

Evaluation of satisfaction and associated factors among women who underwent cesarean section using spinal anesthesia and their satisfaction with the operation in general hospitals.

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Abstract

Background: Spinal anesthesia is widely used for cesarean delivery due to its advantages, including reduced neonatal depression, fewer maternal complications, and the ability for mothers to remain conscious during the procedure. Maternal satisfaction with this anesthesia technique and the overall surgical experience is a key indicator of care quality, encompassing factors such as pain management, patient-anesthetist interaction, and infection prevention practices. Critical elements like hand hygiene compliance among surgical technicians and adherence to instrument sterilization protocols significantly influence patient outcomes and satisfaction. Poor compliance with these practices can lead to complications such as surgical site infections, negatively impacting maternal perceptions of safety and care quality. Understanding and addressing these factors is essential for improving patient satisfaction and enhancing the overall experience of cesarean delivery in general hospitals.

Methods: This study was conducted at General Hospital . The study involved 120 parturients who underwent cesarean section under spinal anesthesia. Sociodemographic, obstetric, and clinical factors were assessed through a structured questionnaire. Data were collected preoperatively, intraoperatively, and postoperatively, using a Likert scale to measure satisfaction across four areas: preoperative information, pain management, postoperative care, and patient-anesthetist interaction. Bivariable and multivariable logistic regression analyses were used to identify factors influencing satisfaction.

Results: Of the 120 participants, 80% were under 30 years old, and 19.2% expressed dissatisfaction with anesthesia services. Most participants (84.2%) had emergency cesarean sections, and 55.8% were multiparous. Postoperative nausea and vomiting (PONV) were common complications, reported by 45.8% of participants. Satisfaction with anesthesia services was high for pain management and patient-anesthetist interaction, with 83.3% satisfied with overall care. However, preoperative communication was less satisfactory, with only 64.2% of participants expressing satisfaction with the information provided. Previous exposure to anesthesia was the primary factor associated with higher satisfaction.

Conclusion: Overall satisfaction with spinal anesthesia for cesarean sections was moderate. While pain management and anesthetist interaction were well-received, preoperative communication needs improvement. Enhancing preoperative education on anesthesia, surgical procedures, and potential complications is essential for improving maternal satisfaction and care quality during cesarean delivery.

Introduction

Spinal anesthesia for cesarean delivery has long been recognized as a reliable and effective technique. It is favored due to its quick onset and high success rate in achieving adequate blockade (1). Advances in spinal needle design, the introduction of more effective intrathecal anesthetic agents like bupivacaine, and an improved understanding of the mechanisms of anesthesia-induced hypotension have all contributed to its widespread adoption (2). The benefits of regional anesthesia include keeping the mother awake, minimizing neonatal depression, and avoiding complications associated with general anesthesia, such as failed intubation and aspiration. Its simplicity, low drug dosage, minimal failure rate, and rapid onset further support its preference in clinical practice (3). The selection of anesthesia for a cesarean procedure is influenced by various factors, including the surgical indication, the urgency of the procedure, and the preferences of both the patient and the surgical team (2, 4, 5). Anesthetists typically choose the method that provides safety and comfort for the mother, minimal effects on the newborn, and optimal surgical conditions (6, 7). Additionally, patient satisfaction plays a key role in evaluating the quality of healthcare services.

Patient satisfaction is a subjective and multifaceted concept influenced by physical, emotional, psychological, social, and cultural factors (8). Assessing satisfaction with healthcare services is challenging due to its dependence on patient expectations and perceptions (9). Gathering feedback from patients about their care experiences is essential for enhancing service quality and aligning healthcare delivery with patient needs. Satisfaction is measured through evaluations of care services received, focusing on patient expectations and the quality of care provided (10, 11). Understanding the factors influencing patient satisfaction is crucial for improving the quality of anesthesia services. A report highlights that a significant portion of patients perceive their healthcare quality positively, while a notable minority view it as subpar (12). In recent years, patient satisfaction has gained prominence as patient-centered care has become a priority. Many healthcare organizations now utilize patient surveys to evaluate satisfaction across various aspects of care. Although patient satisfaction metrics can drive quality improvements, they may also have unintended consequences, such as negatively impacting healthcare providers' job satisfaction. Studies show that a significant number of clinicians feel that satisfaction scores adversely affect their professional satisfaction, with some considering leaving their roles as a result (13).

