Cross-sectional Study

Assessment of satisfaction and associated factors of parturients underwent cesarean section with spinal anesthesia at the General Hospital, Ethiopia; 2019

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**ABSTRACT**

Background and aim: Spinal anesthesia for cesarean section is now a day a popular plan of anesthesia because of its rapid onset and high frequency of successful blockade. It is a vital monitor to the quality of care in anesthesia. The main aim of this study was to assess the level of maternal satisfaction and associated factors after cesarean section under spinal.

Methods: Hospital-based cross-sectional study was conducted on mothers who underwent cesarean section with spinal anesthesia. Descriptive analysis and chi-square test were employed. Bivariable and multivariable logistic regression was used to measure the association of factors with the level of satisfaction. A p-value of <0.25 and ≤ 0.05 was used to decide statistical significance for bivariable and multivariable logistic regression respectively.

Findings: The overall satisfaction level of parturients after spinal anesthesia was 97(80.2%). The satisfaction level was 83.3% with PONV treatment, 98.3% with intraoperative analgesia, between 52.5% and 64.2% to preoperative activities, and 72.5% for postoperative patient care by the anesthetist. Having previous anesthesia was the independent factor that has a significant association with the level of satisfaction with AOR, 3.94; 95%CI, 1.24–12.45; P- 0.01.

Conclusion: In general, the overall satisfaction of the mothers towards spinal anesthesia was fair with a satisfaction score of 80.2%. Parturients were highly dissatisfied with the preoperative visit and information subscale as compared to the other subscales.

1. Introduction

Spinal anesthesia for cesarean section is an old and well-established method. It became popular for cesarean delivery because of its rapid onset and a high frequency of successful blockade [1]. The development of thinner spinal needles and better local anesthetic agents like bupivacaine for intrathecal use and more knowledge of the path physiology of hypotension may have contributed to the rising popularity of spinal anesthesia [2]. The advantages of regional anesthesia include an awake mother, minimal depression of the newborn, and avoidance of the risks of general anesthesia complications (especially failed intubation and aspiration); with its simplicity, small drug dose, low failure rate, and rapid onset [3]. The choice of anesthesia for any cesarean section depends on multiple factors like the indication of surgery, the urgency of the operation, and patient’s as well as surgeon’s desire [2,4,5].

Anesthetists always choose the method that is believed to be safest and most comfortable for the mother, least depressant to the newborn and provides the optimal working conditions for the obstetrician [6,7]. Despite these, patient satisfaction is one of the meaningful indicators of patient experience of health care services. Patient satisfaction is a subjective and complex concept involving physical, emotional, mental, social, and cultural factors [8]. Patient satisfaction and experience of the quality of care is a difficult outcome to measure, mainly because it is a subjective multidimensional concept, based on patient expectations [9]. Asking patients what they think about the care they have received is an important action to improve the quality of care and to ensure the local health services to meet patients’ needs. Satisfaction is measured by parturient thorough evaluation and assessment of the experience after consuming a good service of care by health providers [10,11]. It is determined by the quality of the provided care.
and expectations of that care. Measuring factors that influence patient satisfaction is vital to monitor the quality of care in anesthesia.

According to the World Bank report in Ethiopia indicates that about 52% of respondents perceived the quality of care they received as good whereas about 30% of households who visited government health facilities consider the quality of care they received to be below the average [12]. Patient satisfaction has gained greater attention in recent years because of the emphasis on patient-centered care and the increasing number of family physicians leaving small group practices and entering large organizations, many of which use patient surveys to measure patient satisfaction with multiple aspects of their health care. Valid and appropriately used patient satisfaction scores help to improve the quality of care and service, but they can have unintended consequences as well, such as diminished physician satisfaction. According to a study, 78% of clinicians reported patient satisfaction scores moderately or severely affected their job satisfaction negatively, and 28% of the scores made them consider quitting [13].

Different possible factors can affect maternal satisfaction. Mothers come across various personnel understandings regarding to the care; the urgency of surgery as well as busy schedule lead to lack of communication; complications and side effects of spinal anesthesia are most commonly suspected risk factors [14,15]. American Society of Anesthesiologists (ASA) patient satisfaction guideline stated that in the future, it is likely that payment for anesthesia depends in part on measures of patient satisfaction [16]. Measuring the level of satisfaction and factors that influence parturient satisfaction is vital to monitor the quality of care in anesthesia. The satisfaction level and possible factors of it are highly variable across different setups due to caregivers, maternal sociodemographic, and setup variation. Therefore, this study aimed to assess the level of satisfaction and its associated factors of parturients who gave birth with the cesarean section under spinal anesthesia.

