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Level Of Patient Satisfaction Towards Spinal Anesthesia For Cesarean Section

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Abstract

Background: Patient satisfaction is essential to health-care quality, and researchers have found a significant correlation between patient outcomes and patient satisfaction scores. Patient satisfaction ratings were emphasized as a critical goal of health care over the previous decade There has been an increase in the use of spinal anesthesia for Caesarean section (CS) in KSA in the past decades. The study aims: to evaluate the level of satisfaction among patients who had spinal anesthesia, as an index of the quality of reproductive health care. Methods: A prospective observational study of 380 consenting participants in ASA classes I, II, and III, underwent CS under spinal anesthesia between January and July 2022. The satisfaction score was assessed using a three-point Likert scale. Data were analyzed using SPSS version 28. The level of statistical significance was set at p-value <0.05. Results: A total of 380 consenting patients underwent spinal anesthesia within the study period with (57.6%) aged ≥30 years. Most were emergency CS (70.3%). Most patients (77.4%) expressed satisfaction with being involved in decision-making about the choice of anesthesia technique. The majority of the patients (87.6%) were satisfied with pain relief during the operation. The complications experienced by the patients intraoperatively included dizziness, 50 (13.2%), shivering, (36.6%), and intraoperative nausea and vomiting, (12.6%). Overall, (77.6%) of the patients expressed willingness to have spinal anesthesia again in the future, out of the 295, 293 (99.4%) were satisfied with the current spinal anesthesia. P = 0.000. Conclusion: Maternal satisfaction with spinal anesthesia in[1] this study was high. This could be attributed to the patient's participation in decision-making, prompt treatment of complications, and overall good anesthetic care.

Introduction

One of the most important advances in modern medicine is the ability to deliver a baby through cesarean section (CS) while ensuring both mother and child survive [(1)]. In the preceding 20 years, there has been a rising trend in the CS rate, not only in developed countries but also in developing ones [(2)]. Obstetric anesthesia significantly alleviates surgical pain, including that of CS. Both general anesthesia and regional anesthesia are techniques for the procedure [(3)]. Nevertheless, when it comes to risks and benefits for both mother and fetus, regional anesthesia is the recommended procedure [(4)]. Improving pregnant women's knowledge and attitude toward anesthesia as a part of routine preoperative patient education is crucial to a successful perioperative result, the management of medico-legal situations, and the patient's decision-making process. It has been demonstrated that a positive attitude toward anesthesia and adequate patient education reflect favorably on patient

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outcomes [2].

There is a rise in the trend of cesarean section rates for both emergency and elective surgical deliveries [5, 6], and spinal anesthesia as the anesthetic technique of choice has also been on the increase [5-7]. Regional anesthesia for cesarean delivery has generally been on the rise globally. In the United Kingdom, a survey by Jenkins and Khan (2003) [8] showed a 95% spinal anesthesia rate for cesarean section. While in the West Indies by December 2001 more than eight out of ten cesarean sections were being done under spinal anesthesia [9]. Imarengiaye et al., (2017) [10] reported that over 85% of the cesarean sections were conducted under spinal anesthesia. Anesthetists usually prefer spinal anesthesia for cesarean delivery because it is safe and comfortable for the mother and is associated with the least fetal depression, as well as providing the best surgical conditions for the surgeon [11].

Spinal anesthesia also has other advantages when compared to general anesthesia, such as the reduced need for postoperative analgesia, fewer thromboembolic events, higher Apgar scores, and, more importantly, earlier onset of postoperative oral nutrition in the mother [12-14]. A prospective evaluation of maternal satisfaction with spinal anesthesia is important to ascertain the changes required to improve the overall quality of health-care delivery to the patient. Patient satisfaction is a subjective and complex concept involving physical, emotional, psychological, social, and cultural factors [15]. It is an experience of the quality of care and a difficult outcome to measure, mainly because it is a subjective multidimensional concept based on patient expectations [16].

