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Research Article

Assessment of Maternal Satisfaction and its Associated Factor after Spinal Anesthesia for Cesarean Section in Debere Markose Comprehensive Specialized Hospital, East Gojjam Zone, an Amhara Region, Ethiopia, from January to June 2023 G.C

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Abstract

Background: Spinal anesthesia for cesarean section is an old and well-established method. It was first used in obstetrics in 1901 for pain relief during vaginal delivery and also became popular for cesarean delivery because of its rapid onset and a high frequency of successful blockade. Even if spinal anesthesia for cesarean section has become increasingly popular and the recent decade has been the preferred technique for the majority of anesthetists, Patient satisfaction toward spinal anesthesia is a vital monitor of the quality care in anesthesia. To assess maternal satisfaction and associated factors among parturients who give birth under spinal anesthesia for cesarean delivery in Debre Markos Comprehensive Specialized Hospital, East Gojjam Zone Amhara region, from January to June Ethiopia, 2023 G.C.

Methods and materials: A cross-sectional study of patients who underwent cesarean section under spinal anesthesia in the operating rooms of Debre Markos Hospital obstetrics ward was interviewed exit using a structured questionnaire. A post-operative survey of patients 24 hours after operation was conducted by collecting pre-operative, intra-operative, and post-operative procedures.

Results: The overall satisfaction with spinal anesthesia was 168 (86.2%) a patient was satisfied and 27 (13.8 %) of the patients were dissatisfied. Furthermore, 183 (93.8%) patients would choose spinal anesthesia in the future for similar surgery if required and 12 (6.2%) of patients would not. The reasons for refusal are not the choice of GA but rather fear of spinal complications (headache, backache nausea, and vomiting), fear of awareness during operation, post-operative pain in the surgical site and most say they don't need to give birth in the future.

Conclusion and recommendations: There were a higher number of patients who were satisfied with involvement in decision-making, communication with professionals, and anesthesia practitioners paying attention to their complaints like pain & nausea intraoperatively, and the anesthesia team was willing to listen to their questions. Lower satisfaction for information given by anesthetist preoperatively, intraoperative shivering, post-operative care, and treatment of postoperative headache, PONV, and backache.

Keywords: Spinal anesthesia; Patient satisfaction; Caesarean section

Abbreviations

ASA: American Society of Anesthesiologist; C/S: Cesarean Section; GA: General Anesthesia; N/V: Nausea /Vomiting; OR: Operation Room; PDPH; Post Dural Puncture Headache; PONV: Post -Operative Nausea and Vomiting; RA: Regional Anesthesia; SA; Spinal Anesthesia; NRS: Numerical Scale

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Introduction

Spinal anesthesia for cesarean section is an old and well-established method [1]. It was first used in obstetrics in 1901 for pain relief during vaginal delivery and also became popular for cesarean delivery because of its rapid onset and a high frequency of successful blockade. The development of thinner spinal needles and better local anesthetic agents like bupivacaine for intrathecal use and more knowledge of the pathophysiology 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 spinal anesthesia specifically has the advantages of its simplicity, small drug dose, low Failure rate, and rapid onset [3].

Spinal anesthesia is performed by injecting small amounts of local anesthetic agent into the cerebrospinal fluid [2]. Spinal anesthesia

is easy to perform and provides excellent operating conditions for cesarean section [4]. Compared with general anesthesia, spinal anesthesia has lower rates of venous thromboembolism, cardiac events, the need for post-operative analgesia, sympathetic responses to surgical stimulation along with few other life-threatening complications [4]. Even if spinal anesthesia for cesarean section has become increasingly popular and the recent decade has been the preferred technique for the majority of anesthetists, Patient satisfaction is the most important element in healthcare organizations and the top goal for any healthcare delivery strategy [5,6]. Patient satisfaction is a subjective and complex concept involving physical, emotional, mental, social, and cultural factors [7]. 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 [8].

Satisfaction is measured by patients through evaluation and assessment of the experience after consuming a good service of care by health providers [9]. It is determined by the quality of the provided care and the expectations of that care [10]. Measuring factors that influence patient's satisfaction is vital to monitor the quality of care in anesthesia [11].

