

Knowledge and attitude towards anesthesia for cesarean section and its associated factors among pregnant women attending Antenatal care

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Abstract

Background: Cesarean section is an effective technique for preventing maternal and perinatal mortality when performed properly. Evidence suggested that pregnant women who have had good knowledge about their condition are able to participate in shared decision-making and can alleviate fears related to anesthesia. However, only a few studies conducted in Ethiopia assess the level of knowledge and attitude of pregnant women towards anesthesia for cesarean section.

Methods: Hospital based cross-sectional study was conducted from April 18 to June 25, 2021. A systematic random sampling technique was used to select a total of 362 pregnant women attending antenatal care. Pretested and structured questionnaires were used to collect the data using a face-to-face interview. Both bivariate and multivariable binary logistic regression models were used for statistical analysis. The adjusted odds ratio was used as the measure of association. P-value less than 0.05 at 95% CI was considered as statistically significant.

Results: A total of 354 pregnant women attending at ANC clinic participated with a response rate of 97.8%. The overall proportion of good knowledge and positive attitude towards anesthesia for cesarean section were 56.5% (95% CI: 51.4%, 61.9%) and 50.8% (95% CI: 45.8%, 56.2%), respectively. Pregnant women who had previous operations (AOR=4.47, 95% CI: 1.77, 11.32) and had any health information about anesthesia (AOR=10.06, 95% CI: 5.41, 18.69) were significantly associated with good knowledge towards anesthesia for cesarean section. While, pregnant women who have had secondary education (AOR=6.71, 95% CI: 1.19, 37.99), college and above education (AOR=13.63, 95% CI: 2.26, 82.21), and had health information about anesthesia (AOR=2.02, 95% CI: 1.09, 3.77) significantly associated with a positive attitude towards anesthesia for CS.

Conclusion: This finding means that a significant number of pregnant women still have poor knowledge and attitude towards anesthesia for CS. Previous operation and health information about anesthesia were significantly associated with knowledge while higher education and health information about anesthesia were significantly associated with a positive attitude towards anesthesia for cesarean section. Health professionals need to provide health information during ANC visits and in the operating theater areas for mothers who have indications for CS.

Background

Caesarean section (CS) can be a life-saving procedure for women and babies when potentially life-threatening complications occur during pregnancy or childbirth, such as abnormal fetal presentation, non-reassuring fetal condition, obstetric hemorrhage, and obstructed labor (1-3). In maternal health, anesthesia has contributed significantly to reducing pain related with surgery including CS. It can be performed under either neuraxial anesthesia including spinal anesthesia and epidural anesthesia, or general anesthesia(4), but regional anesthesia is the preferred technique in terms of risk and benefits for both mother and fetus(5).

Although clients may be willing to be anesthetized, many clients still have concerns regarding anesthesia. Some clients have misconceptions regarding the process and the risks of anesthesia, which influences their decision and willingness to undergo anesthesia and surgical interventions(6). For instance, many people believe that once the patient is “asleep”, the anesthesiologist will leave the room(7). Patients also have numerous concerns including the possibility of not waking up postoperatively, experiencing pain, and becoming paralyzed. These may contribute to the delayed presentation of patients, which impacts negatively on outcomes and quality of health care (8).

As a standard preoperative patient education, improving pregnant women knowledge and attitude towards anesthesia, is essential for good perioperative outcome, managing medico-legal conditions and patients’ decision making. Good clients’ knowledge and favorable attitude towards anesthesia has been shown to have a positive effect on clients’ outcome(9).

Although a substantial number of studies regarding knowledge and attitudes towards anesthesia(6) have been conducted worldwide, there is dearth of evidence on pregnant women regarding anesthesia for CS. Hence, this study aimed to assess knowledge and attitudes of pregnant women attending antenatal care (ANC) of the University of Gondar Comprehensive and specialized Hospital towards various anesthesia techniques for CS and also to identify their sources of information about these options. Generating such evidence will help pregnant women to alleviate such misconceptions about anesthesia for their CS and may play an important role in to participate in choosing anesthesia for their CS.

Methods

Study Design and period

Hospital based cross sectional study design was used among pregnant women attending ANC clinic at the University of Gondar Comprehensive Specialized Hospital from April, 18 to June 25, 2021.

Study Area

The study was conducted in the ANC clinic of University of Gondar Comprehensive Specialized Hospital which is found in Gondar town. The hospital is located in Central Gondar Zone of the Amhara Regional state about 727 kilometers Northwest of Addis Ababa. The hospital is providing delivery services 24 hours a day, 7 days a week with its staff including Anesthesia, mid-wives, interns, residents and obstetricians. The hospital serves about 5 million people in the catchment area. The number of pregnant mother in the catchment per year is 60,000. Report from the hospital’s ANC clinic showed that around one thousand two hundred (1,200) pregnant women attend the ANC clinic monthly.