2. Methods

2.1. Study design, area, and period

A hospital-based cross-sectional study was conducted from March 01- May 30/2019 on parturients who gave birth with cesarean section under spinal anesthesia at X General Hospital. This research was reported according to the STROCSS criteria [17]. and was registered at www.researchregistry.com with a research registry number of 6608.

2.2. Population

All parturient who gave birth with cesarean section under spinal anesthesia were the source population while parturients who underwent C/S with spinal anesthesia during the study period were the study population.

2.3. Inclusion criteria

All ASA-I and ASA-II parturients who underwent both elective and emergency cesarean section with spinal anesthesia were included.

2.4. Exclusion criteria

Parturient those who are unable to communicate due to serious illness; failed or complicated spinal anesthesia; parturient with chronic pain.

2.5. Sample size and sampling technique

The sample size was determined by taking the assumption; the overall satisfaction of parturient who gave birth by C/S from a study conducted in Addis Ababa, at Gandhi Memorial hospital in 2015 was 62% [18]. With a confidence level of 95% and margin of error to be tolerated 0.05 sample size was calculated by a single proportion formula as 362. The total number of parturients who underwent cesarean delivery at the study area in three months was 180. By applying a reduction formula for the assumption the final sample size was 120. These 120 parturients were included by the non-probability convenience sampling technique.

2.6. Study variables

Parturient satisfaction towards spinal anesthesia (satisfied/dissatisfied) was the dependent variable of this study. Whereas, the independent variables were sociodemographic characteristics, parturition and past medical history, quality, attention, pain, and preoperative visit, previous experience of surgery and anesthesia, anesthesia technique and attempt, intraoperative and post-operative compliant like pain, nausea/vomiting, and headache.

2.7. Data collection tool and technique

After getting ethical clearance and permission from the responsible bodies of the university and the hospital, pre-operative, intra-operative, and postoperative data were collected from the participants at the postoperative period by using a constructed data collection tool. The data collection tool was adopted from the previous work done in Eritrea on a similar topic and “Patient’s satisfaction with perioperative care: development, validation, and application of a questionnaire” with slight modifications according to our setup [18-20]. Two data collectors after adequate training were involved to collect the data. A six-point Likert scale was used with very dissatisfied (1), dissatisfied (2), slightly dissatisfied (3), slightly satisfied (4), satisfied (5), and very satisfied (6). The tool has four components including the information and preoperative visit (4items), pain therapy and intraoperative care (4items), postoperative and quality care (3items), and patient-anesthetist relationship (6 items) with a total of 17 items. The data collection tool was filled at the time when the parturients discharge to their home. The data was collected by two data collectors who were trained about the technique of data collection for this specific research.

2.8. Data quality assurance

To ensure the quality of data training was given for data collectors and pretest was done. Daily checkup for the collected data was done whether it was properly filled in the prepared format or not.

2.9. Data analysis and process

After checking the completeness of the data collection tool, data were entered into SPSS version 20 software. A descriptive analysis was done using frequency and percentage which were summarized and interpreted with tables. Independent variables were analyzed using binary and multivariate logistic regression with the dependent variable level of satisfaction. Variables with a p-value of <0.2 from the bivariate analysis were fitted to a multivariable logistic regression to check their association with the level of satisfaction. Adjusted Odds ratio with 95% confidence interval and p-value of <0.05 was considered to determine factors which had associated to the level of satisfaction.

2.10. Operational definitions

Quality- It is balanced expectation between the parturient and what the anesthetist delivered quality services in all aspect of the parturient perspective.

Satisfaction level: maternal satisfaction in this study was classified according to the demarcation threshold formula. The formula we used was;
3.2. Parturition and clinical finding

Most of the respondents (84.2%) had undergone emergency surgery with 63.3% of fetal indications. More than half of the respondents (55.8%) were multiparous. The majority of the respondents (78.3%) had no known medical conditions (Table 2). From the participants, 48 of the (55.8%) were multiparous. The majority of the respondents (78.3%) had age ≤ 30 were more satisfied than being the age of >30 years. Parturients being literate and came from the rural area were more dissatisfied. Repeated spinal anesthesia needle insertion attempt was risk factors for dissatisfaction (Table 4).