Researching patient satisfaction is important in understanding the problems which patients experience from spinal anesthesia, and this helps us in improving the quality of anesthesia and healthcare. Who visited government health facilities consider the quality of care they received to be below average [12].

Although most studies report high satisfaction levels for spinal anesthesia, the satisfaction rate can be overestimated because patients like to please service providers by replying 'satisfied' [13]. American Society of Anesthesiologists (ASA) patient satisfaction guideline stated that in the future, it is likely that payment for anesthesia services will depend in part on measures of patient satisfaction [14].

No prior study had been done to assess the level of satisfaction with spinal anesthesia for cesarean delivery at Debre Markos Specialized Comprehensive Hospital [15,16]. Every hospital is mandated to improve the quality of its healthcare delivery system, more so the leading teaching and referral hospital in Ethiopia. This study will be carried out on their level of satisfaction and the factors of dissatisfaction during cesarean deliveries.

The purpose of this study will be to identify the possible gaps as well as a potential area of intervention to improve maternal satisfaction after spinal anesthesia for cesarean section delivery at Debre Markos Comprehensive Specialized Hospital. Measuring factors that influence parturient satisfaction is vital to monitoring the quality of care in anesthesia [17]. All factors determining parturient satisfaction indicate an urgent need for safety and quality guidelines or protocols in the service of anesthesia [18]. These attempts will also improve the quality of anesthesia and intensify the relationship between anesthetist and their parturient.

This study will measure to what extent patients are satisfied and will help to identify problem areas for improvement.

Methods and Materials

Study area, design, and Study period

A hospital-based cross-sectional study was conducted in the Amhara region, East Gojam Debre Markos Comprehensive Specialized Hospital on patients who were scheduled for elective surgery from March-May 2023 G.C.

Source and study of populations

All women who underwent c/s in Debre Markos Comprehensive Specialized Hospital from March to May 2023 and the study population consisting of Comprehensive Specialized Hospital selected women who underwent c/s under spinal anesthesia during the study period at Debre Marks Comprehensive Specialized Hospital.

Inclusion criteria

ASA-II parturient who underwent both elective and emergency cesarean section with spinal anesthesia was included.

Exclusion criteria

Mental disordered mother, parturient with chronic pain, Failed or complicated spinal anesthesia, Parturient who were unable to communicate to the investigator due to illnesses.

Sample size determination and sampling procedure

The sample size was determined using the single proportion formula n=((Za/2)2*(p)*(q))%d2 Whereas;

n=sample size

Z=confidence interval (1.96)

P=estimated prevalence (0.5)

d=margin of sampling error to be tolerated (0.05)

To get the sample size with confidence interval of 95% and margin of error 5%

n=((1.96)20.5(0.5))/0.05*0.05=384

By applying a finite population correction formula, the final sample size was,

NF =n/(1+n/N)

Whereas, NF=the minimum sample size

n=sample size

N=Total number parturient who was undergo cesarean delivery at Debre markos comprehensive specialized hospital in two months.

n=384

N=400

NF=384/(1+384/400)=195

Non-probability consecutive sampling procedure was employed

Study variable

Dependent variable: Maternal satisfaction towards spinal anesthesia and its associated factors.

Independent variable: Socio demographic factor, Level of education, Patient's past medical illness, Postoperative pain, nausea/vomiting, headache and backache.

Data collection tool and procedures: After getting ethical clearance from the Debre Markos University School of Medicine anesthesia department and permission from Debre Markos Comprehensive Specialized Hospital then post-operative study of patients on the day after surgery was conducted by collecting preoperative intraoperative and postoperative data, on a constructed questionnaire.

Data quality assurance: The training was given to data collectors. All data will be collected and properly filled in the prepared format. The questionnaire was checked for its accuracy, clarity, and consistency. The researcher supervised the data collectors and checked for the completeness of the data daily.

After the training we will give to data collectors, data will be collected and properly filled in the prepared format.

