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Assessment of awareness and attitude of pregnant women towards anesthesia techniques for cesarean section and associated factors at selected public hospital of Addis Ababa Ethiopia, 2021

Abstract

Objective: To assess awareness and attitude of pregnant women's towards anesthesia techniques for cesarean section among women attending ANC at selected public Hospital of Addis Ababa, 2021.

Method: During the study, 332 pregnant women attending ANC followup in selected public hospitals of Addis Ababa, Ethiopia were selected systematically selected. Pretested and structured questionnaire was administered to the patient and the data was entered to into Epi info 7.2.4 and transferred to SPSS version 26 for analysis. Both binary and multivariate logistic regression were used to measure association between the factors and outcomes at 95% CI and P value <0.05 was considered as statistically significant.

Results: Among 332 participants, 206 (62%) pregnant mothers heard about anesthesia before. Out of those who heard about anesthesia before (206), 116 (56.3%) participants had good awareness of anesthesia techniques. Level of education and number of parity were significantly associated with awareness of anesthesia techniques. Respondents who were completed secondary school had good awareness of anesthesia techniques [AOR=6.785; 95% CI (1.01- 45.170)] and women with para three pregnancy had good awareness than null parity [AOR=6.453; 95% CI (1.612-25.825)]. The study also found, 146 (70.9%) of respondents had positive attitude towards anesthesia techniques but previous type of anesthesia and absence of anesthesia related complication had no significant association with parturient's attitude towards anesthesia techniques. Among 43 respondents previously received GA, 13 (30.2%) respondents preferred again GA whereas out of 66 respondents received SA, 48 participants preferred spinal anesthesia.

Conclusion: Awareness about anesthesia and anesthesia techniques among parturient were 62%. 126 (38%) were even not heard about anesthesia before.

Keywords: Cesarean section, Anesthesia techniques, Awareness and Attitude

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Strength of the study

I. The study was conducted at a multicenter. Four Public Hospitals were randomly selected from Addis Ababa City Administration.

II. We obtain representative participant which arrive the health care facility from various geographic locations and neighboring regional states

Limitation of the study:

The conclusion was based on few samples obtain from those hospitals; a large scale survey is required in order to assess the attitude of mothers toward anesthesia techniques.

Introduction

Anesthesia is defined as loss of feeling or awareness deliberately produced in a patient by administering an anesthetic agent before surgery, in which he or she can feel no pain, either in a part or in the whole of the body.[1,2] The American Society of Anesthesiologists defines general anesthesia as a drug-induced loss of consciousness which includes the triad of hypnosis/amnesia, analgesia, and immobility in reaction to noxious stimuli whereas regional anesthesia is the use of local anesthetic drugs to induce greater areas of anesthesia.[3] Anesthesia has a long history dating back to 1846 when it was first used to make the surgery go smoothly. It is important for several types of specialty procedures, but it has not gained public awareness as independent specialty. Obstetric anesthesia is differs from other anesthesia specializations because anesthetists deal with two lives and the consequences of pregnancy-induced alterations to all systems.[4,5]

The use of regional anesthetic for cesarean section has increased, while that of general anesthetic has decreased. The rationale for this transition is that general anesthesia has several consequences that cause maternal morbidity and mortality. Drugs onset, duration of action, simplicity of technique, and the effect they had on both mothers and fetus are determinant factors for the preference of regional anesthesia. Techniques of anesthesia are under the influence of many factors include, nature of the procedure, patient's medical condition, patient's preference, anesthesia providers' experience, and availability of the resources and the communication of anesthesia provider with parturient about the advantage and disadvantages of each anesthesia techniques.[6-9]

