baseline availability of advanced analgesia in this setting(50).

Type of incision was independently associated with satisfaction in this study (Ethiopia: AOR = 3.36; 95% CI: 1.37–8.20). While some recent studies report no independent effect of incision type on satisfaction after adjustment(15,41,48),others suggest that incision-related comfort is closely linked to postoperative wound care quality and mobility support(41). Contextual differences in surgical technique, cultural perceptions of scars and body image may therefore explain variability across studies (51).

Regular postoperative visits by healthcare providers to assess pain were associated with higher maternal satisfaction (Ethiopia: AOR = 2.49; 95% CI: 1.10–5.65). Similar findings have been reported in Ethiopia, Uganda, and kenya, where frequent provider engagement improved reassurance and trust even when pain levels remained moderate. Regular postoperative visits by healthcare providers were associated with higher satisfaction(6,10,23). Recent evidence consistently demonstrates that frequent provider engagement improves reassurance, trust, and perceived quality of care, even when pain is not completely eliminated (7,46). Provider responsiveness has been identified as a key component of person maternity care and is strongly associated with positive birth and postoperative experiences(6,12).

Women who were informed about available pain relief options were nearly twice as likely to be satisfied in this study (Ethiopia: AOR = 1.91; 95% CI: 1.11–3.29). Recent studies from Africa and Asia(52) confirm that patient education regarding analgesic options enhances perceived

control over pain and overall satisfaction(10,39). Providing such information empowers women to actively participate in pain management decisions and reduces uncertainty regarding postoperative discomfort. Variations in effect size across studies may reflect differences in analgesic availability, counseling quality, and institutional pain management policies(4,16). Empowering women to participate in pain management decisions aligns with current WHO recommendations on respectful and person-centered maternity care (12)

6. STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths

This study has several notable strengths. First, the study placed emphasis on modifiable psychosocial and care-process factors, such as preoperative information provision, anxiety alleviation, and postoperative healthcare provider engagement. Focusing on factors amenable to intervention increases the practical relevance of the findings and offers actionable insights for improving clinical practice and health service delivery.

Second, standardized data collection procedures using the Kobo Toolbox platform contributed to data consistency, minimized entry errors, and enhanced the overall reliability of the results.

Third, the relatively adequate sample size for multivariable analysis improved the statistical power of the study and supports the stability and robustness of the regression estimates.

Limitations

Despite these strengths, several limitations should be acknowledged. First, the cross-sectional study design restricts the ability to establish causal relationships between the identified predictors and maternal satisfaction. Although significant associations were observed, temporal sequencing between exposure and outcome cannot be definitively determined.

Second, maternal satisfaction and related psychosocial variables (e.g pain measurement pain score were not collected) were measured using self-reported data, which may be prone to recall bias and social desirability bias. Participants may have over- or under-reported

their experiences based on personal expectations, cultural norms, or interactions with healthcare providers.

Third, the study was conducted in a single referral and teaching hospital, which may limit the generalizability of the findings to other healthcare settings with different patient populations, resource availability, or organizational practices.

Finally, although several relevant variables were included in the analysis, residual confounding may remain. Important factors such as cultural beliefs about pain, healthcare provider workload, staffing ratios, and institutional resource constraints were not directly measured and may have influenced patient satisfaction.

7. CONCLUSION

This study demonstrates that maternal satisfaction following cesarean section is shaped by a constellation of interrelated and largely modifiable factors, rather than by surgical outcomes alone. Prior surgical experience significantly enhances satisfaction by reducing uncertainty and improving psychological preparedness for surgery. Adequate perioperative information regarding cesarean-related complications and available pain relief options empowers women, promotes realistic expectations, and strengthens trust in healthcare providers.

Psychological factors, particularly the effective alleviation of preoperative fear and anxiety, play a pivotal role in shaping women's perceptions of care by enhancing coping capacity and pain tolerance. Intraoperative and postoperative pain management emerged as key determinants of satisfaction, with the use of nerve blocks demonstrating the strongest positive association due to their immediate and substantial impact on postoperative comfort.