Data processing and analysis: Data was summarized and analyzed by using SPSS version 25. Associations analyzed by chi chart; all factors to identify what factors and to what extent those factors influence overall satisfaction. The chi-square test was used to define statistical associations between variables. Overall satisfaction has four sub-components, socio-demographic, pre-operative, intraoperative, and post-operative condition of patients.

Result

Socio-demographic characteristics of respondents

A total of 195 participants were sampled with a response rate of 100%. When studying the distribution of age groups most of the parturient 92 (47.2%) were aged between 26 and 35 years, 72 (36.9%) were aged less than 25 years, and 31 (15.9) were aged greater than 35 years. The majority of the parturient 75 (38.5%) were diploma and above, 42 (21.5%) of the participants were unable to read and write as the same result of 42 (21.5%) being able to read and write. 27 (13.8%) of the participants attended secondary school, and 9 (4.6%) of the participants attended primary school (Table 1).

Perioperative condition of the respondents

Furthermore, parity distribution revealed that 120 (61.5%) parturient were multigravida, whereas 75 (38.5%) were prime gravid, the majority of the surgeries 73 (37.4%) were performed as emergency whereas 122 (62.6%) were conducted as elective. The procedure was done more than 73 (34.4%) for fetal indication and 122 (62.6%) for maternal indication (Table 2).

Intraoperative condition

Most of respondents 168 (86.2%) were satisfied, 27 (13.8%) were dissatisfied (Table 3).

Post-operative condition

Most parturient 169 (86.7%) got a bed at immediate post op whereas 26 (13.3%) did not get one. Of the overall satisfaction of spinal anesthesia 168 (86.2%) of patients were satisfied and 27 (13.8%) of the patient were dissatisfied. Furthermore, 183 (93.8%) patients would choose spinal anesthesia in the future for similar surgery if required and 12 (6.2%) of patients would not. The reasons for refusal are not chosen GA but rather fear of spinal complications like headache (2%), backache (2.2%) nausea and vomiting (1.8%), fear of awareness during operation, postoperative pain in the surgical site and most say they don't need to give birth in the future (Table 4 and Figure 1).

Factors associated with satisfaction and dissatisfaction

The association between maternal satisfaction and factors that may affect satisfaction was analyzed by chi-square and there is a strong association between comfort with positioning during SA administration, number of attempts, pain during SA given, post-OP head ach and post-OP back pain but there is no association between maternal satisfaction and age, marital status, occupation, income, level of education, medical history, previous anesthesia history, type of surgery, indication for C/S and parity.

Table 1: Socio -demographic characteristics of respondents in Debre markos comprehensive specialized hospital East gojjam Zone of the Amhara Region of Ethiopia, From April to May 2032 G.C.

Variable	Variable	Frequency	Percent
Age	< = 25	72	36.9
	26-35	92	47.2
	>35	31	15.9
	Total	195	100
Level of education	unable to read and write	42	21.5
	Able to read and write	42	21.5
	Primary school	9	4.6
	Secondary school	27	13.8
	Diploma and above	75	38.5
	Total	195	100
Level of education occupation	Farmer	53	27.2
	Student	23	11.8
	Government employee	51	26.6
	Merchant	61	31.3
	Others	7	3.6
	Total	195	100
Religion	Orthodox	141	72.3
	Muslim	40	20.5
	Protestant	14	7.2
	Total	195	100
Marital status	Married	179	91.8
	Single	14	7.2
	Divorced	2	1
	Widowed	0	0
	Total	195	100
Ethnicity	Amhara	195	100
	Tigre	0	0
	Oromo	0	0
	Total	0	0
Residency	Urban	136	69.7
	Rural	59	30.3
	Total	195	100

Table 2: parturient compliant in perioperative, intraoperative, and postoperative periods in Debre Markos Comprehensive Specialized Hospital in the East Gojjam Zone of the Amhara Region of Ethiopia, 2023 G.C.