Patients having surgical procedures have varying levels of awareness about anesthesia and anesthesia techniques. The result of study conducted by Irfan ali kadri et al. 2014 showed, 63% of patients were unaware of anesthesia techniques while in another study, 48.1% of patients were aware.[3,10] There is an awareness gap about anesthesia and anesthesia techniques for cesarean section. Lack of awareness about anesthesia and anesthesia techniques influences obstetric women's decision to have a cesarean section. The parturients start to get fear of pain during the surgery when they are advised that surgery is required. Patients, who are unaware of anesthesia, may display distressing behaviors such as anxiety, tachycardia, tension, being confused, not follow the instruction and refuse to give informed consent. It is also difficult for them to differentiate the risk and benefits of anesthesia type.[11-14] Different factors influence the attitude of parturients towards anesthesia techniques for cesarean section. Nausea and vomiting (27%), fear of pain(34%), and fear of needle puncture (15%) were the most important predictors of attitude of parturients towards spinal anesthesia.[15]

There is a gap of awareness and misconception regarding preferring anesthesia type during surgery. The study reported by Bacha et al. 2019, showed that 70% of patients prefer general anesthesia over spinal due to misconception about regional anesthesia and fear of chronic back pain. Also, the result of the study reported by Eyelade et al 2010, showed that 78.2% of patients said they would agree with the type of anesthesia selected to them by the anesthetist. A study done in Pakistan shows that obstetric women frequently refuse regional anesthesia for many reasons such as cultural difference, lack of awareness, and false belief towards regional anesthesia. The study conducted in southwestern Ethiopia showed that the majority of pregnant women, (77%) were preferred general anesthesia over spinal anesthesia due to the fear of seeing things during the procedure.[16-19] To deliver safe anesthesia for cesarean section, we must investigate our obstetric women's awareness of anesthesia and attitudes toward anesthetic techniques. The findings of the study will play a role in raising anesthetic service awareness and encouraging women to give birth in a health facility without fear of pain. Despite various studies on the rate of cesarean section and the association between anesthesia and the procedure, there are only a few studies on pregnant women's awareness and attitudes toward anesthesia in Ethiopia

Methods and materials

Study area and period

The study was conducted in a four randomly selected public Hospitals in Addis Ababa City Administration, the capital city of Ethiopia.

Gandhi Memorial Hospital primarily provides service for Gynecology, Obstetric, reproductive health, infertility, sexual violence, as well as emergence cases, inpatient and outpatient health care services. Zawditu memorial Hospital, Yekatit 12 Hospital and Ras Desta memorial Hospital were among randomly selected hospitals which provide health care service for obstetrics women as one part of specialty care.

The study was conducted from January 20 to march 20, 2021.

Study design

A prospective cross-sectional study design was employed to assess awareness and attitude of pregnant women towards anesthesia techniques for cesarean section.

Sample size determination

The sample size was determined by using single population proportion formula for both specific objective one and objective two

The formula $\mathbf{n= (Z\alpha/2)^2\ p\times q/d2}$ was used to calculate sample size for both objective. After correction formula for finite population and adding 10% contingency, the largest sample size, 332 was used for the study.

Sampling technique

The systematic random sampling technique was used to select individual at a fixed interval(**every** k^{th}) from pregnant women those attended antenatal care at Gandhi memorial Hospital, Yekatit 12 Hospital, Ras Desta memorial Hospital and Zawditu memorial Hospital that selected by simple random sampling.

Data collection technique

Data was collected from selected study participants using a pretested questionnaire from January, 20 to March 20, 2021G.C.The Training was given for data collector on the objectives and relevance of the study and also brief orientation on the assessment tools was provided. The completeness of the data was checked daily by the principal investigator.

Data analysis

Data were coded and then entered into Epi info 7.2.4. Then it was exported to SPSS version 26 for analysis. Awareness of parturient was measured by mean score of awareness data and the attitude of parturient also assessed by using mean score five scales Likert data ranging from strongly disagree to strongly agree.

Bivariate logistic regression analysis was carried out to examine the predictors of the outcome variable. A P-value of <0.2 was used as a candidate for multiple logistic regression analysis. Multiple logistic regression analysis was performed to identify independently associated factors for awareness and attitude. An adjusted odds ratio was used to determine the strength of association at 95% CI. Significance was determined at P-value <0.05.

Patient and public involvement: After obtaining a written consent, each patient was interviewed with structured questionnaire. There was no any other patient or public involvement during the study.

Operational definition

Good awareness; If participant scored mean and above mean from total awareness related question.