The complications of spinal anesthesia, such as inadequate block, pain, shivering, nausea, and vomiting, as well as the spinal anesthesia procedure itself, can be uncomfortable for the patients [17]. Porter et al., (2007) [18] concluded that anesthesia was the single most important factor that leads to unsatisfactory memories of childbirth. Another study conducted by Adegboye et al., (2019) [19] reported that 88.9% of cesarean delivery were by spinal anesthesia. However, despite the high rate of spinal anesthesia for cesarean delivery, there has been no study to assess the level of maternal satisfaction after the administration of spinal anesthesia. Does this choice of spinal anesthesia for a parturient undergoing cesarean delivery meet the patient's satisfaction? Patient satisfaction is an objective way to provide feedback to the healthcare givers on the aspects that need improvement. It is the most important element in healthcare organizations and the top goal for any healthcare delivery strategy [20].

Studies conducted on maternal satisfaction following spinal anesthesia for cesarean delivery revealed variations in the rate of satisfaction, while most developed countries reported higher satisfaction rates, most developing African and Asian countries showed a relatively lower maternal satisfaction rate [21, 22]. Therefore, this study aimed to ascertain the level of maternal satisfaction following spinal anesthesia for cesarean delivery and to identify the predictors of dissatisfaction associated with spinal anesthesia for cesarean delivery to improve the quality of healthcare delivery and to meet the patient's needs.

Methods

A prospective observational study was carried out on women who underwent cesarean delivery under spinal anesthesia in ASA classes I, II, and III and underwent CS under spinal anesthesia between January and July 2022 in a Hospital in Makkah, KSA. The hospital provides primary, secondary, and tertiary health services to the population. It also serves as a major referral center for all areas. Institution ethical approval was obtained. Inclusion criteria were all participants aged between 18 and 49 years with American Society of Anesthesiologists (ASA) physical status class I, II, and III who consented to participate in the study. While the exclusion criteria were participants who did not consent to participate in the study, participants with communication problems with the investigator, participants who had failed the spinal anesthetic technique and had to be converted to general anesthesia, participants who were delivered through other methods of anesthesia, for example, epidural anesthesia and participants who delivered per vagina.

Sample size determination

The following formula, described by Cochran, was used to calculate the sample size [23]. $n = Z (1 - \propto/2) \times P (1 - P)/d$ Where; $Z (1 - \propto/2)$ is the standard error of the mean corresponding to a 95% confidence interval and the corresponding value from a t-table is 1.96. P = the proportion of the target

population, that is, the incidence of spinal anesthesia at 48% [7]. d = is the target margin of error at 0.05 n = sample size n = 379. Therefore, a sample size of 380 patients was used for the study.

The study included all participants scheduled for cesarean delivery under spinal anesthesia. During the pre-anesthetic review, all patients with ASA I, II, and III physical status between the ages of 18–49 years scheduled for cesarean section under spinal anesthesia were enrolled in the study. The spinal anesthetic technique to be used was carefully explained to the patient by the investigators, as well as the complications, and other outcomes related to the procedure during the pre-anesthetic review. Patients were pre-loaded with 15 ml/kg of 0.9% normal saline over 15 min before spinal anesthesia. A sterile tray for spinal anesthesia was set up. Standard asepsis was maintained.

The patient was positioned seated for the sub-arachnoid block with the feet placed on a stool so that the hips and knee were in a flexed position and the neck flexed. The skin over the lower back was cleaned with povidone-iodine. The spinal anesthesia was performed using the L4/L5 or L3/L4 interspace. The spinal puncture site was infiltrated with 2mls of 1% lidocaine using a 25 G 30 mm hypodermic needle before the introduction of a 26 G Quinkes spinal needle using a midline approach and following a continuous free flow of cerebrospinal fluid, 12.5 mg of 0.5% hyperbaric bupivacaine was injected slowly without barbotage.

Postoperatively in the recovery room patients' satisfaction with anesthesia was assessed using a questionnaire sheet consisting of the five-point Likert scale (Very dissatisfied, Dissatisfied, neither satisfied nor dissatisfied, Satisfied, Very satisfied) [24]. Provision for an interpreter was made available by investigators who assisted in interpretation during the interview in cases of patients who could not communicate in the English language. The sampling method was purposive sampling in which all consenting patients who satisfied the inclusion criteria were recruited into the study. All information obtained during the conduct of the study was handled with confidentiality and used only for the study.

