Cross-sectional Study

Maternal satisfaction and practice of preoperative anaesthesia evaluation among pregnant who underwent elective caesarean section, cross-sectional study

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ABSTRACT

Background: Preoperative anaesthesia evaluation is beginning of all anaesthesia care. It enables the anesthetists to know general health status of parturient, choose of anesthesia options and discuss the possible complication regarding perioperative anesthesia care. It also creates chance for parturient to know the anesthetist, about anesthesia type as well as possible anesthesia care related complications.

Objective: To assess maternal satisfaction with the practice of preoperative anesthesia evaluation among patients underwent elective cesarean delivery.

Methods: This study was a cross-sectional study design conducted from March 1 to April 30, 2021. All consecutive parturient that were scheduled for elective cesarean delivery under anesthesia during the study period were interviewed postoperatively after 24 h using semi structure questioner. A checklists, which developed based on the hospital’s anesthetic evaluation sheet and Royal Collage of Anesthetist standards (RCOA) were used for data collection. Data were entered in SPSS version 20 and both descriptive and analytic statics analysis were performed.

Result: A total of 157 elective patients undergoing elective cesarean section were included with response rate of 96.9%. All patients (100%) were evaluated in the preoperative period. However, 53 (33.8%) of patients were receiving information regarding postoperative nausea and vomiting during the preoperative period compared to the standards. Educational level of the anesthetist, fasting instruction, information regarding PONV and information regarding type of anesthesia were significantly associated with overall maternal satisfaction to current practice of preoperative anesthesia evaluation.

Conclusion and recommendation: The practice of delivering important information’s to parturient during the preoperative anesthesia evaluation was low compared to the standard. Therefore, we recommend anesthesia professionals to give detail explanation regarding the post-operative pain management option, possible inevitable complications and proper rapport with the clients.

1. Background

Pre anesthesia evaluation is the first step in a series of anesthesia care provision on who planned to undergo surgery to determine patients, preoperative physical status, analyze type of surgery, choose type and technique of anesthesia, predict complications, prepare drugs and anesthesia equipment’s [1].

Preoperative assessment of obstetrics, women should start with a history of maternal health, anesthetic history, past obstetric history, allergies, family history, history of substance abuse, baseline vital signs, examination of the airway, heart, lungs and lower back [2].

Preoperative anesthetist evaluation and preparation were the integral parts of an anesthetic provision to know about the patient’s general status, nature of surgery, choose the type of anesthesia, to discuss perioperative complications and their management [3,4]. It also creates a chance for the parturient to know the anesthetist, to learn about anesthesia options, to discuss postoperative pain, nausea/vomiting management options and other possible complications [4,5]. In addition, it also decrease anxiety, minimize cancellation, shorten length of hospital stay, may reduce morbidity and mortality [4,6].

An audit done in university of Gondar compressive specialized hospital on preoperative anesthesia evaluation stated that history taking...
and physical examination were almost in line with the Royal College of Anesthetists’ (RCOA) preoperative anesthetic evaluation standards and also relatively good practice regarding preoperative fasting instructions. On the other hand, there were gaps in the areas of anesthetists self-introduction, information provision about type of anesthesia, postoperative complications, options for postoperative analgesia, and PONV management according to Royal College of Anesthetists’ standards [7].

Assessment of quality of preoperative anesthesia evaluation progressively appreciated measure of quality improvement in anesthesia service that can be affected by the preoperative anesthetist visit [7,8]. Anesthetists placed in unique position that offer all pre-operative anesthesia assessment skills [7,9]. Therefore, anesthetists should take organized pre-operative anesthesia services including provision of important information for the patient [3].

2. Methods

This study was done at University of Gondar Comprehensive Specialized Hospital from March 1 to April 30, 2021. It is a Referral and Teaching Hospital, which is found in Gondar town, Ethiopia. This Hospital is located 738 km Northwest of Addis Ababa, capital city of Ethiopia. The Hospital is estimated to serve over 5 million people around the area. The article has been registered with the UIN of the research registry (7451) and it has been reported in line with the STROCSS criteria. The Source of information was chart review and ROCA [4,10,11] (Table 1).

2.1. Study design

A cross-sectional study design.

2.2. Standards

2.3. Study population and sample population

The study population of this study was all patients who were undergoing cesarean section and the sample population was patients who underwent elective cesarean section during the study period.

2.4. Variables of the study

Dependent variables: Maternal satisfaction.

Independent variables: Socio-demographic variables: Age, ASA status, residency, educational status of the patient, frequency of operation, educational level of anesthetists.