Population

The source population for this study was all pregnant women who attended ANC clinic of the University of Gondar Comprehensive Specialized Hospital. The study population was all selected pregnant women who attended ANC clinic of the University of Gondar Comprehensive Specialized Hospital. Pregnant women who have had at least one ANC clinic visit in their current pregnancy irrespective of their delivery and anesthetic history were eligible for the study. Pregnant women who are seriously ill and have psychiatric illness, and unable to communicate were the exclusion criteria.

Sample size determination and sampling procedures

Single population proportion formula was used to estimate the minimum sample size. It was estimated using a 31.3% proportion of knowledge towards anesthesia of CS from a previous study in Jimma, Ethiopia(17), 95% confidence level ($\alpha=5\%$), 5% margin of error, and a non-response rate of 10%.

$$n = (Z_{\alpha/2})^2 * p(1-p) / d^2$$

Where **n** is the minimum sample size required, **a**=level of significance at 5% level, **p**=proportion of good knowledge about anesthesia for CS (0.31), **1-p**= proportion of poor knowledge about anesthesia for CS (0.69), and **d**= level of precision or maximum tolerable error (5%). Based on the above assumptions and by accounting for 10% non-response rate a total of 362 pregnant women attending the ANC clinic at the UoGCSH was required to determine the proportion of knowledge and attitude towards anesthesia for CS.

Systematic random sampling technique was used to select pregnant women attending ANC clinic. Based on the average daily attendance at the ANC, a sampling interval of 3 was obtained. The first pregnant woman was selected using a lottery method, a number between one and three. Then after, every 3rd pregnant woman coming to the clinic was selected to be part of the study.

Operational Definitions

Attitude: A pregnant woman is classified as having positive attitude if her response was higher than the median value.

Knowledge: Pregnant women were considered knowledgeable if they correctly responded more than 60% of the knowledge related question, otherwise categorized as having poor knowledge(17).

Data collection tools and procedures

Face to face interviews were held to collect the data using pretested and structured questionnaire. Both closed and open ended questionnaire were used to collect the data. The questionnaires were translated into local language (Amharic) and health care professionals were recruited to collect the data. Data collectors collected data on the Socio demographic characteristics of pregnant women (age, residence,

marital status, educational status, occupational status and their family monthly income (FMI)), Health service utilization, Health information about anesthesia, previous exposure to surgery and or anesthesia, knowledge and attitudes towards anesthesia for caesarean section. The knowledge domain contained 9 questions to assess pregnant women's levels of knowledge regarding anesthesia for CS. Within the knowledge domain, the respondents were asked to respond any choices as they could think might be correct. Each correct answer was scored one and each incorrect answer was scored zero. Thus, the total score of knowledge for each study participant ranged from 0 to 9, and a higher score indicated a good knowledge. The attitude domain contained 8 questions to assess pregnant women's attitude towards anesthesia for CS. A 5-point Likert scale ranged from strongly disagree (1) to strongly agree (5) was used to assess pregnant women's attitude towards anesthesia (5). A negative question was coded in reverse direction during analysis. Each question or item was scored and the final attitude score ranged between 8 and 40. The mean and median values were computed and tested for normality. The median value was used to classify women's attitude as positive and poor attitude.

Data analysis

The completed questionnaire was entered into Epidata. The data was exported into SPSS version 25 statistical software for its analysis. Data was cleaned, coded and checked for, completeness and consistency. Descriptive analysis was used using frequency, proportions, means, and SD, to describe the data. Texts, tables, and graphs were used to present the study findings. Bivariate logistic regression analysis was used to check which variables had associations with knowledge and attitude. Variables with p-values up to 0.2 in the bivariable logistic regression analysis were fitted in the multivariable binary logistic regression for controlling the possible effects of confounders. Adjusted odds ratios (AOR) were used as the measure of association between dependent variable and independent variables. P-value less than 0.05 at 95% confidence interval were considered as statistically significant. Model goodness-of-fit was checked by Hosmer-Lemeshow test.

Ethical considerations

Ethical clearance was obtained from the Institutional Ethical Review Committee of GCMHS. Informed consent was obtained from pregnant women after explanation of what will be done in the research.

Confidentiality was ensured from all the data collectors and investigators side by using code numbers than names and keeping questionnaires locked.

Results

Sociodemographic characteristics of participant

Three hundred fifty-four pregnant women attending at ANC clinic of the UoGCSH were participated in the study making a response rate of 97.8%. The mean age of the participants was 27.6 (SD=5.04) years. Of

the participants, 328 (92.7%) were urban residents, 285(80.5%) were Orthodox Tewahido Christianity followers, 337 (95.2%) were married, and 74 (20.9%) were government employed (Table 1).