The data were analyzed using SPSS Statistics for Windows, Version 28.0. Demographic data such as age groups, parity, education level, and previous exposure to anesthesia are presented as frequency distribution. The five-point Likert scale [24] was compressed to a three-point Likert scale (Satisfied, neither satisfied nor dissatisfied, Dissatisfied) for ease of analysis to measure patient satisfaction. The results are expressed as means and percentages and presented in tables and figures as appropriate. The level of significance for comparative analysis was p-value <0.05.

Result

A total of 380 participants were enrolled in the study. **Table (1)** shows a summary of the socio-demographic aspects of the participants. Most of the participants were above 30 years of age with a mean age of 30.58 years and minimum and maximum age being 18 and 45 years, respectively. The participants were mostly university graduates 239 (62.9%). The majority of the participants were multiparous 313 (82.4%). About half of the participants had previous exposure to anesthesia 187 (49.2%) out of which 144 (77%) had spinal anesthesia. The ASA physical status of most of the participants was ASA II 228 (75.8%), 58 (15.2%) were ASAIII of which 24 (41.4%) of them were patients with severe preeclampsia.

Most of the cesarean section was done as emergency 267 (70.3%). About 182 (49.2%) of the participants had previous exposure to anesthesia, out of which 144 (77.0%) had spinal anesthesia. Preoperatively 102 (90.3%) participants out of the 113 (29.7%) who had their cesarean section performed as elective were satisfied with the explanation of spinal anesthesia and 209 (78.3%) participants out of the 267 (70.3%) who had their cesarean section performed as an emergency procedure were satisfied with the explanation of spinal anesthesia **(Table 1)**.

Table (2) shows that a total of participants 294 (77.4%) were satisfied with being involved in the decision-making of the choice of spinal anesthesia as the anesthetic technique. Out of the 294 participants, 94 (31.97%) of them had elective cesarean deliveries and 200 (68.03%) had emergency deliveries. The majority of the mothers (94%) were satisfied with the absence of pain during lumbar puncture. Most of the participants 333 (87.6%) were satisfied with the intraoperative pain relief. In contrast, 364 (95.8%) of the participants were satisfied with the overall conduct of the spinal anesthesia.

Table (3) shows that out of the 380 participants that had cesarean section performed under

spinal anesthesia 48 (12.6%) had intraoperative nausea and vomiting, 50 (13.2%) had intraoperative dizziness and 139 (36.6%) had intraoperative shivering.

Table (4) shows that 37 (77.0%) participants were satisfied with the treatment of intraoperative nausea and vomiting by administering intravenous metoclopramide. While 40 (80.0%) and 95 (68.8%) were satisfied with the treatment of intraoperative dizziness and intraoperative shivering respectively

Table (5) compares the level of satisfaction of the participants with spinal anesthesia and whether spinal anesthesia would be their anesthetic choice in the future. The majority of the participants 295 (77.6%) said they would accept spinal anesthesia for a similar procedure in the future. Most of the participants who chose spinal anesthesia as the technique in the future were satisfied with spinal anesthesia 293 (99.4%) with a p-value of 0.000.

Table (1): Socio-demographic characteristics of the participants

Variable		Frequency	%
Age	<30	161	42.4%
	≥30	219	57.6%
Educational Level	Uneducated	7	1.8%
	Primary school	21	5.5%
	Secondary school	113	29.7%
	Graduate	239	62.9%
Parity	Primiparous	67	17.6%
	Multiparous	313	82.4%
Type of surgery	Emergency	267	70.3%
	Elective	113	29.7%
ASA Status	I	34	8.9%
	II	288	75.8%
	III	58	15.3%
Previous exposure to anesthesia	Yes	187	49.2%
	No	193	50.8%
Previous anesthetic technique	General anesthesia	40	21.4%
	Spinal	144	77.0%
	Other regional technique	3	1.6%

Table (2): Level of satisfaction with, explanation of spinal anesthesia, pre-operative decision-making,

injection of spinal anesthesia, intraoperative pain relief, and satisfaction with anesthetic care.