Inclusion criteria: All parturients who underwent elective cesarean section in University of Gondar comprehensive specialized hospital during the study period were included.

Exclusion criteria: Patients below 18 years old, patients who cannot communicate and unconscious after operation during data collection time were excluded.

2.5. Sample size

The required sample size was calculated using a single population proportion formula from previous study 64.7% [14].

\[ n = \left( Z_{\alpha/2} \right)^2 \frac{\hat{p}(1-\hat{p})}{d^2} \]

Assumptions \( n = \) is the required sample size, \( Z = \) critical value for normal distribution at 95% confidence level (1.96), \( W = 0.05 \) (5% margin of error), \( \alpha = \) the level of significance = best estimate of the population proportion.

\[ n = \left( 1.96 \right)^2 \times \left( 0.647 \times 0.353 \right) \]

\[ = 350.95 \text{ to } 351. \text{ The correction formula was used since the number of patients scheduled for cesarean section was less than 10,000. On average 300 patients undergone cesarean section in the our hospital.} \]

\[ n_f = n/1+n/N \]

\[ n_f = 351 \]

\[ 1 + 351/ \]

\[ n_f = 161.8 = 162, \text{ was the total sample size} \]

2.6. Sampling procedure

All consecutive patients scheduled for surgical operation were included till the calculated sample size reached.

2.7. Operational definition

Parturients satisfaction: The proportion of patients who have said satisfied in >95% with anesthesia services at the University of Gondar comprehensive specialized hospital was classified as satisfactory [7].

2.8. Data collection methods

Data were collected via interview of patients with (RCOA) checklist, postoperatively after 24 h (Table 2).

2.9. Data analysis

Data cleanup and cross checking were done for inconsistencies and missed values. Appropriate coding and editing was performed before data entry. The coded data were entered to Epi-info software version 6

Table 1

| No. | Standards                                      | Source | Target |
|-----|-----------------------------------------------|--------|--------|
| 1   | Seen by anesthetist before surgery            | RCOA   | 100%   |
| 2   | Self-introduction done by anesthetist          | RCOA   | 100%   |
| 3   | Parturients history taken by anesthetist       | RCOA   | 100%   |
| 4   | Physical examination done by anesthetist       | RCOA   | 100%   |
| 5   | Fasting instructions given                    | RCOA   | 100%   |
| 6   | Information received on type of anesthesia before surgery | RCOA   | 100%   |
| 7   | Information received about the possible anesthesia complications | RCOA   | 100%   |
| 8   | Information given on modes of postoperative analgesia | RCOA   | 100%   |
| 9   | Information received about PONV and its management option | RCOA   | 100%   |

Table 2

Checklist to preoperative anesthesia evaluation among parturients undergoing cesarean delivery with chart review and interview.

| No | Statement                                      | Yes | No |
|----|-----------------------------------------------|-----|----|
| 1  | Did anesthetist evaluate before the surgery?  |     |    |
| 2  | Did the anesthetist introduce him or herself?|     |    |
| 3  | Did the anesthetist take history from you?   |     |    |
| 4  | Did anesthetist perform physical examination?|     |    |
| 5  | Did you get fasting instruction?             |     |    |
| 6  | Did the anesthetist discuss on types of anesthesia?|     |    |
| 7  | Did the anesthetist discuss on possible anesthesia complications?| | |
| 8  | Did the anesthetist discuss on choice of postoperative analgesia methods?| | |
| 9  | Did the anesthetist discusses about PONV and its management options? | | |
and exported to SPSS version 20. Bivariate and multivariate linear regression analyses were used. A p-value of <0.05 was considered as significant. The results were summarized using tables and presented with narrative descriptions.

3. Results

A total of 157 elective parturients underwent elective cesarean section were included with a response rate of 96.9%. However, five patients were excluded from analysis for incomplete data. The mean ±(SD) age of the patient was 29.3 ± 6.1 years. All parturients were evaluated in the preoperative period and history was taken. On 141(89.8%) of the patient physical examination were performed, 107(68.2%) of them had received instruction regarding fasting during the preoperative anesthetic evaluation. In addition, 97(61.2%), 87(55.4%), 82(52.2%) and 53 (33.8%) of parturients were received information regarding type of anesthesia, possible complication, post-operative pain management option and post-operative nausea and vomiting during the preoperative period respectively. Majority of patients (75.8%) had seen by anesthesia students (Table 3, Table 4).

Factors associated with overall satisfaction of parturients with preoperative anesthesia evaluation.