Positive attitude; If participant scores mean and above mean from total attitude question that measured by Likert scale.

Results

The study comprised a total of 332 pregnant women who were seen for antenatal care at four selected public hospitals of Addis Ababa, with a 100% response rate. The majority of the participants 104 (31.3%) were between the ages of 30-34 (Table 1).

148 (44.6%) mothers were Orthodox Christians, 109 (32.8%) were Muslims and 75 (22.6%) were protestants.

(Table 2) Majorities of mothers 274 (82.5%) arrived the health facilty from Addis Ababa residency.

Table 1 Age of respondents in selected public Hospital of Addis Ababa from January 20 to March 20, 2021

Age of the mother	Frequency N=332
<25	84 (25.3%)
25-29	94 (28.3%)
30-34	104 (31.3%)
35-39	43 (13%)
>40	7 (2.1)

Table 2 Socio-demographic characteristics of respondents in selected public Hospital of Addis Ababa from January 20 to March 20, 20

Variables		Frequency N=332	Percent (%)
Residence	Addis Ababa	274	82.5%
	Major regional city	31	9.8%
	Rural area	27	8.1%
Level of education	Not educated	26	7.8%
	Able to read and write	43	13%
	Primary school	73	22%
	Secondary school	108	32.5%
	Graduated	64	19.3%
Monthly income	No income	84	25.3%
	<1000ETB	18	5.4%
	1000-2000ETB	65	19.6%
	2001-3000ETB	74	22.3%
	>3000ETB	91	27.4 %
Occupation	Housewife	95	28.6%
	Government employer	80	24.1%
	Independent business	157	47.3%
No of parity	Null parity	106	31.9%
	Para 1	109	32.8%
	Para 2	67	20.2%
	Para 3	34	10.2%
	Para 4	16	4.8%

108 (32.5%) mothers complete Secondary school, while 73 (22%) mothers only complete primary school.

84 (25.3%) had no monthly income, 157 (47.3%) were active in independent business, and 109 (32.8%) were para-one mother.

Awareness related results

Out of study participants, 206 (62%), had heard about anesthesia, and more than half of them, 110 (53.4%), mentioned experience as a source of information.

Among the women who had heard about anesthesia, 119 (57.8%) had previously been exposed to anesthesia for various surgical procedures, with cesarean section accounting for 66.38 % (**Table 2**) From those who had previously been exposed to anesthesia, 66 (55.5%) had undergone spinal anesthesia, whereas 43 (36.1%) and 10 (7.4%) had received general anesthesia and both type of anesthesia respectively. From those who had previously been exposed to anesthesia, 50 participants mentioned anesthesia related complications (Table 3 & 4).

Table 3 Surgical procedure for respondents previously exposed to anesthesia

Type of procedure	Frequency N=119	Percent (%)
Cesarean section	79	66.38
Cholecystectomy	10	8.4
Appendectomy	15	12.6
Laparotomy for ectopic pregnancy	10	8.4
Cesarean section and appendectomy	3	2.52
Cesarean section and cholecystectomy	2	1.68
Total	119	**100**

Table 4 Anesthesia-related complication from the previous operation that mentioned by respondents during the study period at selected public Hospital of Addis Ababa from January 20 to March 20, 2021

Complication	Frequency (N=50)	Percent (%)
Delay awake	20	40
Nausea and vomiting	7	14
Headache	9	18
Back pain	14	28
Total	**50**	**100**

All of the participants who had heard of anesthesia and anesthesia techniques were aware that anesthesia may prevent or relieve pain during the procedure and 204 (99%) were aware of the importance of anesthesia for cesarean section. Regarding anesthesia techniques for cesarean section, 169 (82%) respondents were aware of the existence of two techniques of anesthesia, and 104 (50.5%) were aware of the advantage of spinal anesthesia for parturient during cesarean section. On the other hand, 130 (63.1%) of respondents were aware of who is in charge of administering anesthesia administration. However, just 51 (24.6%) were aware that anesthetists are responsible for patients' recovery from anesthesia.