Surgical technique, as reflected by the type of incision, also influenced satisfaction through its effects on postoperative pain, mobility, wound healing, and cosmetic outcomes. Furthermore, regular postoperative visits by healthcare workers to assess and manage pain significantly improved satisfaction by enhancing reassurance, continuity of care, and perceived provider responsiveness.

Overall, these findings underscore that improving maternal satisfaction after cesarean section requires a comprehensive, patient-centered approach that integrates effective communication, psychological support, evidence-based pain management, appropriate surgical practices, and consistent postoperative follow-up. Addressing these determinants holistically has the potential to substantially improve women's experiences of cesarean delivery and the perceived quality of obstetric surgical care, particularly in low and middle-income healthcare settings.

8. RECOMMENDATIONS

Based on the findings of this study and their comparison with existing evidence, the following recommendations are proposed:

I. Clinical Practice Recommendations

Healthcare facilities providing cesarean section services should institutionalize regular, structured postoperative visits by healthcare workers with a specific focus on pain assessment and management. Standardized postoperative pain follow-up protocols should be developed and implemented to ensure consistent provider–patient interaction during the early recovery period.

Preoperative care pathways should incorporate routine psychological assessment and counseling to identify and address fear and anxiety prior to surgery. Providing clear, culturally appropriate information about the surgical procedure, anesthesia, pain management options, and postoperative expectations is essential for improving psychological preparedness and satisfaction. Targeted training for healthcare providers in empathetic communication, patient reassurance, and respectful maternity care is strongly recommended.

II. Health System Recommendations

Hospital administrators and health system managers should recognize maternal satisfaction as a key indicator of quality of care and integrate it into routine monitoring and evaluation frameworks. Ensuring adequate staffing levels is critical to facilitate regular postoperative provider engagement, particularly in high-volume maternity units.

In resource-constrained settings, where access to advanced analgesic techniques may be limited, emphasis should be placed on low-cost, high-impact interventions such as effective communication, timely response to pain complaints, psychological support, and continuity of care. Policies that promote patient-centered and respectful maternity care alongside clinical outcomes are likely to yield meaningful improvements in maternal experience.

III. Research Recommendations

Future studies should employ longitudinal or interventional designs to establish causal relationships between perioperative care processes, anxiety reduction strategies, and maternal satisfaction. Multicenter studies with larger and more diverse populations are recommended to enhance generalizability and to explore contextual, institutional, and cultural moderators of satisfaction.

Additionally, mixed-methods research incorporating qualitative approaches would provide deeper insight into women's expectations, perceptions, and lived experiences of postoperative pain management. Standardization of satisfaction measurement tools across studies is also recommended to facilitate more accurate comparison of effect sizes and predictors in future research.

9. REFERENCES

1. Betran AP, Ye J, Moller B, Souza JP. Trends and projections of caesarean section rates : global and regional estimates. 2021;1–8.
2. Apfelbaum JL, Gan TJ, Chen C. Postoperative Pain Experience: Results from a National Survey Suggest Postoperative Pain Continues to Be Undermanaged. 2003;534–40.
3. Rawal N. Current issues in postoperative pain management. 2016;160–71.
4. Gan TJ. Poorly controlled postoperative pain : prevalence , consequences , and prevention. 2017;2287–98.
5. Gan TJ, Miller TE, Apfelbaum JL. Review Incidence , patient satisfaction , and perceptions of post-surgical pain : results from a US national survey No p Un t yr au fo ig th r ht di or S sp ize a la d le © vi e o ew p r d p ibi om In rin ted m fo rm t a . Au e si th rc a U ng or i le is al py us is Lim fo ers tr ite r p c i b d so d ut na ow io l u nl n. 2014;30(1):149–60.
6. Afulani PA, Phillips B, Aborigo RA, Moyer CA. Articles Person-centred maternity care in low-income and middle-income countries : analysis of data from Kenya ,. Lancet Glob Heal [Internet]. 7(1):e96–109. Available from: http://dx.doi.org/10.1016/S2214-109X(18)30403-0
7. Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Diniz A, et al. The Mistreatment of Women during Childbirth in Health Facilities Globally : A Mixed-Methods Systematic Review. 2015;(1):1–32.
8. Donabedian-The-Quality-of-Care.pdf.
9. Rahman DMM ur, Debnath DKC, Haq DS. An Assessment of Postoperative Pain Management Undergoing Cesarean Section. Saudi J Med Pharm Sci. 2022;8(12):789–93.
10. Habimana Sibomana E, Tuyishime E, Nizeyimana F, Mukwesi C, Tuyishime J de D, Dylan BM, et al. Quality of Post-Cesarean Section Pain Management at Referral Hospital in Kigali Rwanda: A Cross-Sectional Study. Rwanda J Med Heal Sci. 2024;7(2):372–8.
11. Epstein RM, Street RL. The Values and Value of Patient-Centered. 2011;9(2):100–3.
12. Bahl R, Daelmans B. Quality of care for pregnant women and newborns — the WHO vision. 2015;1045–9.
13. Hussen I, Worku M, Geleta D, Ahmed A, Abebe M, Molla W, et al. Post-operative pain and associated factors after cesarean section at Hawassa University Comprehensive Specialized Hospital , Hawassa , Ethiopia : A cross-sectional study. Ann Med Surg [Internet]. 2022;81(May):104321. Available from: https://doi.org/10.1016/j.amsu.2022.104321