3.3. Satisfaction of parturients towards anesthesia service

Preoperative visit and information: About 64.2% of the participants were satisfied with the amount of information given about the anesthesia plan and preoperative visit. 52.5% and 58.3% of the participants were satisfied with the information about postoperative complication and explanation about the operation respectively (Table 3).

Post-operative and quality care: 83.3% of parturients were satisfied with the overall quality of care and treatment of PONV, 72.5% of the participants develop intraoperative pain and PONV respectively (Table 2).

Patient – anesthetist relationship: 99.2% of participants were satisfied with the anesthesia professional’s attention to the complaints like pain and nausea. 92.5% of parturients were satisfied with the anesthesia team willing to listen to the participant’s questions (Table 3).

3.4. Distribution of satisfaction level among the independent variables

The total score of satisfaction level above and equal to 69 was considered as satisfied. Most of the participants had age ≤ 30 were more satisfied than being the age of >30 years. Parturients being literate and came from the rural area were more dissatisfied. Repeated spinal anesthesia needle insertion attempt was risk factors for dissatisfaction (Table 4).

3.5. Factor analysis

Factor analysis was done by bivariable and multivariable logistic regression. Based on the result of the regression, five factors were detected with bivariable analysis and only having previous anesthesia was significantly associated with the level of satisfaction (Table 5).

4. Discussion

Researches aimed to assess patient satisfaction in the perioperative period is important as it helps us in improving the quality of overall patient care and anesthesia-related quality cares as well [18,19].
The level of maternal satisfaction was varied based on each activity. The satisfaction rate for spinal anesthesia in the future was 83.3% with PONV treatment, 98.3% with intraoperative staffs and the parturients. Satisfaction with postoperative care assessed based on different perspectives in the preoperative visit and not directly involved in that patient's care and by using the Likert scale.

Several aspects of perioperative care that were thought to likely influence maternal satisfaction were assessed. The satisfaction was assessed based on different perspectives in the preoperative visit and information communication between the mothers and the anesthetist, intrapartum patient care and quality of management, postoperative patient follow up by the anesthetist, lack of adequate anesthesia, and ignored postoperative patient follow up by the anesthetist.

According to a study done in Tunisia to assess the satisfaction of cesarean section with spinal anesthesia at the General Hospital (Bivariable and Multivariable logistic regression), 2019.

Multidimensional perspectives were considered for predictors of maternal satisfaction. Having different complications and side effects of spinal anesthesia in addition to sociodemographic factors might be the predictors of satisfaction level. Possible reasons for the satisfaction/dissatisfaction might be interpersonal variation based on expectations, resources, socioeconomic variation, poor communication between the parturients and staffs, lack of adequate anesthesia, and ignored postoperative patient follow up by the anesthetist. Therefore, several aspects of perioperative care that were thought to likely influence maternal satisfaction were assessed. The satisfaction was assessed based on different perspectives in the preoperative visit and information communication between the mothers and the anesthetist, intrapartum patient care and quality of management, postoperative patient follow up by the anesthetist, lack of adequate anesthesia, and ignored postoperative patient follow up by the anesthetist.

Table 3
Responses of parturients to satisfaction statements about Anesthesia care.

| Variables | Satisfied (score ≥ 69; N (%)) | Dissatisfied (score < 69; N (%)) |
|-----------|-------------------------------|---------------------------------|
| Preoperative visit and information | To what degree you satisfied with the amount of information given about the anesthesia plan? | 77 (64.2%) | 43 (35.8%) |
| | To what degree you satisfied with the explanation about the operation? | 70 (58.3%) | 50 (41.7%) |
| | To what degree you satisfied with the preoperative visit? | 77 (64.2%) | 43 (35.8%) |
| | To what degree you satisfied with the information about postoperative complication? | 63 (52.5%) | 57 (47.5%) |
| Pain therapy and intraoperative care | To what degree you satisfied with pain therapy after surgery? | 106 (88.3%) | 14 (11.7%) |
| | To what degree you were satisfied with the treatment of nausea and vomiting after the operation? | 92 (76.7%) | 28 (23.3%) |
| | How you satisfied with the absence of pain at the puncture site? | 98 (81.7%) | 22 (18.3%) |
| | How you satisfied with the absence of pain during the operation? | 118 (98.3%) | 2 (1.7%) |
| | How would you rate the quality of your overall care at the facility? | 100 (83.3%) | 20 (16.7%) |
| | How satisfied were you with the treatment of nausea and vomiting after the operation? | 100 (83.3%) | 20 (16.7%) |
| | How would you rate the quality of your overall care by the anesthetist? | 87 (72.5%) | 33 (27.5%) |
| | Did the staff of the operating theatre show understanding for your situation? | 56 (46.7%) | 64 (53.3%) |
| | Are you comfortable positioning when SA being given? | 73 (60.8%) | 47 (39.2%) |
| | Did the staff of the operating theatre pay attention to you as an individual? | 81 (67.5%) | 39 (32.5%) |
| | To what degree you satisfied with the information about postoperative pain? | 95 (79.2%) | 25 (20.8%) |
| | To what degree you satisfied with the anesthesia complaints like pain and nausea? | 119 (99.2%) | 1 (0.8%) |
| | To what degree you satisfied with the anesthesia team willing to listen to your questions? | 111 (92.5%) | 9 (7.5%) |