Obstetrics related characteristics of the respondents

Of the total respondents, 224 (63.3%) have had two or more pregnancies, 128 (35.9%) have had 2 or more deliveries, 145 (41.0%) had 4 or more ANC visit for the last delivery, and 167 of them gave vaginal birth (Table 2).

Health service utilization factors of the respondents

Among the total respondents, 344(97.2%) visited the health facility, of whom 334 (96.8%) obtained health care services for their health. Regarding the site of health care services, 292 (82.5%), 73 (20.6%), and 52 (14.7%) received health care service from the Hospital, health centre, and Clinic, respectively (Table 3).

Anesthesia or surgery related factors of the respondents

Among the total respondents, 86 (24.3%) have had history of any operation in the past, and all of them have received anesthesia for their surgery. Of the total 86 respondents who have had history of anesthesia, 54(62.8%) of them received spinal anesthesia, 27 (31.4%) of them received general anesthesia, and 5 (5.8%) of received both anesthesia forms. Of those who received anesthesia, majority (74.4%) of them received their anesthesia from a tertiary Hospital. Of the total respondents, 183 (51.7%) heard any health information about anesthesia. Of the respondents who heard information about anesthesia, 39 (21.3%), 93 (50.8%), and 51 (27.9%) heard about general anesthesia, regional anesthesia, and both types of anesthesia, respectively (Table 3).

Regarding the source of anesthesia information, 74 (40.4%), 58 (31.7%), 36(19.7%) of them heard the information from previous exposure, friends, and the anesthetists, respectively (Figure 2).

Knowledge of pregnant women towards Anesthesia for Cesarean section

The overall proportion of good knowledge about anesthesia for CS among pregnant women attending ANC at the University of Gondar Comprehensive Specialized Hospital was 56.5% (95% CI: 51.4%, 61.9%). The proportion of knowledge about anesthesia for CS was higher among those who have had previous operation (90.7%) compared with those who hadn't any previous operation (45.5%) and who have had any health information about anesthesia (84.7%) as compared with who hadn't any health information about anesthesia (26.3%).

Of the total respondents participated in the study, 192(54.2%) correctly responded what anesthesia mean, 268(75.7%) correctly responded the purpose of anesthesia, 280(79.1%) responded that anesthesia is necessary for CS, 223(63%) responded correctly with the presence of different forms of anesthesia, 264 (74.6%) responded correctly the route of anesthesia administration, 301(85%) responded that anesthesia is not always safe, 151(42.7%) have had some knowledge about complications of anesthesia, 98(27.7%)

had knowledge that which anesthesia have high complications, and 206(58.2%) had knowledge some types of anesthesia complication/s (Table 4).

Factors associated with knowledge towards anesthesia for cesarean section

The bivariate logistic regression analysis showed that being age 25-29 years, urban, having primary and more education, government employed, FMI of more than 4000 birr, previous operation, and previous information about anesthesia were positively and significantly associated with good knowledge about anesthesia for CS. After adjusting for the possible confounders, having previous operation and HI about anesthesia remained positively and significantly associated with good knowledge about anesthesia for CS.

Accordingly, pregnant women who have had previous operation were nearly 5 times (AOR=4.47, 95% CI: 1.77, 11.32) more likely to have good knowledge about anesthesia for CS as compared to who hadn't any previous operation. Moreover, pregnant women who have had any health information about anesthesia were 10 times (AOR=10.06, 95% CI: 5.41, 18.69) more likely to have good knowledge about anesthesia for CS as compared to who haven't any health information about anesthesia (Table 5).

Attitudes of pregnant women towards Anesthesia for Cesarean section

The overall proportion of positive attitude towards anesthesia for CS was 50.8% (95% CI: 45.8%, 56.2%). Of the total respondents, only 17 (3.8%) agreed on the item/question of "any physician or nurse can administer the anesthesia", 281 (79.4%) agreed on the item "I would like to know as much as possible about anesthesia", 257(62.6%) agreed on the item "prior to operation any pregnant women would require discussion about anesthesia", 39 (11%) agreed on the item "the less I know about anesthetic for my operation, the better the outcome", 176(49.7%) agreed that "we would like to meet the anesthetist before my operation every time", 42 (11.8%) agreed on the item "I am more nervous about the anesthetic than the surgery itself", 33 (9.4%) agreed on the item that "I don't care about the anesthetic as long as my operation turns out well", and 62 (17.5%) agree on the item "anesthesia is risky for the baby" (Table 5).

Factors associated with attitudes towards anesthesia for cesarean section

The bivariate logistic regression analysis also showed that age; urban residents; having primary and more educational status, FMI of more than 4000 birr, number of previous ANC visit, number of delivery/ies, previous operation, HI about anesthesia, and having good knowledge about anesthesia were positively and significantly associated with positive attitude towards anesthesia for CS. The multivariate logistic regression analysis showed that having secondary, college and above level of education, and HI about anesthesia were the only factors positively and significantly associated with positive attitude towards anesthesia for CS.