14. Pereira MS, Silva DO, Carvalho FLD, Teles JS, Santos GR de S, Ribeiro CJN. Management and impacts of acute post-cesarean section pain in a usual-risk maternity hospital: cross-sectional study. Brazilian J Pain. 2025;8:e20250013.

15. Atmawan DB, Kurniawan HA, Estiko RI, Allinda T. Relationship Between Pain Severity in Post-Caesarean Section and Its Preoperative Factors. JAI (Jurnal Anestesiol Indones. 2023;15(3):198–205.

16. Meissner W, Coluzzi F, Fletcher D, Huygen F, Morlion B, Neugebauer E, et al. Improving the management of post-operative acute pain : priorities for change Commentary Improving the management of post-operative acute pain : priorities for change. 2015;7995(January 2016).

17. Kehlet H, Analgesics P acting. The Value. 1993;1048–56.

18. Abdallah FW, Brull R. The Definition of Block '" Success "' in the Contemporary Literature. 2012;37(5):545–53.

19. Meissner W, Coluzzi F, Fletcher D, Huygen F, Morlion B, Neugebauer E, et al. Improving the management of post-operative acute pain : priorities for change Commentary Improving the management of post-operative acute pain : priorities for change. 2015;7995.

20. Bimrew D, Misganaw A, Samuel H, Daniel Desta T, Bayable SD. Incidence and associated factors of acute postoperative pain within the first 24 h in women undergoing cesarean delivery at a resource-limited setting in Addis Ababa, Ethiopia: A prospective observational study. SAGE Open Med. 2022;10.

21. Demelash G, Berhe YW, Hailekiros A. Prevalence and Factors Associated with Postoperative Pain After Cesarean Section at a Comprehensive Specialized Hospital in Northwest Ethiopia : Prospective Observational Study Prevalence and Factors Associated with Postoperative Pain After Cesarean Secti. 2022;

22. Admass BA, Diress FT, Fentie DY, Endalew NS. Maternal Satisfaction and Associated Factors with Postcesarean Section Pain Management: A Cross-Sectional Study. Anesthesiol Res Pract. 2024;2024(1).

23. López-españa JT. Maternal satisfaction with postpartum surgical pain management in a hospital in northern Mexico Satisfacción materna con manejo del dolor en posparto quirúrgico en un hospital del norte de México Satisfação materna com a gestão da dor cirúrgica pós-parto. Sanus. 2021;6:1–14.

24. Caumo W, Schmidt AP, Schneider CN, Bergmann J, Iwamoto CW, Bandeira D, et al. Risk factors for postoperative anxiety in adults. 2001;

25. Powell R, Nw S, Manyande A, Bruce J, Vögele C, Lmt B davis, et al. Psychological preparation and postoperative outcomes for adults undergoing surgery under general anaesthesia (Review). 2016;(5).