In bi-variable logistic regression analysis factors like educational level of the anesthetist, age of the parturients, type of anesthesia, fasting instruction, PONV, postoperative analgesia, time spent by the anesthetist were 2.2(AOR = 2.2; CI: 1.8, 2.84; P = 0.009) times higher compared to parturients visited by anesthesia students in practice of both undergraduate and postgraduate students in practice of anesthesia related complication was given (Table 3, Table 4).

Factors associated with overall satisfaction of parturients with preoperative anesthesia evaluation.

In this study, patients who underwent elective cesarean delivery were evaluated in the preoperative period in line with RCOA preoperative anesthesia evaluation standard and previous audit done in UOGCSH(4,12).The reason for this might be probably active involvement of both undergraduate and postgraduate students in practice of anesthesia evaluation were 3.3(AOR = 3.3; Cl:1.10.7), 2.76(AOR = 2.76; Cl: 1, 7.6), and 2.6(AOR = 2.6; Cl:1.1,6.2)times higher for anesthetists who informed regarding PONV, Fasting instruction and type of anesthesia respectively compared with their counterparts (Table 5).

4. Discussion

The aim of the present study was to determine the level of maternal satisfaction with the preoperative anesthetic evaluation among patients underwent elective cesarean section under both general and spinal anesthesia.

In this study, patients who underwent elective cesarean delivery were evaluated in the preoperative period in line with RCOA preoperative anesthesia evaluation standard and previous audit done in UOGCSH(4,12). The reason for this might be probably active involvement of both undergraduate and postgraduate students in practice of anesthesia evaluation were 3.3(AOR = 3.3; Cl:1.10.7), 2.76(AOR = 2.76; Cl: 1, 7.6), and 2.6(AOR = 2.6; Cl:1.1,6.2)times higher for anesthetists who informed regarding PONV, Fasting instruction and type of anesthesia respectively compared with their counterparts (Table 5).

### Table 3

| Factors                     | Frequency (%) |
|-----------------------------|---------------|
| Age                         |               |
| 18-30                       | 78(49.7)      |
| 31-44                       | 79(50.3)      |
| ASA                         |               |
| II                          | 112(71.3%)    |
| III                         | 45(28.7%)     |
| Residency                   |               |
| Rural                       | 47(29.9)      |
| Urban                       | 110(70.1)     |
| Educational level           |               |
| Illiterate                  | 42(26.8)      |
| Elementary                  | 7(4.5)        |
| Secondary                   | 45(28.7)      |
| Diploma                     | 16(10.2)      |
| Degree and above            | 47(29.9)      |
| Occupation                  |               |
| Housewife                   | 53(33.8)      |
| Farmer                      | 42(26.8)      |
| Governmental employee       | 62(39.5)      |
| Previous history of C/s     |               |
| Yes                         | 81(51.6)      |
| No                          | 76(48.4)      |
| Level of anesthetists       |               |
| Anesthesia students         | 119(75.8)     |
| Qualified anesthetists      | 38(24.2)      |
| Overall satisfaction        |               |
| Satisfied                   | 116(73.9)     |
| Dissatisfied                | 41(26.1)      |

### Table 4

| Variable                          | Freq (%) | Freq (%) |
|-----------------------------------|---------|---------|
| Parturients seen by anesthetist   | 157     | 100     |
| Anesthetist introduced him or herself | 75      | 47.8    |
| History was taken                  | 157     | 100     |
| Physical examination was done     | 141     | 89.8    |
| Fasting instruction was given     | 107     | 68.2    |
| Information about type of anesthesia given | 97      | 61.8    |
| Information about anesthesia related complication was given | 87      | 55.4    |
| Information about postoperative analgesia was given | 82      | 52.2    |
| Information about PONV and its management was given | 53      | 33.8    |

### Table 5

Association between factors and overall maternal satisfaction to current practice of anesthesia evaluation among patients underwent elective cesarean section, Northwest, Ethiopia, 2021 (N = 157).

| Variable                          | Overall satisfaction | COR(95% CI) | AOR(95% CI) | P-value |
|-----------------------------------|----------------------|-------------|-------------|---------|
| Educational level of anesthetist   |                      |             |             |         |
| Qualified anesthetists            | 53(57.6)             | 25(20.4)    | 1.85        | 0.027   |
| Anesthesia students               | 63(58.4)             | 16(20.6)    | 0.89        | 0.027   |
| Post-operative nausea and vomiting | 45(39.2)           | 8(13.8)     | 2.6         | 0.044   |
| Yes                               | 71(76.8)             | 33(27.2)    | 1.00        | 0.049   |
| Fasting instruction               | 76(79.1)             | 31(27.9)    | 1.63        | 0.027   |
| Yes                               | 40(36.9)             | 10(13.1)    | 0.72        | 0.027   |
| Type of anesthesia                | 80(71.7)             | 17(25.3)    | 3.13        | 0.027   |
| Yes                               | 36(44.3)             | 24(15.7)    | 1.56        | 0.027   |
| Post-operative analgesia          | 65(60.6)             | 17(21.4)    | 1.8         | 0.027   |
| Yes                               | 51(55.4)             | 24(19.6)    | 1.00        | 0.027   |
preoperative anesthesia evaluation during their clinical attachment.