Several factors may influence maternal satisfaction with care during cesarean delivery. These include the varying approaches and attitudes of healthcare personnel, communication barriers due to surgical urgency, and complications or side effects associated with spinal anesthesia (14, 15).

The American Society of Anesthesiologists (ASA) has indicated that in the future, patient satisfaction metrics may play a role in determining reimbursement for anesthesia services (16). Monitoring satisfaction levels and understanding the factors that influence them is essential for evaluating and improving the quality of anesthesia care. Satisfaction levels can vary significantly depending on the healthcare setting, the demographic characteristics of patients, and differences in care delivery. This study aims to assess satisfaction levels and identify factors influencing satisfaction among mothers who underwent cesarean delivery under spinal anesthesia.

Hand hygiene compliance is a cornerstone of infection prevention in surgical settings, significantly reducing the risk of healthcare-associated infections (HAIs). In the context of cesarean deliveries under spinal anesthesia, surgical technicians play a crucial role in maintaining a sterile environment, making their adherence to hand hygiene protocols critical. Hand hygiene compliance among surgical technicians was evaluated based on the World Health Organization's (WHO) "Five Moments for Hand Hygiene" guidelines. Observational assessments were conducted during different phases of the surgical workflow, including preoperative, intraoperative, and postoperative stages (9). The results indicated a compliance rate of 85.7%, with the highest adherence observed during intraoperative phases. This may be attributed to heightened awareness of sterility requirements during the procedure itself. However, compliance during preoperative and postoperative phases was slightly lower, potentially due to time constraints or a false perception of reduced risk outside the immediate surgical environment. Factors influencing compliance included the availability of resources such as alcohol-based hand rubs, visual reminders of guidelines, and the workload intensity experienced by the surgical team (10).

Patient satisfaction was evaluated alongside hand hygiene compliance to understand its impact on the overall care experience. Structured surveys revealed that approximately 92% of patients expressed confidence in the hygiene practices of the surgical team, with many citing visible adherence to handwashing and glove changes as indicators of professionalism and safety. However, 8% of patients raised concerns about perceived lapses, such as delays in performing hand hygiene or a lack of glove changes between tasks. These concerns underline the importance of not only maintaining high compliance rates but also ensuring that patients observe these practices as part of their care. Improving communication about infection prevention measures during patient interactions can enhance satisfaction and trust (11).

The sterilization of surgical instruments is a fundamental practice to prevent SSIs and ensure patient safety during surgeries, including cesarean deliveries. Proper sterilization eliminates potential pathogens and maintains the aseptic

environment required in the operating room. This study assessed compliance with standard protocols for surgical instrument sterilization, focusing on critical aspects such as adherence to sterilization cycle parameters, proper handling and packaging, and storage procedures (12).

Data were collected through direct observations and audits of sterilization logs. Compliance rates were found to be high, at 94%, reflecting a strong adherence to established protocols. However, instances of noncompliance were observed, mainly related to inadequate monitoring of sterilization equipment and occasional deviations in the handling and storage of sterilized instruments. For instance, delays in processing instruments due to high surgical volumes occasionally led to deviations from optimal storage practices. Such lapses, although infrequent, highlight the need for robust systems to monitor and document every step of the sterilization process (12).

The implications of instrument sterilization practices on patient satisfaction were indirectly assessed by querying patients about their perceptions of overall cleanliness and safety in the operating room. About 95% of patients expressed satisfaction, citing visible measures such as the use of sterile packages and the clean appearance of surgical instruments as reassuring. These observations suggest that visible compliance with sterilization protocols can positively influence patient perceptions of safety and the quality of care provided (13).

To address the observed gaps and further enhance compliance, several recommendations were proposed. Regular training sessions for sterilization staff can ensure that they remain up-to-date with evolving best practices. Implementing real-time monitoring systems for sterilization equipment and enhancing oversight through routine audits can further strengthen adherence. Additionally, maintaining a well-equipped sterilization department with sufficient capacity to handle peak surgical volumes can prevent lapses caused by high workloads (14).

Together, high compliance with hand hygiene and instrument sterilization protocols serves as a dual pillar for improving surgical outcomes and ensuring patient satisfaction. By addressing areas for improvement and maintaining transparency in infection prevention measures, healthcare institutions can enhance trust and deliver safer, higher-quality care.

Methods

This study employed a hospital-based cross-sectional design conducted , involving parturients who underwent cesarean delivery under spinal anesthesia at X General Hospital. The source population consisted of all individuals who delivered via cesarean section with spinal anesthesia. The study population was defined as those who underwent this procedure during the specified study period.