Accordingly, pregnant women who have had secondary education were 6.7 times (AOR=6.71, 95% CI: 1.19, 37.99) more likely to have positive attitude towards anesthesia for CS as compared to illiterate pregnant women. Pregnant women who have had college and above education were 13.6 times

(AOR=13.63, 95% CI: 2.26, 82.21) more likely to have positive attitude towards anesthesia for CS as compared to illiterate pregnant women. Pregnant women who have had health information about anesthesia were 2 times (AOR=2.02, 95% CI: 1.09, 3.77) more likely to have positive attitude towards anesthesia for CS as compared to who haven't any health information about anesthesia (Table 6).

Discussion

In this study, the overall proportion of good knowledge about anesthesia for CS was 56.5% (95% CI: 51.4%, 61.9%). This finding is in agreement with a study conducted in Northern Ghana (53%)(10). The reason might be due to similar socio economic status of the two countries.

It was higher than studies conducted among pregnant women on knowledge and attitudes towards anesthesia for CS in Tikur Anbessa Specialized Hospital Ethiopia (32%)(11), Jimma University Specialized Hospital (31.3%)(17), India (30.0%)(21), and Khamis Mushait (37.5%)(14). The reason for high prevalence of knowledge in this study as compared with Tikur Anbessa Specialized Hospital might be due to majority (92.7%) of the study participants in this study were from urban areas while only 42.5% of participants from Tikur Anbessa Specialized Hospital were from urban set up. There are evidence that revealed individuals who lived in urban setup were more likely to have good knowledge about anesthesia than who lived in rural area(11, 18). The difference in economic status might be the possible reason for the high proportion of knowledge in this study as compared with Jimma University Specialized Hospital; where the FMI in this study was >4000 ETB among 50% of the study participants while 73.8% of participants in Jimma study hadn't any source of income. The possible reason for the difference in the proportion of knowledge about anesthesia for CS in this study compared with that of India is that majority of the study participants in India were housewife (82.5%). There are also evidence that revealed participants who were housewife were less knowledgeable about anesthesia technique as compared to the civil servant or working women(13, 17).

However, this finding was lower than studies conducted in India (89.5%)(12), Pakistan (82.4%)(13), University of Ilorin Teaching Hospital, Nigeria (78%)(15), Aminu Kano Teaching Hospital- Nigeria (65.5%)(16), and Ghana (62.4%)(6). The reason for low prevalence of knowledge in this study might be due to only 20.6% of the study participants were graduated/college and above, while majority of the study participants in studies done in Nigeria (61.4%), India (74.5%), and Pakistan (69%) were graduated. There is adequate evidence that educated women may spend more effort to get accurate information about anesthesia which in turn leads to better knowledge of anesthesia than those with lesser education (6, 18-21).

A number of studies suggest that having positive attitude towards anesthesia may be connected with good health benefits such as improved maternal and child health outcomes and a lower risk of death from conditions like heart disease. In this study, the overall proportion of positive attitude towards anesthesia for CS was 50.8% (95% CI: 45.8%, 56.2%).

In this study, strong association was found between previous exposures to operation and pregnant women's knowledge towards anesthesia for CS. Accordingly, pregnant women who have had previous operation or exposure to anesthesia were 5 times more likely to have good knowledge about anesthesia for CS as compared to pregnant women who hadn't any previous operation. This finding is consistent with studies conducted in Jimma University specialized Hospital Ethiopia(17), India(20), Pakistan(13, 23) Turkey(24), and Nepal(25) which showed that patient with previous exposure of anesthesia or surgery had good knowledge of anesthesia techniques as compared to those without previous exposure. This might be due to that pregnant women who have had previous operation or exposure to anesthesia may spend more effort to get accurate information about it which improves their knowledge level towards anesthesia. However, the finding is in contrary with studies conducted in Ghana(6), Nigeria(8), and India(26) where previous surgery or history of anesthesia had no association with good knowledge of pregnant women's towards anesthesia for CS.

This study found strong association between good knowledge towards the different forms of anesthesia for CS and having any health information for anesthesia. Accordingly, pregnant women who have had any health information about anesthesia were 10 times more likely to have good knowledge about anesthesia for CS as compared to who haven't any health information about anesthesia. This might be explained by pregnant women who have had previous operation also took anesthesia for their surgery and have adequate health information about anesthesia which might increase their level knowledge.

In this study positive and significant association was found between educational status and attitude towards anesthesia for CS. Consequently, pregnant women who have had secondary education level and college and above education level were 6.7 and 13.6 times more likely to have positive attitude towards anesthesia for CS as compared those unable to read and write pregnant women, respectively. This is in agreement with studies conducted in Tikur Anbessa Specialized Hospital (11) and Lebanese women(27) where higher education were linked with positive attitudes towards anesthesia. This might be due to that educated mother have higher chance of seeking health information about anesthesia which intern brings positive attitude towards anesthesia as evidenced by most pregnant women in this study who are educated are also have health information about anesthesia.