About 89.8% of patient’s physical examination had taken which was below standards in previous audit [4,11], anesthetist introduced themselves in 47.8% of parturient which was relatively similar to audit conducted in Northwestern province of Sri Lanka, and fasting instruction given to 68.2% of parturient which was lower compared to audit conducted in the Northwestern province of Sri Lanka and UOGCSH; However all of items did not meet RCOA standards [10]. This might be explained by UOGCSH was teaching hospital and those involved in the preoperative anesthesia evaluation were BSC and below level of education. Therefore respective tutors should involve in current practice of preoperative anesthesia evaluation to achieve the standards’ and to improve maternal satisfaction.

Information provided to 61.8%of parturient regarding type of anesthesia which relatively good compared to audit conducted in Northwestern province of Sri Lanka and in UOGCSH(4,10).In addition, information was provided regarding possible anesthesia complications with their management options to 55.4% parturient. In other study, about 91.5% patients were satisfied with the explanation by the anesthetists about the anesthetic procedure and possible complications [12]. Information was also provided regarding postoperative analgesia method to 52.2% parturient, and regarding PONV management option to 33.8%parturient those relatively good compared to audit conducted in Northwestern province of Sri Lanka, and in UOGCSH. Besides, the preoperative anesthesia visit that involved information and communication about postoperative management had the highest correlation with the overall satisfaction with P < 0.0001[13]. The reason behind this were currently undergraduate and postgraduate student quantity were increased those involved in clinical attachment in UOGCSH reduced missed information these might improve current practice of preoperative anesthesia evaluation by compared to previously.

All these result were less than 100%, except percent of parturient seen by the anesthetist and history were taken, which recommended by the Royal College of Anesthetists (RCOA). The reason for this could be probably due to the high workload and limited number of trained senior anesthetists in university of Gondar compressive and specialized hospital. Additionally, having no preoperative anesthesia evaluation clinic in our setup might be the reason. This may affect opportunity of patients to know the anesthetist, to learn about anesthesia options, postoperative pain, nausea and vomiting management options and other possible complications.

In this study, non-modifiable factors such as: age of the patients, and level of education did not reveal a strong association with overall satisfaction similar with previous finding done in Malaysia [14].

Maternal satisfaction to current practice of preoperative anesthesia evaluation who received fasting instruction, informed regarding PONV and type of anesthesia given were higher compared there counterpart similar to previous findings [15,16]. Furthermore, a study found that an effective perioperative evaluation by the anesthetist had increased maternal satisfaction [17].

4.1. Limitation of the study

The limitation of this study was small sample size.

4.2. Conclusion and recommendation

Generally in our setup the current practice of preoperative anesthesia evaluation by anesthetist was below the recommended standards and overall maternal satisfaction with current practice of preoperative evaluation was low. We recommend university of Gondar comprehensive and specialized hospital anesthetist to improve the practice of preoperative anesthesia evaluation for parturients by detail explanation regarding type of anesthesia, post op pain management option, possible inevitable complications and proper rapport with the clients as well as need improvement in areas of self-introduction. We recommend department head of anesthesia for continues follow up of preoperative anesthesia evaluation practice.

Acronyms

PONV = Post-operative nausea and vomiting, RCOA = Royal college of anesthetist, UOGCSH = University of Gondar compressive and specialized hospital.

Ethical approval

Ethical clearance and permission letter were obtained from institutional ethical review committee of school of medicine, university of Gondar to collect data. After a brief explanation about the study and questioner, written informed consent was obtained from each study participant.

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Author contribution

This study was carried out in collaboration among all authors. B.M. Admassie contributed to the preparation of proposal, preparation of data collection tool, analysis and manuscript preparation. Y.A. Fereede and B.A. Tegegne have participated in editing, result interpretation and reviewing the manuscript.

Trail registry number

Name of the registry: Research registry.
Unique Identifying number or registration ID: 7451.
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Consent for publication

It is not applicable.

Availability of data and materials

Data is available.

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Declaration of competing interest

There is no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.
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