Inclusion Criteria

The study included parturients classified as ASA-I or ASA-II who underwent either elective or emergency cesarean section with spinal anesthesia.

Exclusion Criteria

Parturients were excluded if they were unable to communicate due to severe illness, experienced failed or complicated spinal anesthesia, or suffered from chronic pain conditions.

Study Variables

The primary dependent variable was maternal satisfaction with spinal anesthesia, categorized as "satisfied" or "dissatisfied." Independent variables included sociodemographic factors, obstetric and medical history, preoperative care, anesthesia quality, intraoperative and postoperative experiences, and complications such as pain, nausea, vomiting, and headache.

Data Collection Tools and Procedures

After obtaining ethical clearance and approval from relevant authorities, data were collected preoperatively, intraoperatively, and postoperatively using a structured questionnaire. The tool was adapted from similar studies conducted in Eritrea and other works on perioperative care satisfaction, with modifications tailored to the study context (18, 19, 20). Data collection included a six-point Likert scale ranging from "very dissatisfied" (1) to "very satisfied" (6). The questionnaire covered four areas: preoperative information and visits (4 items), pain management and intraoperative care (4 items), postoperative care quality (3 items), and patient-anesthetist interactions (6 items), totaling 17 items. Data were collected at the time of discharge by two trained data collectors.

Data Analysis

Data were entered into SPSS version 20 for analysis. Descriptive statistics, including frequencies and percentages, were presented in tables. Relationships between independent variables and satisfaction levels were analyzed using binary and multivariable logistic regression. Variables with a p-value ≤ 0.2 in bivariable analysis were included in multivariable regression, and significance was determined at a p-value ≤ 0.05 with adjusted odds ratios and 95% confidence intervals.

Results

The study included a total of 120 participants, of which 96 (80%) were 30 years old or younger. Only 14.2% of the women who underwent cesarean delivery were unmarried. The (Table 1). Overall, 23 (19.2%) of the participants expressed dissatisfaction with the anesthesia services provided during perioperative care (Table 2).

Emergency cesarean sections accounted for the majority of procedures (84.2%), with fetal indications contributing to 63.3% of cases. More than half of the participants (55.8%) were multiparous. Most respondents (78.3%) had no pre-existing medical conditions (Table 2). Among the participants, 48 (40%) reported prior exposure to anesthesia, with spinal anesthesia used in 75% of those cases. Complications such as post-dural puncture headache (PDPH), back pain, and postoperative nausea and vomiting (PONV) were noted in 12.5% of the cases. Intraoperative complications included pain in 24 participants (20%) and PONV in 55 participants (45.8%) (Table 2).

Approximately 64.2% of participants expressed satisfaction with the level of information provided about the anesthesia plan and preoperative visits. Satisfaction regarding information on potential postoperative complications and explanations about the surgical procedure was reported by 52.5% and 58.3% of participants, respectively. Confidence in the operating theater staff was high, with 88.3% of participants expressing trust in their expertise. Furthermore, 81.7% of respondents were satisfied with the absence of pain at the spinal puncture site.

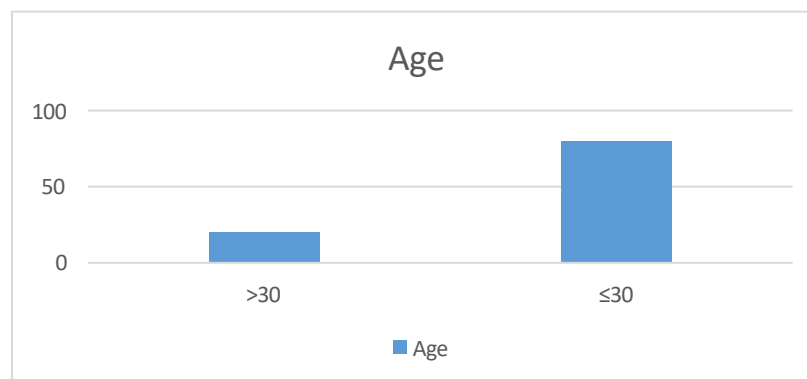
A total of 83.3% of participants reported satisfaction with the overall quality of care and the management of PONV. Similarly, 72.5% were content with the quality of care provided by the anesthetist.