Table 4
Level of maternal satisfaction in related with different risk factors of participants (n = 120; with chi-square test), 2019.

| Variable Categories | Satisfied (score ≥ 69; N (%)) | Dissatisfied (score < 69; N (%)) |
|---------------------|-----------------------------|-----------------------------|
| Age | >30 | 19 (79.2%) | 5 (20.8%) |
| | ≤30 | 78 (81.2%) | 18 (18.8%) |
| BMI | <18.5 | 45 (83.3%) | 9 (16.7%) |
| | 18.5–24.9 | 44 (77.2%) | 13 (22.8%) |
| | ≥25 | 8 (88.9%) | 1 (11.1%) |
| Educational level | Illiterate | 57 (13.6%) | 9 (86.4%) |
| | Literate | 40 (74.1%) | 14 (25.9%) |
| Marital status | Married | 86 (83.5%) | 17 (16.5%) |
| | Single | 11 (64.7%) | 6 (35.3%) |
| Residency | Urban | 52 (76.5%) | 16 (23.5%) |
| | Rural | 45 (86.5%) | 7 (13.5%) |
| Religion | Orthodox | 87 (82.9%) | 18 (17.1%) |
| | Muslim | 3 (50) | 3 (50) |
| | Protestant | 7 (77.8%) | 2 (22.2%) |
| Employment | Employed | 34 (81) | 8 (19) |
| | Unemployed | 63 (80.8%) | 15 (19.2%) |
| Number of attempts | Yes | 20 (76.9%) | 6 (23.1%) |
| | No | 77 (81.9%) | 17 (18.1%) |
| Pain | No | 19 (79.2%) | 5 (20.8%) |
| | Yes | 19 (79.2%) | 5 (20.8%) |
| Type of surgery | Emergency | 50 (84.7%) | 9 (15.3%) |
| | Elective | 47 (77) | 14 (23) |
| PONV | Yes | 45 (82.8%) | 10 (18.2%) |
| | No | 52 (80) | 13 (20) |
| Number of attempts | Yes | 44 (91.7%) | 4 (8.3%) |
| | No | 19 (79.2%) | 5 (20.8%) |
| Education | No | 87 (82.9%) | 18 (17.1%) |
| | Yes | 3 (50) | 3 (50) |
| Marital status | Married | 86 (83.5%) | 17 (16.5%) |
| | Single | 11 (64.7%) | 6 (35.3%) |
| | Repeated | 1 | 1 |

PONV: postoperative Nausea Vomiting; BMI: Body Mass Index.

Table 5
Factors associated with the level of satisfaction for parturients who underwent cesarean section with spinal anesthesia at the General Hospital (Bivariable and Multivariable logistic regression), 2019.

| Variables | Categories | COR, 95% CI & P-value | AOR, 95% CI & P-value |
|-----------|------------|------------------------|-----------------------|
| Residency | Urban | 1.98, 0.75–5.24, 0.12 | 1.28, 0.30–5.55, 0.6 |
| | Rural | 1 | 1 |
| Previous anesthesia | Yes | 0.25, 0.08–0.8, 0.01 | 3.94, 1.25–12.45, 0.02 |
| | No | 1 | 1 |
| Education | illiterate | 0.45, 0.18–1.14, 0.07 | 1.35, 0.44–4.27, 0.55 |
| | literate | 1 | 1 |
| Number of attempts | Yes | 0.6, 0.24–1.54, 0.2 | 1.49, 0.60–3.7, 0.33 |
| | No | 1 | 1 |
| Marital status | Repeated | 1 | 1 |
| | Single | 0.36, 0.12–1.11, 0.07 | 1.49, 0.60–3.7, 0.33 |

COR: crude odds ratio; CI: confidence Interval; AOR: adjusted odds ratio.

analgesia which is satisfactory. Regarding preoperative activities, the satisfaction level was between 52.5% and 64.2% which needs improvement to scale up the quality of care and patient satisfaction. Satisfaction for postoperative patient care by the anesthetist was 72.5% which is still low and improvement might be required.