Variable	Category	Frequency	Percent
Patient have any medical history	HTN	14	7.2
	DM	7	3.6
	Asthma	2	1
	No	170	87.2
	Total	195	100
ASA	ASA	195	100
Parity	Multi	120	61.5
	Prime	75	38.5
	Total	195	100
Patient received anesthesia before?	Yes	102	52.3
	No	93	47.7
If yes what technique	Spinal	70	35.9
	General	28	14.4
	Total	98	14.4
Patient complication from Receiving anesthesia before	Yes	54	27.7
	No	141	72.3

Respondents who greater than two trial give SA, who have pain during SA being given, and patients who get post-operative complications like headache and back pain are dissatisfied (Table 5).

Discussion

The overall satisfaction with spinal anesthesia 168 (86.2%) of

Table 3: Parturient compliant in intraoperative period in Debre Markos comprehensive specialized hospital in the East Gojjam Zone of the Amhara Region of Ethiopia, 2023 G.C.

Variable	Category	Frequency	Percent
No of attempts	1st trial	83	42.6
	2nd trial	63	32.3
	3rd trial	47	24.1
	Above three trial	2	1
	Total	195	100
Did you have intraoperative pain	Mild pain	56	28.7
	Moderate pain	50	25.6
	Severe pain	3	1.5
	No pain	86	44.1
	Total	195	100
Intraoperative N/V	Once	74	37.9
	Twice	19	9.7
	Only nausea	46	23.6
	No N/V	56	28.7
	total	195	100
Pain during injection	Yes	112	57.4
	No	83	42.6
	Total	195	100
Shivering	Yes	122	62.6
	No	73	37.4
	Total	195	100
Intraoperative satisfaction	Satisfied	168	86.2
	Dissatisfied	27	13.8
	Total	195	100

Table 4: Parturient condition in the postoperative period in Debre Markos Comprehensive Specialized Hospital in the East Gojjam Zone of the Amhara Region of Ethiopia 2023 G.C.

Variable	category	Frequency	Percent
Post-operative back ache	Severe backache	9	4.6
	Moderate backache	55	28.2
	Mild backache	68	34.9
	No	63	32.3
	Total	195	100
Postoperative N/V	Once	67	34.4
	Twice	28	14.4
	Only nausea	42	21.5
	No	58	29.7
	total	195	100
Postoperative headache	Severe	5	2.6
	Moderate	57	29.2
	Mild	68	34.9
	No	65	33.3
	Total	195	100
Are you happy to take SA for the same procedure	Yes	183	93.8
	No	12	6.2
	Total	195	100
Have you got bed	Yes	169	86.7
	No	26	13.7
	Total	195	100

parturient was satisfied and 27 (13.8 %) of the patient was dissatisfied. Furthermore, 183 (93.8%) patients would choose spinal anesthesia in the future for similar surgery if required and 12 (6.2%) of patients would not. The reasons for refusal are not the choice of GA but rather fear of spinal complication (headache and backache), fear of awareness during operation, postoperative pain in the surgical site,

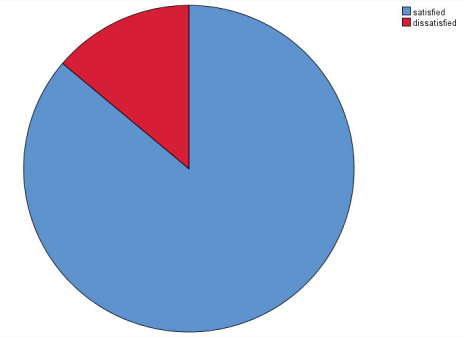

Figure 1: Percentage of overall satisfaction of parturients in Debre Markos comprehensive specialized hospital the East Gojjam Zone of the Amhara Region of Ethiopia, From April to May 2023 G.C.

Table 5: The association of factors and parturient compliant respondents in Debre Markos comprehensive specialized hospital in the East Gojjam Zone of the Amhara Region of Ethiopia, 2023G.C.