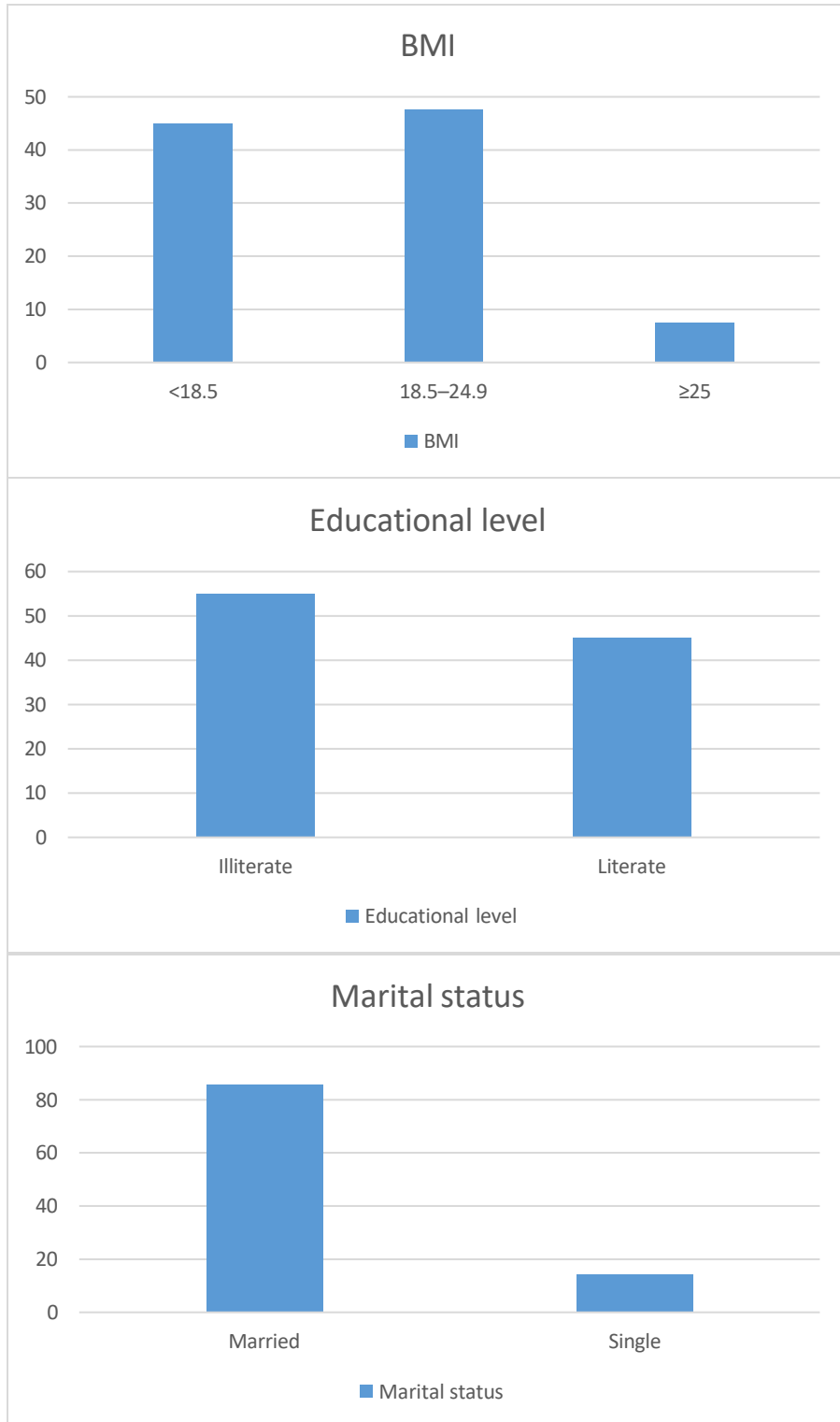
Almost all participants (99.2%) appreciated the attentiveness of the anesthesia team in addressing their complaints, such as pain and nausea. Additionally, 92.5% were satisfied with the team's willingness to answer their questions. Satisfaction was determined based on a total score threshold of 69 or higher. Younger participants (≤ 30 years) were generally more satisfied compared to older participants. Dissatisfaction was more common among literate individuals and those from rural areas. Multiple attempts at spinal needle insertion emerged as a significant factor contributing to dissatisfaction.