Based on the mean awareness score of respondents who had heard about anesthesia, 116 (56.3%) had a good awareness of anesthesia techniques for cesarean section. The association between independent variables and awareness of pregnant women about anesthesia and anesthesia techniques for cesarean section was carried out by cross-tabulation and logistic regression analysis (**Table 5**). Education level with P-value <0.048, monthly in came with P-values < 0.007 and number of parity with p-values <0.008 had a significant association with awareness of anesthesia and anesthesia techniques. The findings showed that, those who were completed secondary education were more likely to have good awareness about anesthesia and anesthesia techniques than those who were not educated [AOR=6.785; 95% CI (1.01- 45.170)].

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Table 5 Associations of socio-demographic characteristics with pregnant women's awareness of anesthesia and anesthesia techniques in selected public Hospital of Addis Ababa, Ethiopia from January 20 to March 20, 2021 (N=206)

Variables	Awareness		COR, CI 95%	p-value	AOR, CI 95%	P-value
	Poor awareness	Good awareness				
Residence						
Rural area	7	4	1		1	
Addis Ababa	78	107	2.401(0.679- 8.486)	0.174*	1.734(0.281-10.692)	0.553
Major regional city	5	5	1.75(0.306- 10.022)	0.530	5.495(0.445-67.903)	0.184
Education level						
No formal education	10	3	1		1	
Able to read& write	12	4	1.111(0.200- 6.181)	0.904	0.555(0.062-4.999)	0.599
Primary school	24	10	1.389(0.314- 6.139)	0.665	0.749(0.112-5.011)	0.766
Secondary school	22	48	7.273(1.820- 29.064)	0.005*	6.785(1.019- 45.170)	0.048**
Graduate	17	39	7.647(1.866- 31.333)	0.005*	5.188(0.698-38.547)	0.108
Post graduate	5	12	8(1.522- 42.042)	0.014*	3.669(0.375- 35.712)	0.263
Monthly in came						
No income	12	18	1		1	
<1000 ETB	3	7	1.556(0.334- 7.235)	0.573	2.316(0.303- 17.719)	0.418
1000-2000ETB	21	13	0.413(0.151- 1.129)	0.085*	0.444(0.110-1.791)	0.254
2001-3000ETB	30	21	0.467(0.186- 1.170)	0.104*	0.146(0.03--0.587)	0.007**
>3000ETB	24	57	1.583(0.662- 3.788)	0.302	0.814(0.207- 3.203)	0.768
No of parity						
Null parity	34	19	1		1	
Para 1	22	45	3.660(1.715- 7.814)	0.001*	3.819(1.379- 10.573)	0.010**
Para 2	20	26	2.326(1.036- 5.226)	0.041*	1.706(0.595-4.895)	0.321
Para 3	7	12	5.624(2.030-15.583)	0.001*	6.453(1.612-25.825)	0.008**
Para 4	7	4	1.023(0.265-3.947)	0.974	1.654(0.2861-9.572)	0.574
Source of information						
Relative	16	3	1		1	
Doctors	8	6	4(0.788- 20.316)	0.095*	1.525(0.216-10.771)	0.672
Anesthetists	6	7	6.222(1.2- 32.272)	0.030*	3.234(0.451- 23.164)	0.243
Nurse	6	4	3.556(0.608-20.805)	0.159*	5.503(0.597- 50.709)	0.132
Midwifes	5	8	8.533(1.616- 45.061)	0.012*	6.502(0.864-48.921)	0.069
Exposure	30	80	14.222(3.866-52.319)	0.00*	3.055(0.353- 26.418)	0.310
Family	11	6	2.909(0.597- 14.185)	0.186*	2.009(0.415-12.830)	0.461
Friends	8	2	1.333(0.184- 9.660)	0.776	0.403(0.42- 3.830)	0.429
Anesthesia exposure						
No	55	32	1		1	
Yes	35	84	4.125(2.292- 7.424)	0.00*	2.568(0.526- 12.546)	0.244

NB,* statistically significant for p-value<0.2 and ** for p-value < 0.05

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Comparing with null parity, para one respondents were more likely to have good awareness about anesthesia and anesthesia techniques for cesarean. [AOR=3.819; 95% CI (1.379-10.573)].Similarly, women with para three were more likely to have good awareness than null parity [AOR=6.453; 95% CI (1.612-25.825].