Variable	Categories	Satisfaction toward spinal anesthesia	
		Satisfied (%)	Dissatisfied (%)
Age	<=25	63 (87.5%)	9 (12.5%)
	26-35	80 (87%)	12 (13%)
	>35	25 (80.6%)	6 (19.4%)
Level of education	Unable to read and write	40 (95.2%)	2 (4.8%)
	Able to read and write	35 (83.3%)	7 (16.7%)
	Primary school	7 (77.8%)	2 (22.2%)
	Secondary school	21 (77.8%)	6 (22.2%)
	Diploma & above	65 (86.7%)	10 (13.3%)
Occupation	Farmer	49 (92.5%)	4 (7.5%)
	Student	18 (78.3%)	5 (21.7%)
	Government employee	42 (82.4%)	9 (17.6%)
	Merchant	52 (85.2%)	9 (14.8%)
	Other	7 (100%)	0 (%)
Type of procedure	Emergency	61 (83.6%)	12 (16.4%)
	Elective	107 (87.7%)	15 (12.3%)
Indication	Maternal	111 (91%)	11 (9%)
	Fetal	57 (78.1%)	16 (21.9%)
Medical Hx	HTN	14 (100%)	0 (%)
	DM	7 (100%)	0 (%)
	Asthma	2 (100%)	0 (%)
	Other	2 (100%)	0 (%)
Parity	Multi	105 (87.5%)	15 (12.5%)
	Prime	63 (84%)	12 (16%)
Previous anesthesia	Yes	90 (88.2%)	12 (11.8%)
	No	78 (83.9%)	15 (16.1%)
Hx Intra op N/V	Once	68 (91.9%)	6 (8.1%)
	Twice	13 (68.4%)	6 (31.6%)
	only nausea	41 (89.1%)	5 (10.9%)
	no nausea and vomiting	46 (82.1%)	10 (17.9%)
Intra opp shivering	Yes	107 (87.7%)	15 (12.3%)
	No	61 (83.6%)	12 (16.4%)

and most say they don't need to give birth in the future.

The study was done in Pakistan on 246 patients with a response rate of 100%, the average age of the patients was 27.49 ± 4.1 years [13]. The study was done in Pakistan on 246 patients with a response rate of 100%, the average age of the patients was 27.49 ± 4.1 years [13]. Three patients (1.21%) complained of severe pain and discomfort during

surgery. None of the patients complained of postoperative vomiting, 18 patients (7.32%) complained of mild nausea while the rest of them had no PONV. Eighteen patients (7.32%) complained of severe postoperative backache, 39 (15.85%) moderate, 96 (39.02%) mild and 93 (37.8%) had no backache. Only 2 patients (0.81%) complained of PDPH that was effectively treated with analgesics, stool softeners, and ensuring good hydration and none of them required an epidural blood patch. Fundamental Area Score (FAS) and Patient Satisfaction Score (PSS) in these patients were calculated. The patient's overall level of satisfaction was 83.02% after spinal anesthesia [13].

Unlike their difference in terms of different variables, the overall satisfaction is relatively similar to the study conducted at Banaras Hindu University total of 116 patients was observed and, in this study, 84.48% of patients were satisfied with spinal anesthesia. In 67.24% of patients with single prick spinal anesthesia was given. In 22.41% it was done in 2 to 3 pricks and in 10.34% it was done in more than 3 pricks. In 3.44% of patients, spinal anesthesia failed and general anesthesia was given. Pre-anesthetic counseling was done in 81.04% of cases. Spinal headache was observed in 12.06% nausea & vomiting was present in 22.4%. Spinal hypotension was reported in 0.86%. Numbness in the lower limb was present in 3.44% of cases. The causes of dissatisfaction were multiple pricks (10/34%), inadequate analgesia (2.58%), failed spinal anesthesia (3.44%), and backache (22.41%). Similarly, the study conducted at Kenyatta National Hospital, in 2015, a total of 346 respondents were interviewed, 89.5%, 92.2%, and 91.15% of the respondents were satisfied with the level of pain control, their involvement in decision-making during spinal anesthesia for C\S delivery and explanation for SA given to them by the anesthesia provider respectively [19-21]. The satisfaction ratings for care received, knowledge of the anesthesia provider, interest shown by the anesthesia provider, general attitude of the anesthesia provider, and anesthesia provider's sensitivity to the respondents' needs were all over 90% [22]. The overall satisfaction with the spinal anesthetic technique was 80% [23]. But the study conducted in Malaysia a total of 200 pregnant patients, with ages ranging from 17 to 45 years, were surveyed: 64.5% Malay, 17% Indian, 14% Chinese and 4.5% others. All (100%) of the patients were satisfied with the explanation provided regarding the choices of anesthesia, but 2% could not concentrate on the explanation because of labor pain. Overall, the average satisfaction with spinal anesthesia administration was divided into 194 (97%) satisfied patients and 6 (3%) dissatisfied patients. Factors associated with dissatisfaction were inadequate analgesia during surgery and failed spinal anesthesia.