This study also revealed that having any health information for anesthesia were significantly associated with attitudes towards the different anesthesia techniques. Pregnant women who have had health information about anesthesia were 2 times more likely to have positive attitude towards anesthesia for CS as compared to who haven't any health information about anesthesia. This finding is consistent with the Lebanese study (27) where receiving information from obstetricians was linked with positive attitudes towards anesthesia.

Strength and limitations of the study

The strength of the study was the data was collected based on primary data and important factors were included and systematic random sampling technique was used. As limitation since the study was conducted among pregnant women attending a tertiary hospital, most of the study participants were educated and from urban community.

Conclusion

This finding means that a significant number of pregnant women still have poor knowledge and attitude towards anesthesia for CS and this must be further improved. Previous operation and any health information about anesthesia was found significant factors associated with knowledge towards anesthesia for CS and higher educational status and any health information about anesthesia was found significant factors associated with favorable attitude towards anesthesia for CS. There is a need to provide health information about anesthesia during pregnancy at ANC clinic, operating room before operation who underwent anesthesia to improve the knowledge and attitudes of pregnant Women's towards anesthesia for CS.

Declarations

Ethics approval and consent to participate

To conduct the current research ethical approval was obtained from the Ethical Review Committee of School of Medicine, College of Medicine and Health Sciences, University of Gondar. A permission letter from each institution and consent from each study participant were obtained. Potential ethical issues were addressed accordingly during the study period.

Consent for publication

The article did not contain any personal or any clinical detail of any individual participant

Availability of data and materials

Any data or supporting material can be found here via the address of corresponding author on reasonable request.

Competing interests

All authors declared that they have no competing interests.

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Not applicable.

Author contribution

All authors (MA, NS, AF, DF and ZA) participated in the design of the study and the interpretation of data. MA conceived of the study and performed data analysis and drafted the manuscript. All authors (MA, NS, AF, DF and ZA) approved the final work for publication. All authors critically revised the manuscript and have approved the final version.

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Abbreviations

ANC: Ante Natal Care; AOR: Adjusted Odds Ratio; CS: Cesarean Section; FMI: Family Monthly Income; UOGCSH: University of Gondar Comprehensive Specialized Hospital; SD: standard deviation.

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Tables

Table 1: Participant characteristics of participants (n=354), University of Gondar Comprehensive and specialized hospital, 2021

Variables	Frequency	Percent
Residence		
Urban	328	92.7
Rural	26	7.3
Age in years		
16-24	93	26.3
25-29	146	41.2
30-34	79	22.3
³35	36	10.2
Religion		
Orthodox	285	80.5
Muslim	69	19.5
Marital status		
Married	337	95.2
Others*	17	4.8
Educational status		
Unable to read and write	20	5.6
Read and write	20	5.6
Primary school (1-8)	117	33.1
Secondary school (9-12)	124	35.0
College and above	73	20.6
Occupational status		
Housewife	124	35.0
Merchant	105	29.7
Government employed	74	20.9
Farmer	17	4.8
Student	20	5.6
Others	14	4
Family monthly income, Ethiopian Birr (ETB)		
£2000		

2001-4100	96	27.1
4101-7000	81	22.9
>7001	90	25.4
	87	24.6

*Single, divorced, and widowed

Table 2: Obstetrics related characteristics of the respondents, University of Gondar Comprehensive and specialized hospital, 2021

Variables	Frequency	Percent
Number of pregnancy		
Primigravida	130	36.7
Multigravida	224	63.3
Number of deliveries (Parity)		
Nullipara	133	37.5
Para 1	93	26.3
Multipara	128	36.2
Number of ANC visit/s for previous pregnancy		
No visit	138	39.0
1-3 visit	71	20.0
4 and more visit	145	41.0
Type of last delivery (n=221)		
Cesarean	54	24.4
Vaginal	167	75.6

Table 3: Respondents anesthesia or surgery related factors, University of Gondar Comprehensive and specialized hospital, 2021

Variables	Frequency	Percent
Any operation or surgery in the past (n=354)		
Yes	86	24.3
No	268	75.7
Type of anesthesia given (n=86)		
Spinal	54	62.8
General	27	31.4
Both	5	5.8
Type of health facility where they received the anesthesia (n=86)		
Tertiary hospital		
General hospital	64	74.4
District hospital	19	22.1
Private hospital	1	1.2
	2	2.3
Any health information about anesthesia(n=354)		
Yes	183	51.7
No	171	48.3
Type of anesthesia you heard (n=183)		
General anesthesia	39	21.3
Regional anesthesia	93	50.8
Both	51	27.9