Attitude related results

Out of respondents who heard about anesthesia, 156(75.7%) were agreed to meet and discuss about anesthesia before surgery with a professional who will provide anesthesia for them. However, only three people (1.5%) disagreed with this view point. It was discovered that 130 (63.1%) of respondents agreed on an anesthetist's explanation of what will happen to them during anesthesia and that 181 (87.9%) respondents agreed on hearing about any anesthesia-related complications that may occur during the procedure, regardless of how serious they are.

On the other side, 59 (28.8%) respondents agreed to ask the anesthetist how the anesthesia went after the procedure, while 123 (59.7%) respondents were neutral. In terms of anesthesia techniques, 99 (48.1%) respondents agreed that having more information about the type of anesthesia for a cesarean section is important, while 68 (33.3%) respondents were neutral. Furthermore, 47 (22.8%) of participants disagreed about being more concerned about the type of anesthesia than the surgery, while 130 (63.1%) were neutral. When came to choose of anesthesia, 21 (10.2%) respondents preferred general anesthetic, 91 (44.2%) preferred spinal anesthesia, 50 (24.3%) were undecided, and 44 (21.4%) left it to the anesthetist (Table 6).

Thirteen of the 43 respondents who had previously received GA preferred GA again, while 48 of the 66 respondents who had received SA preferred SA. In contrast, nine out of ten responders who had previously received both types of anesthesia preferred SA. For various reasons, respondents preferred one anesthetic technique over the other (**Table 6**).

Fear of seeing things during the surgery and fear of feeling pain were the main reasons for choosing general anesthesia over spinal anesthesia, while the safety of technique or low risk with procedures and experience were the key reasons for choosing spinal anesthesia.

Table 6 Pregnant women's reasons for preferring type of anesthesia at selected public Hospital of Addis Ababa from January 20 to March 20, 2021

Reasons for choosing General Anesthesia	Frequency (N=21)	Percent (%)
Experience	4	19
Not to see things	6	28.57
Not to feel pain	3	14.28
Fear of back pain	8	38
Reasons for choosing Spinal anesthesia	**Frequency (N=91)**	**Percent (%)**
Previous Experience	19	20.87
Low risk	24	26.37
Early mobilization	14	15.38
Early breast feeding	5	5.49
To be awake	17	18.68
To see the baby	12	13.18

The attitude of respondents was assessed using a Likert scale, and their level of attitude was also analyzed using the mean attitude score. Out of the participants who had heard about anesthesia, 146 (70.9%) had a positive attitude towards anesthesia techniques, while 60 (21.9%) had a negative attitude. Out of 43 participants who had general anesthesia experience, 32 parturient had a positive attitude towards anesthesia techniques for cesarean section. Similarly from 66 parturients who received spinal anesthesia, 49 participants had positive attitudes towards anesthesia techniques. Previous type of anesthesia and absence of anesthesia related complication had no significant association with parturient attitude towards anesthesia techniques (Table 7).

Table 7 Association of socio-demographic characteristics with respondent's attitude towards anesthesia and anesthesia techniques in selected public Hospital of Addis Ababa from January 20 to March 20, 2021

Variables	Attitude		COR (CI) 95%	P-value	AOR (CI) 95%	P-value
	Negative attitude	Positive attitude				
Type of previous anesthesia						
GA	11	32	1		1	
SA	17	49	2.909(0.706-11.991)	0.139*	2.436(0.573-10.360)	0.228
Both GA and SA	5	5	2.882(0.742-11.195)	0.126*	2.711(0.685-10.723)	0.155
Anesthesia complication						
YES	18	32	1		1	
NO	15	54	2.025(0.898-4.565)	0.089*	1.949(0.845-4.493)	0.117