Post-operative complications included spinal headache 5 (2.5%), postoperative Nausea and Vomiting (PONV) 1 (0.5%), pain at the surgical site 2 (1%), and backache 2 (1%) Furthermore, 177 (88.5%) patients would opt for spinal anesthesia in future for similar surgery if required; 16 (8%) would not; and 7 (3.5%) were not sure [4]. Similarly cross-sectional study was done among 116 patients by Anjali R, Shreye who underwent cesarean section under spinal anesthesia 84.48% of mothers were satisfied. In 67.24% of mothers with single prick spinal anesthesia was given. In 22.41% & 10.34% of the mothers was 2-3 and above 3 pricks respectively. In 3.44% of mothers spinal anesthesia failed and general as given. Pre-anesthetic counseling was done in 81.04% of the mothers. Spinal headache was observed in 12.06%, nausea and vomiting in 22.41%, spinal hypotension 0.86%, and numbness in the lower limb was observed in 3.44% of mothers. The cause of dissatisfaction was multiple pricks (34%), inadequate analgesia (2.58), failed spinal anesthesia (3.44%), and backache (22.41%). Spinal complications like headache and backache were the main reasons for refusal. This refusal can be minimized by explaining the advantages of spinal anesthesia which can avoid the incidence of general anesthetic complications (difficult intubation, polypharmacy, probability of delay awaking, high risk to mortality and morbidity) as well as early bonding between the mother and the newborn because the mother is awake during the procedure. Backache, inadequate postoperative analgesia, pain during the attempt, intra-operative shivering, and post-dural puncture headache were the main contributing factors of dissatisfaction

Post-Operative nausea and vomiting

On study done in Britain to assess the impact of Post-Operative Nausea and Vomiting (PONV) on 489 patients found that nausea occurred in 383 patients and vomiting in 106 within 24 hours [24-34]. Patients who had nausea and vomiting have overall significantly lower patient satisfaction compared to those who did not experience nausea and vomiting. There was a strong relation between patient dissatisfaction and awareness of moderate or severe postoperative pain severe nausea and vomiting and lastly postoperative complication

Conclusion and Recommendation

Conclusion

In general, patient satisfaction is considered to be one of the most important parameters in assessing the quality of care in anesthesia practice. There was a higher number of patients who were satisfied with involvement in decision-making, and communication with professionals, with anesthesia practitioners paying attention to their complaints like pain & nausea intraoperatively and the anesthesia team willing to listen to their questions. Lower satisfaction for information given by anesthetist preoperatively, intra-operative shivering, post-operative care, and treatment of postoperative headache, PONV, and backache.

Recommendations

To anesthetist: Try to evaluate the patient preoperatively, be aware of the procedure, and possible intraoperative as well post-operative complications for the patient.

To the researchers: As we know the assessment of patient satisfaction and the patient experience are key performance measures of the quality of care in anesthesia services, so similar studies with large sample size which includes all other anesthetic care good to notice the gap behind patient satisfaction, especially on factors associated with dissatisfaction.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval and Consent

Ethical clearance was obtained from the department ethical clearance committee college of health science Department of Anesthesia Debre Markos University before the start of the study. Get permission from DMCSH clinical director's office after submission of an official letter. The importance of the study was explained and written informed consent was obtained from each participant relative by the data collector. Participant's involvement in the study was on voluntary bases, participants who were not willing to participate in the study & those who wish to quit their participation at any stage were informed to do so without any restriction.

Authors' Contributions

All authors should have made substantial contributions to all of the following: the conception and design of the study, or acquisition of data, drafting the article or revising it critically for important intellectual content, final approval of the version to be submitted.

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