26. Kruk ME, Gage AD, Joseph NT, Danaei G, García-saisó S, Salomon JA, et al. Mortality due to low-quality health systems in the universal health coverage era : a

systematic analysis of amenable deaths in 137 countries.

27. Sherman M, Sethi S, Hindle AK, Chanza T. Multimodal Pain Management in the Perioperative Setting. 2020;47–71.

28. Doyle C, Lennox L, Bell D. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. 2013;

29. Afshan G, Khan RI, Ahmed A, Siddiqui AS, Rehman A, Raza SA, et al. Post-operative pain management modalities employed in clinical trials for adult patients in LMIC ; a systematic review. 2021;1–14.

30. Raja S, Carr D, Cohen M, Finnerup N, Flor H, Gibson S. The Revised IASP definition of pain: concepts, challenges, and compromises. Pain [Internet]. 2020;161(9):1976–82. Available from: https://doi.org/10.1097/j.pain.0000000000001939

31. Bn CH. Ó 2000 Blackwell Science Ltd, Journal of Clinical Nursing , 9 , 649±653. :650.

32. Breivik H, Borchgrevink PC, Allen SM, Rosseland LA, Romundstad L, Hals EKB, et al. Assessment of pain. 2008;101(1):17–24.

33. Kehlet H, Dahl JB. Anaesthesia , surgery , and challenges in postoperative recovery. 2003;362:1921–8.

34. Riza S, Desreza N, Asnawati, Sudiyanto H, Andrio, Osuke Komazawa, Ni Wayan Suriastini, Endra Dwi Mulyanto, Ika Yulia Wijayanti, Maliki DDK, et al. No 主観的健康感を中心とした在宅高齢者における 健康関連指標に関する共分散構造分析 Title. BMC Public Health [Internet]. 2019;5(1):1–11. Available from: https://doi.org/10.1186/s12889-021-12260-z%250Ahttps://doi.org/10.1186/s12889-022-13062-7%250Ahttps://doi.org/10.1016/j.cegh.2021.100907%250Ahttp://ejournal-s1.undip.ac.id/index.php/jnursing%250Ahttps://ejurnal.poltekkes-tjk.ac.id/index.php/JKEP/article/view/355%25

35. Bimrew D, Misganaw A, Samuel H, Daniel Desta T, Bayable SD. Incidence and associated factors of acute postoperative pain within the first 24 h in women undergoing cesarean delivery at a resource-limited setting in Addis Ababa, Ethiopia: a prospective observational study. SAGE Open Med. 2022;10:20503121221133190.

36. Sibomana EH, Tuyishime E, Nizeyimana F, Mukwesi C, de Dieu Tuyishime J, Dylan BM, et al. Quality of Post-Cesarean Section Pain Management at Referral Hospital in Kigali Rwanda: A Cross-Sectional Study. Rwanda J Med Heal Sci. 2024;7(2):372–8.

37. M KJ. Evaluation of the Practice and Adequacy of Current Pain. 2019;(May).

38. Ashebir Y. Level of maternal satisfaction with post-operative pain management after caesarian section delivery at Debre Markos Comprehensive Specialized

Hospital , Debre Markos , Ethiopia , 2022 . A cross-. 2024;112(2):1–15.

39. Abubakar KK, Wariyo A, Dirirsa G. Assessment of Client Satisfaction on Post Cesarean Section and Associated Factors Among Delivered Mothers, 2021. Inq (United States). 2023;60.

40. Ashebir Y. Level of maternal satisfaction with post-operative pain management after caesarian section delivery at Debre Markos Comprehensive Specialized Hospital , Debre Markos , Ethiopia , 2022 . A cross-. 2024;(2):1–15.

41. COLLEGE OF HEALTH SCIENCES SCHOOL OF MEDICINE DEPARTMENT OF ANESTHESIA INCIDENCE AND ASSOCIATED FACTORS OF POSTOPERATIVE PAIN AFTER CESAREAN SECTION UNDER SPINAL ANESTHESIA AT GANDHI WOMEN AND CHILD CARE MEMORIAL HOSPITAL 2020/21, ADDIS ABABA, ETHIOPIA. LONGITUDINAL CROSS SECTIONAL STUDY BY: MINDA ABEBE ADVISERS: MR. SILESHI ABIY (BSC, MSC IN ANESTHESIA, LECTURER OF ANESTHESIA) : Mrs. SELAMAWIT (BSC, MSC IN ANESTHESIA, LECTURER OF ANESTHESIA).