Variable	D (%)	NS/D (%)	S (%)	Total
Explanation of spinal anesthesia	8 (2.1%)	61 (16.1%)	311 (81.8%)	380 (100%)
Decision making for choosing spinal anesthesia	12 (3.1%)	74 (19.5%)	294 (77.4%)	380 (100%)
Injection of spinal anesthesia	23 (6.0%)	25 (6.6%)	332 (87.4%)	380 (100%)
Intraoperative pain relief	27 (7.1%)	20 (5.3%)	333 (87.6%)	380 (100%)
Satisfaction with spinal anesthesia.	5 (1.3%)	11 (2.9%)	364 (95.8%)	380 (100%)

D = Dissatisfied, NS/D = Neither satisfied nor dissatisfied, S = Satisfied

Table (3): Intraoperative complication of spinal anesthesia experienced by the participants

Variables	Yes (%)	No (%)	Total (%)
Intraoperative nausea and vomiting	48 (12.6%)	332 (87.4%)	380 (100%)
Intraoperative dizziness	50 (13.2%)	330 (86.8%)	380 (100%)
Intraoperative shivering	139 (36.6%)	241 (63.4%)	380 (100%)

Table (4): Level of satisfaction with the treatment of intraoperative nausea and vomiting, intraoperative dizziness, and intraoperative shivering.

Variable	D (%)	NS/D (%)	S (%)	Total (%)
Intraoperative nausea and vomiting	3 (6.3%)	8 (16.7%)	37 (77.0%)	48 (100%)
Intraoperative dizziness	3 (6.0%)	7 (14.0%)	40 (80.0%)	50 (100%)
Intraoperative shivering	20 (14.5%)	23 (16.7%)	95 (68.8%)	138 (100%)

D = Dissatisfied, NS/D = Neither satisfied nor dissatisfied, S = Satisfied

Table (5): Comparing participants' level of satisfaction with spinal anesthesia to the choice of spinal anesthesia next time.

Level of satisfaction to spinal anesthesia	Acceptance of spinal anesthesia in future N (%)				p-value
	Yes	No	Not sure	total	
D	1 (0.3%)	2(16.7%)	2 (2.7%)	5 (1.3%)	0.000
NS/D	1 (0.3%)	1(8.3%)	9 (12.3%)	11 (2.9%)	
S	293 (99.4%)	9(75%)	62 (85%)	364 (95.8%)	
Total	295 (100%)	12 (100%)	73 (100%)	380 (100%)	

D = Dissatisfied, NS/D = Neither satisfied nor dissatisfied, S = Satisfied

Discussion

The maternal satisfaction rate of spinal anesthesia for cesarean delivery in this study is 95.8%. A recent study reported a maternal satisfaction rate of 87.9% in mothers towards spinal anesthesia for cesarean delivery [25]. These rates are in keeping with several studies that have reported the maternal satisfaction score of spinal anesthesia to be generally high, ranging from 85% to 100% [21, 26, 27]. The level of satisfaction with the pre-anesthetic explanation of the procedure in this study was 81.8%, which is relatively low compared with that of Dharmalingam and Zainuddin, (2013) [21] which was 98%, but higher than that of Uziele et al., (2019) [28] (67.1%).

The lower level of satisfaction with the explanation of the procedure in our study could be attributed to the fact that most of the cesarean deliveries were performed as emergencies 267 (70.3%) when the participants were already experiencing labor pain and unsure of the ability of spinal anesthesia to offer immediate pain relief. Therefore, further breaking it down, the satisfaction level with the explanation of the spinal procedure was less among the participants who had emergency cesarean section 78.3% when compared to those participants who had elective cesarean section 90.3%. Some previous authors who recorded lower pre-anesthetic levels of satisfaction with the explanation of the procedure are also in agreement with our argument that it is because the participants were experiencing labor pains, especially with participants for emergency cesarean section, but attributed the reason to the fact that the participants may not have concentrated on the explanation of spinal anesthesia given by the anesthetist [21, 26].