Table 4: Knowledge about anesthesia for CS among pregnant women in University of Gondar Comprehensive and specialized hospital, 2021

Variables	Frequency	Percentage
What is anesthesia for you		
Know	192	54.2
Don't know	162	45.8
Purpose of anesthesia		
Know	268	75.7
Don't know	86	24.3
Anesthesia is necessary for CS		
Yes	280	79.1
No	74	20.9
Know about the different forma of anesthesia		
Yes	223	63.0
No	131	37.0
Route of Anesthesia administration		
Know	264	74.6
Don't know	90	25.4
Anesthesia is always safe		
Yes	53	15.0
Not	301	85.0
Knowledge about complications of anesthesia		
Know	151	42.7
Don't know	203	57.3
Type of anesthesia having high complication		
Know	98	27.7
Don't know	256	72.3
Types of anesthesia complication		
Know	206	41.8
Don't know	148	58.2

Table 5: Bivariate and multivariable logistic regression analysis of factors associated with knowledge towards anesthesia for CS

Variable	Knowledge		COR (95% CI)	AOR (95 % CI)
	Good	Poor		
Age				
16-24	55(59.1%)	38(40.9%)	2.03(0.93, 4.43)	1.99(0.66, 5.94)
25-29	88(60.3%)	58(39.7%)	2.12(1.01, 4.46)*	1.82(0.65, 5.10)
30-34	42(53.2%)	37(46.8%)	1.59(0.72, 3.52)	1.23(0.41, 3.69)
≥35	15(41.7%)	21(58.3%)	1	1
Residence				
Urban	190(57.9%)	138(42.1%)	2.20(0.97, 5.0)	0.97(0.19, 4.74)
Rural	10(38.5%)	16(61.5%)	1	1
Educational status				
Unable to read and write				
Able to read and rite	5(25.0%)	15(75.0%)	1	1
Primary school	9(45.0%)	11(55.0%)	2.46(0.64, 9.39)	0.49(0.07, 3.44)
Secondary (9-12)	67(57.3%)	50(42.7%)	4.02(1.37, 11.79)*	1.68(0.30, 9.35)
College and above	68(54.8%)	56(45.2%)	3.64(1.25, 10.64)*	0.98(0.17, 5.54)
	51(69.9%)	22(30.1%)	6.96(2.25, 21.50)*	1.45(0.22, 9.39)
Occupational status				
Housewife	60(48.4%)	64(51.6%)	1	1
Merchant	63(60.0%)	42(40.0%)	1.60(0.95, 2.71)	1.92(0.97, 3.79)
Government employed	54(73.0%)	20(27.0%)	2.88(1.55, 5.37)*	2.10(0.79, 5.52)
Farmer	4(23.5%)	13(76.5%)	0.32(0.10, 1.06)	0.78(0.07, 8.43)
Student	12(60.0%)	8(40.0%)	1.6(0.61, 4.19)	0.84(0.24, 2.89)
Others	7(50.0%)	7(50.0%)	1.07(0.35, 3.22)	1.98(0.49, 7.93)
FMI, ETB				
<2000	43(44.8%)	53(55.2%)	1	1
2001-4100	41(50.6%)	40(49.4%)	1.26(0.69, 2.29)	1.11(0.52, 2.40)
4101-7000	55(61.1%)	35(38.9%)	1.94(1.08, 3.47)*	1.51(0.70, 3.26)
>7000	61(70.1%)	26(29.9%)	2.89(1.57, 5.32)*	1.48(0.64, 3.46)
Previous operation				

Yes	78(90.7%)	8(9.3%)	11.67(5.42, 25.11)*	4.47(1.77, 11.32)*
No	122(45.5%)	146(54.5%)	1	1
HI about anesthesia				
Yes	155(84.7%)	28(15.3%)	15.5(9.15, 26.26)*	10.06(5.41,18.69)*
No	45(26.3%)	126(73.7%)	1	1

*P-value<0.05

Hosmer and Lemeshow Test=0.619

Table 6: Bivariate and multivariable logistic regression analysis of factors associated with attitude towards anesthesia for CS.