42. Betran AP, Torloni MR, Zhang JJ, Gülmezoglu AM. WHO statement on caesarean section rates. BJOG An Int J Obstet Gynaecol. 2016;123(5):667–70.

43. Laycock H, Bantel C. Objective Assessment of Acute Pain. 2016;7(6):6–8.

44. Joshi A, Kale S, Chandel S, Pal D. Likert Scale: Explored and Explained. Br J Appl Sci Technol. 2015 Jan 10;7(4):396–403.

45. Street RL, Makoul G, Arora NK, Epstein RM. Patient Education and Counseling How does communication heal ? Pathways linking clinician – patient communication to health outcomes. 2009;74:295–301.

46. Article O. Evaluation of patient satisfaction about the use of regional anesthesia for cesarean section in the Kingdom of Saudi Arabia. 2023;2–7.

47. Kalkman CJ, Visser K, Moen J, Bonsel GJ, Grobbee DE, Moons KGM. Preoperative prediction of severe postoperative pain. 2003;105:415–23.

48. Sangkum L, Thamjamrassri T, Arnuntasupakul V, Chalacheewa T. The Current Consideration, Approach, and Management in Postcesarean Delivery Pain Control: A Narrative Review. Anesthesiol Res Pract. 2021;2021.

49. Roofthooft E, Joshi GP, Rawal N, Velde M Van De. PROSPECT guideline for elective caesarean section : updated systematic review and procedure-speci fi c postoperative pain management recommendations. 2022;665–80.

50. Govender M: K. Post Caesarean Delivery Analgesia KM Köhne. 2017;(17).

51. Review P. Determinants of patient satisfaction : a systematic review. 2016;XX(X):1–13.

52. Dwi Marta OF, Nurhaliza S, Aini N, Setyowati L, Mashfufa EW, Ariani TA. Pain Experience After Caesarean Section: A Qualitative Study. KnE Med.

2022;2022:719–29.

ANNEX I: INFORMATION SHEET FOR PARTICIPANTS

Title: Maternal Satisfaction With Cesarean Section Pain Management and Its Associated Factors at Asella Referral and Teaching Hospital, Ethiopia, 2026

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.

Hello! My name is Dr Workineh Kassaye .i am 4th year obstetrics and gynecology resident at Asella referral and teaching hospital, Arsi University. I am doing my research on "Maternal Satisfaction with Post-Cesarean Pain Management and Its Determinants at Arsi University.

This is a study to be conducted with objective of assessment the level of maternal satisfaction and identify factors associated with satisfaction in pain management after cesarean section. I would like to inform you that the responses that you provide are very essential, not only, for the successful accomplishment of the study but also for producing relevant information which will be helpful in addressing problems associated with inadequate pain management . The study will be conducted partly for partial requirement for speciality certificate in obstetrics and gynecology.

Your involvement in this research is providing some personal information on socio-demographic variables and on the status of your pain management. The study requires 30 minutes of your time for giving us your information.

We are selecting every two interval post-partum women who gave birth via C/S at asella referral and teaching hospital the first participant will be selected by lottery method .so your selection every two interval by considering your eligibility as you are post-partum women gave birth via C/S

Your privacy will be kept secret and your participation is completely voluntary. You have the right to refuse participation in the study or refuse any question and withdraw at any time without any consequence what so ever if you feel uncomfortable to continue.

The possible benefits of this research are to assess the level of maternal satisfaction and identify factors associated with satisfaction in pain management after cesarean section. By participating in this study there is no possible physical or psychological harm that may come to a participant as a result of participating in the research except the minimal discomfort that may happen when ever physical examination is indicated. The other potential loss to you is the time you invest for the interview.