NB,* statistically significant for p-value<0.2

Discussion

According to the findings of the studies, 206 (62%) respondents heard about anesthesia and anesthesia techniques for a cesarean section from various sources. Out of the participants who had heard about anesthesia and anesthesia techniques, 116 (56.3%) had a good awareness of anesthesia and anesthetic techniques for cesarean section. This is significantly lower than 82% observed in the study conducted in Pakistani on women's knowledge and attitudes concerning anesthesia techniques for Caesarean section.[18] This disparity could be related to

the sample size, research area, and level of education of the majority of participants, as well as the fact that the study was conducted in a tertiary care center private hospital that provided services to patients who could afford the medical costs. When compared to Rabiu et al. finding of 68.8% on knowledge, attitude, and perception of pregnant women concerning anesthesia techniques for cesarean section at Aminu Kano Teaching Hospital, our finding is low.[20] However, our results are higher than the figure of 31% reported by Jemal et al. 2016 on the Perception, Knowledge, and Attitude of Pregnant Women in Developing Countries regarding anesthesia for Cesarean Section.[19] This may be due to differences in the study area, sample size, and duration between the two studies. In terms of information sources, our findings contradict the Ahmad etal 2011research, which claims that anesthetists are the main source of information. But in line with a report by Jemal et al 2016 and Rabiu et al2019 in which experience was the main source of information.[18-20]

This study determined the significant association between awareness about anesthesia techniques and educational level, monthly income, and the number of parity. This is similar to the result reported by Jemal et al.[19] Among anesthesia-related complications experienced by parturient, delayed awake figure 20(40%), in this study is higher than the 29.7% reported in a Nigerian study. It might be due to the length of the surgery, as most parturients received GA for a surgical procedure other than a cesarean section. However, the rate of headache 9(18%) is lower than their report (64.9%), which could be attributed to the type of spinal needle used or the anesthesia provider's experience.[20]

In terms of anesthesia type preference, the study found that 44.25% of respondents preferred SA, and 10.2% preferred GA.The fear of seeing things during surgery was the main reason for choosing general anesthesia. This is a similar rationale, but it contrasts strongly with the figures published by Jemal et al., and Bukar et al. which reveal that general anesthesia was favored by 60.3 % and 70.1 % respectively.[19,21]

The main reason for preferring SA in this study was the perception of regional anesthesia as low risk or safe. The rationale is similar to Rabiu et al. 2019, finding with different figures but differs from Bukar et al. finding that the majority of individuals who preferred spinal anesthesia wanted to observe what was going on rather than the safety of the anesthesia techniques.[20,21] Despite the fact that there is no report on attitudes to compare with this study, our findings demonstrated the level of respondents' attitudes towards anesthesia techniques for cesarean section based on the mean score of liker scale data. Out of participants who heard of anesthesia, (70.9%) were scored mean and above the mean and categorized as those who have positive attitude. Out of 43 participants who had general anesthesia experience, 32 parturients had a positive attitude towards anesthesia techniques for cesarean section. Similarly from 66 parturients who received spinal anesthesia, 49 participants had positive attitudes towards anesthesia techniques Thirteen of the 43 respondents who had previously received GA preferred GA again, while 48 of the 66 respondents who had received SA preferred SA. In contrast, nine out of ten responders who had previously received both types of anesthesia preferred SA.

Conclusion

Awareness about anesthesia and anesthesia techniques among parturient were 62%. 126 (38%) were even not heard about anesthesia before. This result is low as compared to similar studies conducted in other countries.

Recommendation

Public advocacy should be performed in pregnant mothers in order to enhance awareness to ward anesthesia and anesthesia techniques.

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Contributor-ship statement

Mr. Ayano gudeta was the principal investigators and Mr. Darsema, Dawit and Mrs. Siryet Tesfaye was coauthors.

Competing interests

There is no computing interest**.**

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Ethical consideration

Ethical clearance and approval were obtained from the ethical review committee, Anesthesia Department, Addis Ababa University. Permission to conduct the study was obtained from medical director of the selected Hospitals. Informed written consent was secured from every study participant. Privacy and confidentiality were maintained throughout the study period; each questionnaire was coded without any personal identification.

Data sharing statement

No additional data available.

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