Variable	Attitude		COR (95% CI)	AOR (95 % CI)
	Positive	Negative		
Age				
16-24	43(46.2%)	50(53.8%)	1.35(0.62, 2.96)	0.49(0.16, 1.50)
25-29	84(57.5%)	62(42.5%)	2.13(1.01, 4.49)*	0.86(0.32, 2.30)
30-34	39(49.4%)	40(50.6%)	1.53(0.69, 3.42)	1.07(0.41, 2.78)
≥35	14(38.9%)	22(61.1%)	1	1
Residence				
Urban	176(53.7%)	152(46.3%)	6.37(2.15, 18.89)	3.38(0.92, 12.45)
Rural	4(15.4%)	22(84.6%)	1	1
Educational status				
Unable to read and write	2(10.0%)	18(90.0%)	1	1
Able to read and rite	6(30.0%)	14(70.0%)	3.86(0.67, 22.1)	2.51(0.36, 17.49)
Primary school	47(40.2%)	70(59.8%)	6.04(1.34, 27.27)*	3.68(0.64, 21.06)
Secondary	69(65.6%)	55(44.4%)	11.29(2.51, 50.77)*	6.71(1.19, 37.99)*
College and above	56(76.7%)	17(23.3%)	29.64(6.24, 140.86)*	13.63(2.26, 82.21)*
FMI, ETB				
<2000	42(43.8%)	54(56.2%)	1	1
2001-4100	37(45.7%)	44(54.3%)	1.08(0.59, 1.96)	0.91(0.47, 1.76)
4101-7000	44(48.9%)	46(51.1%)	1.23(0.69, 2.19)	0.87(0.46, 1.65)
≥70001	57(65.5%)	30(34.5%)	2.44(1.34, 4.44)*	1.04(0.51, 2.10)
Number of ANC visit				
No visit	72(52.2%)	66(47.8%)	1	1
1-3 visit	28(39.4%)	43(60.6%)	0.59(0.33, 1.06)	0.17(0.03, 1.10)
4 or more visit	80(55.2%)	65(44.8%)	1.13(0.71, 1.80)	0.28(0.04, 1.77)
Number of delivery				
Nullpara	70(52.6%)	63(47.4%)	1	1
Para I	58(62.4%)	35(37.6%)	1.49(0.87, 2.56)	5.52(0.83, 36.98)
Multipara	52(40.6%)	76(59.4%)	0.62(0.38, 1.00)	2.32(0.36, 15.04)

Previous operation/surgery				
Yes	51(59.3%)	35(40.7%)	1.57(0.96, 2.57)	0.82(0.41, 1.62)
No	129(48.1%)	139(51.9%)	1	1
HI about anesthesia				
Yes	111(60.7%)	72(39.3%)	2.28(1.49, 3.49)**	2.02(1.09, 3.77)*
No	69(40.4%)	102(59.6%)	1	1
Knowledge about anesthesia				
Good	118(59.0%)	82(41.0%)	2.14(1.39, 3.28)*	1.37(0.77, 2.45)
Poor	62(40.3%)	92(59.7%)	1	1