The result of a study done in Bahawalpur is approachable with the overall satisfaction of parturients was 81.4%. The satisfaction score with PONV was 98.17%, with intraoperative pain and discomfort was 74.09% and with postoperative backache was 76.83%.

According to a study done in Tunisia to assess the satisfaction of maternal satisfaction.
participants towards spinal anesthesia; 16.4% of them were dissatisfied with the care. The dissatisfaction was provoked by complications and side effects of spinal anesthesia [15].

The dissatisfaction level of mothers who gave birth in Korea was 3.7% with spinal anesthesia. This is much less than the current study since it is 19.8%, possibly due to different factors like sociodemographic factors, lifestyle of the participants, setup variation of the clinical care [24]. By considering the marital status and intraoperative pain as a factor; the satisfaction level of parturients who underwent cesarean section with spinal anesthesia in Eritrea hospital was 87.9%. This is higher than our result which might be due to setup difference, socioeconomic difference, expectation difference among the participants [19]. According to another study done in Gondar and Iran to assess the level of satisfaction; the overall satisfaction of the parturients was 82.3% and 83.8% respectively. The predictors of the former level were a single spinal attempt, successful block, less level of PDPH, and prophylactic anti-emetic. The type of surgery for the latter was only elective cesarean section [25,26]. Studies having higher satisfaction level than the current study was revealed that the overall satisfaction level of participants based on two studies were 90.1% and 96.2% with an increased number of attempt, pain during block, inadequate intraoperative analgesia, and post-operative urinary retention as a predictor of the left dissatisfaction [27,28]. Although satisfaction level of our study was affected by the number of attempt of spinal block, residency of the parturients, previous anesthesia, educational status, and marital status, having previous anesthesia was the independent factors which have a significant association with the dependent factor with AOR, 3.94; 95%CI, 1.24–12.45; P- 0.01. Having an increased educational level have less satisfaction level which might be due to high expectations. Having previous anesthesia is 3.94 times more satisfied. This is due to parturients who were exposed to anesthesia before might be familiar with the environment and the activities with the possible coping mechanisms. Therefore these participants were satisfied than those of have no previous exposure.

5. Conclusion

In general, the overall satisfaction of the mothers towards spinal anesthesia was fair with a satisfaction score of 80.2%. Relatively, the parturients were highly dissatisfied on preoperative visit and information subscale as compared to the other subscales. Therefore in the pre-operative period, adequate information regarding to the anesthesia and the surgery with possible complications and side effects is better to address for the parturients. All care providers better to give attention to the concerns and issues raised by the client. By doing such activities in the perioperative period, quality of care and satisfaction might be improved.

5.1. Limitation

The total rate of cesarean section was limited to include a large sample size and apply the probability sampling technique. Therefore, we used a reduction formula to get the sample size and incorporate all parturients who gave birth with cesarean section under spinal anesthesia within the study period.

Sources of funding

None.

Availability of data

All the necessary data will be provided for reasonable request.

Authors’ contributions

Basazinew Chekol Demilew developed the proposal, collected the data, analyzed the data and prepared the manuscript. Dagninet Getu, Desalegn Tesfaw and Moges Gelaw Taye revised the proposal, involved in data collection, data analysis and manuscript preparation.

Ethical approval

Ethical clearance and permission was obtained from Debre Tabor University, Collage of Health Science, and research and community service coordinator office. Confidentiality of the information were assured by using code numbers than personal identification like names and keeping questionnaires locked in a secured place.

Trial registry number

Registered at https://www.researchregistry.com with researchregistry6608.

Guarantor

Basazinew Chekol Demilew (B.C. Demilew).

Provenance and peer review

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Declaration of competing interest

The authors have no conflict interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2021.102282.

Abbreviations

| AOR | Adjusted Odds Ratio |
| BMI | Body Mass Index |
| CI  | Confidence Interval |
| COR | Crudes Odds Ratio |
| C/S | Cesarean section |
| PDPH | Post-Dural Puncture Headache |
| PONV | Postoperative Nausea Vomiting |
| SA  | spinal Anesthesia |
| SPSS | Statistical Package for Social Science |

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