Table 1. Demographic characteristics of parturient who gave birth with cesarean section under spinal anesthesia at the General Hospital,

Variable	Categories	Frequency	Percentage
Age	>30	24	20
	≤ 30	96	80
BMI	<18.5	54	45
	18.5–24.9	57	47.5
	≥ 25	9	7.5
Educational level	Illiterate	66	55
	Literate	54	45
Marital status	Married	103	85.8
	Single	17	14.2
Residency	Urban	68	56.7
	Rural	52	43.3
Employment	Employed	42	35
	Unemployed	78	65

BMI: body mass index.





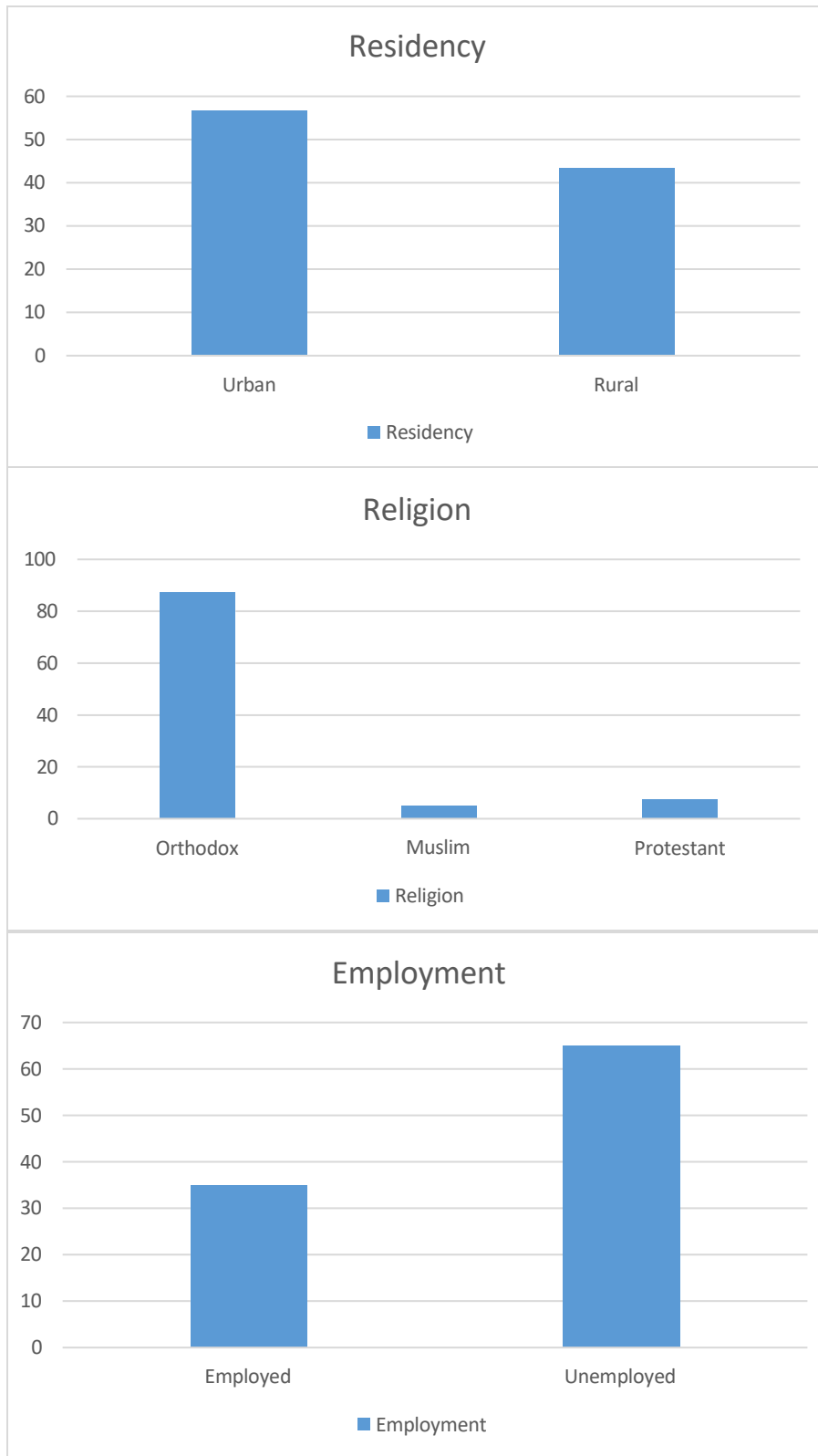


Table 2. Parturition and clinical characteristics of parturients who gave birth with cesarean section under spinal anesthesia at the General Hospital,