All the information collected from you will be handled confidentially through omitting your personal identification and the data will be used for the research purpose only. Confidentiality will not be broken on any means without your consent. The information you provide will be filled into pretested interviewer administered questionnaire.

The final results of this study will be submitted department of obstetrics, Arsi University research office and to publishers for possible evaluation and publication of the paper. A valuable recommendation will be made based on the result obtained at the end of the study that is going to be implemented during the clinical practice.

Dr Workineh Kassaye, MD, Final Year Obstetrics and Gynecology Resident at Asella Referral and Teaching Hospital, Arsi University, 2026

Phone: 0910615096

Email: workukassa21@gmail.com

ANNEX II: INFORMED CONSENT FOR STUDY PARTICIPANT

ARSI UNIVERSITY COLLEGE OF HEALTHY AND MEDICAL SCIENCE, DEPARTMENT OF GYNECOLOGY & OBSTETRICS QUESTIONNAIRE FOR HEALTH FACILITY RELATED INFORMATION

Hello! My name is_____. I am final year obstetrics and gynecology resident at Asella referral and teaching hospital, Arsi University. I am doing my research on "Maternal Satisfaction with Post-Cesarean Pain Management and Its Determinants among pregnant women who gave birth via cesarean section in Asella teaching referral hospital.

This is a study to be conducted with objective to assess the level of maternal pain management satisfaction and factor associated with it after cesarean section. I would like to inform you that the responses that you provide are very essential, not only, for the successful accomplishment of the study but also for producing relevant information which will be helpful in addressing problems associated with pain management satisfaction.

Your privacy will be kept secret and you have the right to not to participate in the study or can stop your participation at the middle of interview if you feel uncomfortable to continue.

Are you willing to participate? Yes ---------- No --------

Date of interview: -----/---------/-----

Name of data collector----------

Date--------/----------/------ signature ----------

Questionnaire code---------

ANNEX III: QUESTIONER

Part I: Socio demographic characteristic of mothers

1.	Age (year)	_____yrs
2.	Height(in meter)	_____
3.	Weight(in Kg)	_____
4.	BMI(kg/m2)	_____kg/m2
5.	Marital status	A.single B.Divorce C.Married D.widowed E.separated
6.	Educational level	A.illetriate B.read and write C.Primary education D.Secondary and high school E.attend college and above
7.	Residentially	A.rural B.urban

Part II: obstetric characteristics and Preoperative factors variable

8.	Parity	A.nulliparous B.multiparous
9.	Type of cesarean section	A.Emergency B.Elective
10	ASA physical status	A.ASA I B.ASA II
11	Any comorbities (i.e,DM,HTN)	A.Yes B.no If yes specify _____
Preoperative patient preparation		
11	I was well educated about my condition and the need for caesarean section	A.strongly disagree B.disagree C.agree D.strongly agree

12	I was well informed about C/S related complication	A.strongly disagree B.disagree C.agree D.strongly agree
13	My fear and anxiety about c/s allayed before surgery	A.strongly disagree B.disagree C.agree D.strongly agree
14	I was given opportunity to consent for the procedure to be done	A.strongly disagree B.disagree C.agree D.strongly agree
15.	Previous surgery	A.yes B.NO
16	Number of previous cesarean section	A.I B.II C.III D.>IV
17	Preoperative analgesia	A.YES B.NO
18	Type of analgesia	A.Tramadol B.Diclofenac C.other(specify) ..

Part III: intra operative anesthesia and surgery related associated factors

19	Dose of bupivacaine	A.10.5mg B.12.5mg C.15mg
20	Adjuvant added	A.yes B.NO
21	Type of Adjuvant added	A.Pethidine B.Morphine C.Fentanyl D.other(specify)