*P-value<0.05

Hosmer and Lemeshow Test=0.146

Figures

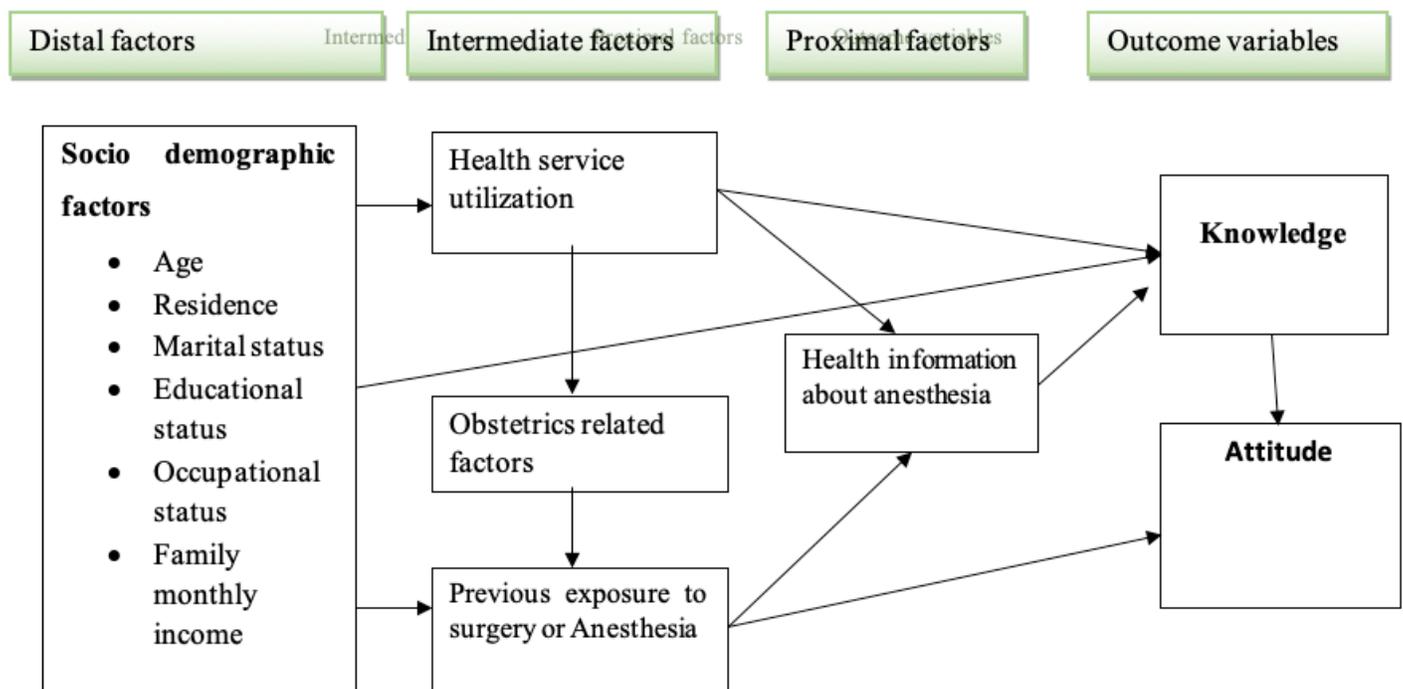


Figure 1

Conceptual framework for factors affecting knowledge and attitude of pregnant women toward anesthesia for CS

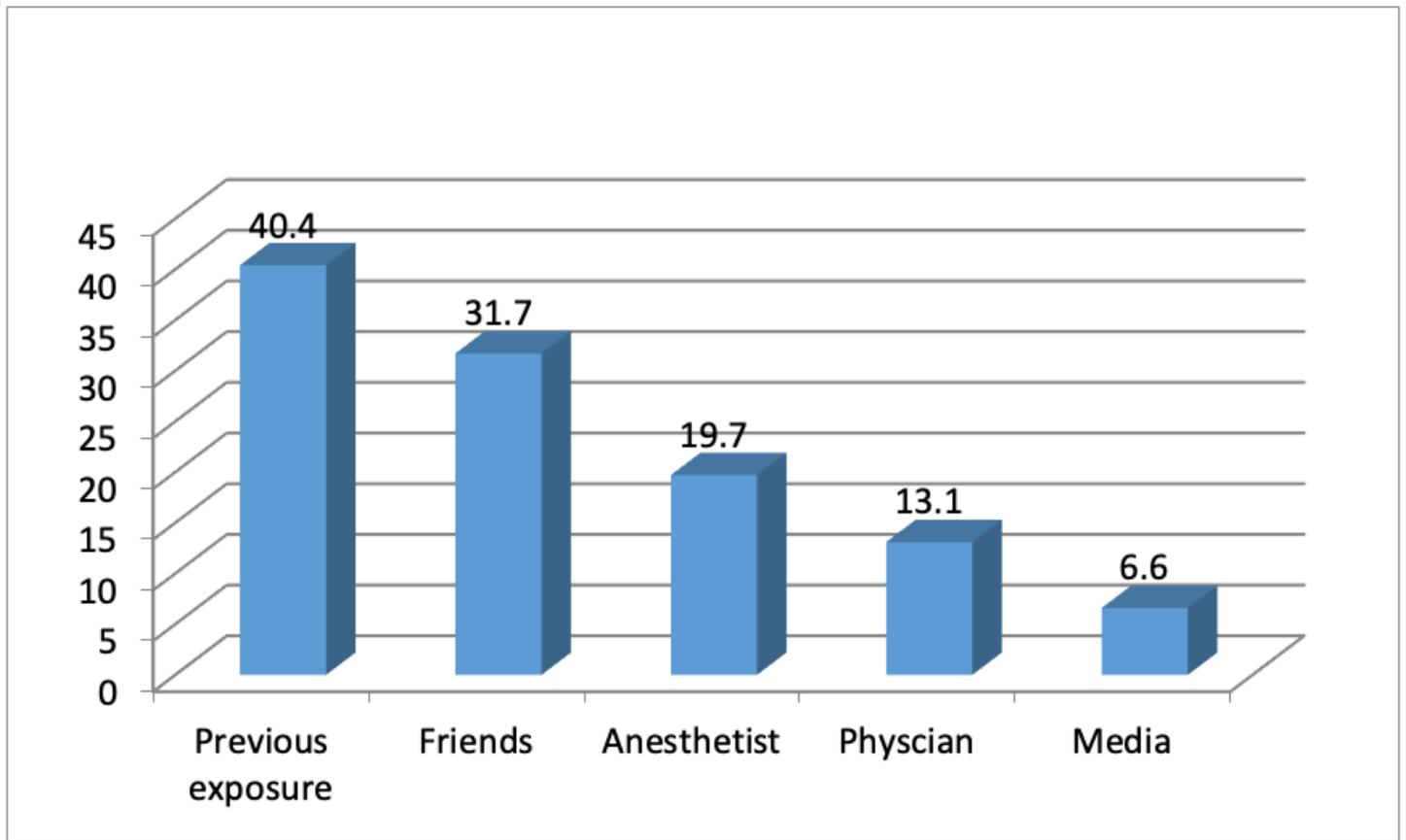


Figure 2

Source of information about Anesthesia