Variable	Category	Frequency	Percentage
ASA	II	120	100
Parity	Nulliparous	53	44.2
	Multiparous	67	55.8
Medical history	Yes	26	21.7
	No	94	78.3
Indication	Maternal	44	36.7
	Fetal	76	63.3
Type of surgery	Elective	19	15.8
	Emergency	101	84.2
Previous anesthesia	Yes (anesthesia before)	48	40
	No	72	60
Number of attempts	Once	59	49.2
	Repeated	61	50.8
Intraoperative pain	Yes	24	20
	No	96	80
PONV	Yes	55	45.8
	No	65	54.2
Satisfaction level	Satisfied	97	80.2
	Dissatisfied	23	19.8

Discussion

Research focused on evaluating patient satisfaction during the perioperative period is critical as it supports improvements in both overall patient care and anesthesia-specific practices (18,19). Satisfaction among mothers undergoing cesarean sections is influenced by numerous factors, including complications and side effects of spinal anesthesia, as well as sociodemographic variables (15). Factors such as individual expectations, resource availability, socioeconomic disparities, ineffective communication between patients and staff, insufficient anesthesia, and lack of follow-up care from anesthetists may contribute to either satisfaction or dissatisfaction.

Various dimensions of perioperative care were analyzed to understand their impact on maternal satisfaction. These included preoperative interactions and information sharing, intraoperative care quality, postoperative management, and the overall relationship between the healthcare team and the patients.

While high satisfaction rates with spinal anesthesia are commonly reported, these figures may be inflated due to patients' tendency to provide socially desirable responses. To mitigate this bias, trained personnel unaffiliated with the patients' care conducted this study using a structured Likert scale.

In this study, the overall satisfaction rate of mothers undergoing cesarean sections with spinal anesthesia was 80.2%, although 33.3% expressed unwillingness to opt for spinal anesthesia in the future. Satisfaction levels varied across different aspects of care. For instance, 83.3% of participants were satisfied with the management of postoperative nausea and vomiting (PONV), while satisfaction with intraoperative pain relief reached 98.3%. However, preoperative activities, such as communication and information provision, received lower satisfaction ratings, ranging from 52.5% to 64.2%, indicating a need for improvement. Postoperative care provided by anesthetists also saw relatively lower satisfaction levels at 72.5%.

A study conducted elsewhere reported an overall satisfaction rate of 81.4%, comparable to the present findings. PONV management satisfaction in that study was 98.17%, while satisfaction with intraoperative pain management and postoperative back pain were 74.09% and 76.83%, respectively (3).

Another study identified dissatisfaction in 16.4% of participants, largely due to complications and side effects of spinal anesthesia (15). Similarly, research from another region revealed a dissatisfaction rate of only 3.7%, significantly lower than the current study's rate of 19.8%. This discrepancy may stem from differences in patient demographics, lifestyle, or clinical settings (24).

Additional studies reported satisfaction rates of 87.9%, 82.3%, and 83.8%, with contributing factors such as a single spinal needle attempt, successful anesthesia blocks, minimal post-dural puncture headache (PDPH), and the use of prophylactic antiemetics. In contrast, the current study's dissatisfaction rates were influenced by factors such as the

number of spinal needle attempts, patient residency, educational level, marital status, and prior exposure to anesthesia (25,26).

Some studies reported even higher satisfaction levels, with rates of 90.1% and 96.2%. Predictors of dissatisfaction in these studies included multiple spinal needle attempts, intraoperative pain, insufficient analgesia, and postoperative urinary retention (27,28).

In the present study, previous exposure to anesthesia emerged as a significant independent factor associated with satisfaction, with participants having prior experience being 3.94 times more likely to be satisfied (AOR 3.94; 95% CI 1.24–12.45; $p = 0.01$). This may be because prior familiarity with the anesthesia process helps patients manage expectations and develop coping mechanisms. Conversely, higher education levels were associated with lower satisfaction, potentially due to elevated expectations.

Conclusion

Overall, satisfaction with spinal anesthesia among mothers undergoing cesarean sections was moderate, with a score of 80.2%. However, satisfaction with preoperative communication and information provision was notably lower than other aspects of care. It is recommended that healthcare providers enhance preoperative education about the anesthesia process, surgical procedures, and potential complications. Addressing patient concerns comprehensively during the perioperative period can improve care quality and satisfaction.

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