22	Supplemental analgesia given	A.yes B.NO
23	Type of parental analgesia given	A.Diclofenac B.Pethidine C.Tramadol D.other(specify)
24	Type of incision	A.midline B.Pfannenstiel
25	Duration of surgery in minutes	_____minutes
26	Nerve block done at the end of surgery	A.yes B.No
27	Type of nerve block done	A.TAP B.Wound infiltration C.other(specify)
28	Did you feel any pain during the surgery?	A. No B. Mild pain C. Moderate pain Severe pain
29	Were you informed about what to expect regarding pain during the surgery?	A. Yes **A. No**
30	How satisfied were you with intraoperative pain control?	A. Very satisfied B. Satisfied C. Neutral D. Dissatisfied ✓ **Very dissatisfied**
	Post op pain management	
31	Provision of regular anti pain	A. Yes B. No
32	Types of anti pain given	A. Diclofenac (IM /IV /suppository) B. Pethidine C. Tramadol D. Morphine E. Opoids + NSAIDS combined F. Other(specify)

33	Presence of Regular visit by HCW to address their pain	A. Yes B. No
34	Were pain medications given on time after surgery?	☐ Always ☐ Sometimes ☐ Rarely ☐ Never
35	Was the pain relief you received effective?	☐ Very effective ☐ Moderately effective ☐ Slightly effective ☐ Not effective
36	Were you informed about pain relief options?	☐ Yes ☐ No
37	Did you have any side effects from pain medications (e.g., nausea, dizziness)?	☐ Yes ☐ No
38	If yes for Q 37, specify)	_____
39	How satisfied are you with the overall postoperative pain management?	☐ Very satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very dissatisfied

Part IV: Likert Scale Questions for Postoperative Pain Satisfaction

No.	Statement	V. Dissatisfied 1	Dissatisfied 2	Neutral 3	Satisfied 4	V. Satisfied 5
1	I was adequately informed about what to expect regarding pain after surgery.					
2	Pain relief medications were administered in a timely manner.					

3	The medications I received effectively reduced my pain.					
4	The healthcare team responded promptly when I reported pain.					
5	I was involved in decisions about my pain management.					
6	I was informed about possible side effects of pain medications.					
7	I was satisfied with the non-medication approaches (e.g., positioning, ice packs) used for pain relief.					
8	My concerns about pain were taken seriously by the medical staff.					
9	The level of pain I experienced was acceptable given the circumstances.					
10	Overall, I am satisfied with the pain management I received after surgery.					
	Total score out of 50					

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ANNEX IV: STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis entitled "**Maternal Satisfaction With Cesarean Section Pain Management and Its Associated Factors at Asella Referral and Teaching Hospital, Ethiopia, 2026**" is my original work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in in partial fulfillment of the requirement for the specialty certificate in obstetrics and gynecology from the Arsi University, college of health sciences, department of obstetrics and gynecology. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

NAME OF PRINCIPAL INVESTIGATOR:

Dr. Workenah Kassaye (MD, Final Year Obstetrics and Gynecology Resident)

Signature: - _____ Date: - _____

This thesis work has been submitted for examination with my approval as an advisor.
Approved by:

ADVISORS:

Dr Melese Gezahgn (MD, Associate Professor of Obstetrics and Gynecology, Urogynecologist and Reconstructive Pelvic Surgeon)

Signature: -_____ Date: - _____

Mr Kabtamu Tolosie (MPH, Assistant Professor of Biostatistics)

Signature: -_____ Date: - _____

ANNEX V: APPROVAL BY THE BOARD OF EXAMINATION

As thesis research advisor/examiner, I hereby certify that I have read and evaluated this Thesis prepared by Dr. Workenah Kassaye (MD, Final Year Obstetrics and Gynecology Resident) entitled "**Maternal Satisfaction With Cesarean Section Pain Management and Its Associated Factors at Asella Referral and Teaching Hospital, Ethiopia, 2026.**". I recommend that it be submitted as fulfilling the Thesis requirement for the specialty certificate in obstetrics and gynecology.

EXAMINER (INTERNAL):

_____ _____ _____

NAME SIGNITURE DATE

RESEARCH ADVISORS:

Dr Melese Gezahgn (MD, Associate Professor of Obstetrics and Gynecology, Urogynecologist and Reconstructive Pelvic Surgeon) _____ _____

NAME SIGNITURE DATE

Mr Kabtamu Tolosie (msc, Assistant Professor of Biostatistics)

NAME _____ _____

SIGNITURE DATE

DEPARTMENT HEAD:

_____ _____ _____

NAME SIGNITURE DATE