Shisanya and Marema, (2017) [26] further explained that besides the presence of labor pain that is associated with low satisfaction scores, lack of pre-anesthetic visits at all to the participants also leads to low satisfaction to pre-anesthesia explanation. In the current study, because of the high level of satisfaction with the preoperative explanation of spinal anesthesia, the overall maternal satisfaction level with spinal anesthesia was significantly influenced. The level of satisfaction of participants with the opportunity to be involved in decision-making to have spinal anesthesia for cesarean delivery was 77.4% in this study, which is lower compared to that reported by Turnbull et al., (1999) [29] reported 90.9%.

However, if we break it down into satisfaction with involvement in decision-making in participants for elective cesarean section and those for emergency cesarean section, the satisfaction scores were 83.2% and 74.9%, respectively. This is comparable to that obtained by Mould et al., (1996) [30] who reported a satisfaction score of 93% for elective cesarean delivery and 69% for emergency cesarean delivery. Therefore, our study demonstrated that participants had a good satisfaction score when involved in the decision-making to have their cesarean section by spinal anesthesia. There was a high level of maternal satisfaction with intraoperative pain control in this study 87.6%. Most intraoperative pain is usually a discomfort felt during the uterus exteriorization and peritoneal retraction [31].

Once the baby was delivered patients who complained of pain were given intravenous pethidine and diclofenac sodium according to their body weight. A similar study by Siddiqi and Jafi, (2009) [27] reported a maternal satisfaction score of 74.09% for intraoperative pain control. The higher satisfaction in our study may be because our data collection was done in the recovery room (immediate postoperative period) compared to the study by Siddiqi and Jafi, (2009) [27] in which there was no limit on the time of data collection after the cesarean delivery. When the analgesic effect of spinal anesthesia wears off, the patient starts having post-operative pain and if the pain is not managed properly it may be difficult for some participants to differentiate between intraoperative and

postoperative pain, therefore, resulting in a lower anesthesia satisfaction score. The high score of maternal satisfaction with pain control in this study shows that spinal anesthesia is effective in controlling pain during the surgery and in the immediate postoperative period after the cesarean delivery.

Intraoperative shivering after spinal anesthesia is a frequent event, occurring in up to 55% of the cases [32]. The shivering is caused by hypothermia due to the redistribution of heat, mainly following vasodilation below the level of the neuraxial block [33]. In the current study, 36.6% of the participants had intraoperative shivering and maternal satisfaction with the treatment of shivering was the lowest in our study 68.8%. This is similar to the 40.2% reported by Uziele et al., (2019) [28]. Therefore, there is a need for prompt recognition of post-spinal shivering and treatment with the appropriate drug, such as opioids, following spinal anesthesia.

The current study showed that 295 (77.6%) of the participants accepted that they would choose spinal anesthesia for a similar procedure in the future out of these 295, 293 (99.4%) of them were satisfied with the conduct of the current spinal anesthetic technique. This was statistically significant p = 0.000. Similar findings were reported by Uziele et al., (2019) [28] and Sadeghi et al., (2017) [15] in which 95% and 78.6% of their participants who had spinal anesthesia as their choice of anesthesia wished to use spinal anesthesia for similar future surgeries. However, some factors such as dissatisfaction with the treatment of intraoperative shivering, intraoperative nausea, and vomiting, poor explanation of the spinal anesthetic procedure, participation in decision-making, and injection site pain are variables in the overall satisfaction to spinal anesthesia, which could be simply controlled.

Conclusion

The overall satisfaction to spinal anesthesia in our study was high 95.8% which is good because ideally, a satisfaction level closer to 100% should be the target. This high level of satisfaction could be attributed to the patient's participation in decision-making, prompt treatment of complications, and overall good anesthesia care which are important factors in ensuring maternal satisfaction following spinal anesthesia for cesarean delivery.

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