Original Research

ANNALS OF MEDICINE & SURGERY

OPEN

Evaluating patients' choice of general and spinal anesthesia for elective cesarean section and associated factors: a descriptive study

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Objective: During an elective cesarean section, the choice of method of anesthesia is critical for maternal and fetal outcomes. However, the anesthesiologist's decision is dependent on the patient's desire. This study aimed to determine the choice of general and spinal anesthesia among women undergoing elective cesarean sections and the factors affecting their choice.

Methods: In this descriptive study, pregnant women who had the ability to undergo both spinal and general anesthesia were referred to public and private hospitals in (Sari Imam Khomeini Hospital, Mazandaran University of Medical Sciences). A questionnaire recorded the patient's demographic data, education and occupation, history of anesthesia, choice of anesthetic method, and reason for selection.

Results: A total of 384 women were included in the study, of whom 60% selected general anesthesia and 40% selected spinal anesthesia. Among the reasons for not choosing spinal anesthesia, most common were fear of injury to the spinal cord (64.3%) and fear of seeing and hearing during the surgery (53.3%), and among the reasons for not choosing general anesthesia, most common were fear of not waking (54.3%) and a desire to be alert at the time of infant birth (40.7%). Most of the women with a history of spinal anesthesia selected spinal anesthesia (53%), and 62% of those without a history of spinal anesthesia selected general anesthesia. Factors such as age, nonmedical staff advice, and being employed were significantly correlated with the choice of anesthesia ($P < 0.005$).

Conclusion: The rate of general anesthesia selection was higher than spinal anesthesia. More attention and efforts are required to educate patients regarding the method of anesthesia prior to the surgery.

Keywords: anesthesia, cesarean section, spinal anesthesia, surgery, women

Introduction

The prevalence of cesarean section (C-section) has dramatically increased globally. In 150 countries 18.6% of total births are through a C-section. Iran is among the countries with the highest rate of C-section (47.9%)[1].

From 1985 to 1990, the mortality rate of C-sections under general anesthesia was reported to be 16.7 times higher than that under spinal anesthesia in the United States. However, in a study in 2002, the mortality rate was reduced significantly, and it was suggested that anesthesia the two types of anesthesia might not influence mortality, indicating that procedures and drugs for general anesthesia have improved in the past two decades[2].

HIGHLIGHTS

- The prevalence of cesarean sections has dramatically increased globally.
- During an elective cesarean section, the choice of method of anesthesia is critical for maternal and fetal outcomes.
- However, the anesthesiologist's decision is dependent on the patient's desire.
- The rate of general anesthesia selection was higher than spinal anesthesia.
- More attention and efforts are required to educate patients regarding the method of anesthesia prior to the surgery.

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Annals of Medicine & Surgery (2023) 85: 6–12

Received 3 September 2022; Accepted 12 November 2022

Published online 12 January 2023

http://dx.doi.org/10.1097/MS9.0000000000000010

Physiological changes during pregnancy set hurdles in anesthesia management since they affect both fetus and the mother[3,4]. Studies have indicated that spinal anesthesia is safer and is associated with better maternal and fetal outcomes[5,6].

The physician's decision to choose general anesthesia or regional anesthesia to provide analgesia for a C-section depends primarily on the clinical condition of the mother and fetus, as well as the degree of emergency, but in many cases, especially in elective C-sections, the decision of the anesthesiologist also depends on the patient's desire[7]. Therefore, it is important for a mother to have sufficient knowledge regarding each method of anesthesia, expected outcomes, and potential side effects before the decision is made[8].

In general, the use of spinal anesthesia is widespread and increasing due to the increased risks of general anesthesia.

According to studies conducted in different parts of the world in this field, cultural and regional differences have played a major role in this selection of anesthesia method. Thus, we conducted this study in (Sari Imam Khomeini Hospital, Mazandaran University of Medical Sciences) to evaluate patients' desires for anesthesia methods and factors that influence their decision.

Methods

In this descriptive study, 384 pregnant women who were referred to public and private maternity hospitals and underwent both general and spinal anesthesia for C-section in (Sari Imam Khomeini Hospital, Mazandaran University of Medical Sciences) from January 2017 to December 2020 were enrolled. Inclusion criteria included a pregnant woman with American Society of Anesthesiologists Class I and II undergoing a C-section, consent to participate in the study, and the possibility of performing both general anesthesia and spinal anesthesia. Patients who did not consent to participate in the study and those allergic to general or spinal anesthesia were excluded from the study.

Based on the study of Foroozeh Fard and the following formula, the sample size was 384 people:

$$N = \frac{\left(Z1 - \frac{\alpha}{2}\right)^2 . P(1-P)}{D^2}, N = \frac{(1/96)^2 \times 0/5 \times 0/5}{(0/05)^2} = 384$$

$$P = 0.5, D = 0.05, \alpha = 0.05, \mathrm{ZI} - \frac{\alpha}{2} = 1.96$$

Epidemiological data of the patients, such as age, level of education, occupation, place of residence (city or village), and history of anesthesia or spinal anesthesia were obtained first. In the second step, the choice of general anesthesia or spinal anesthesia was asked, along with the reasons for selection, and recorded in the checklist.

The obtained data were entered in SPSS v.24 and descriptive and analytical analysis was performed based on the specific objectives of the project. Data description was performed using the mean and SD for numerical variables. Qualitative variables were described using numbers and percentages. χ^2, a t test, and Fisher's tests were performed to compare the data. A significance level of 0.05 was considered.

All patients entered the study with full knowledge and informed consent. The study was performed after the approval of the ethics committee of (Sari Imam Khomeini Hospital, Mazandaran University of Medical Sciences) and the unique identifying number is Research Registry 8155.

The methods are stated in accordance with STROCSS guidelines[9].

Results

Of the 384 people included in the study, 31 cases (8.07%) were in the age group under 25 years, 202 cases (52.60%) were aged between 25 and 30 years, 72 cases (18.75%) between 31 and 35 years, 59 cases (15.36%) between 36 and 40 years, and 20 cases (5.21%) were over 40 years.

The place of residence was the city in 260 (67.71%) cases, and 124 (32.29%) women were located in the village areas.

Frequency of pregnant women in terms of education

Based on the level of education, 95 (24.74%) women had less than a diploma, 132 (34.38%) women had a diploma, 34 (8.85%) were postdiploma, and 123 (32.03%) had a bachelor's degree or higher. The education of most pregnant women surveyed was a diploma.

According to the frequency of pregnant women surveyed by occupation, 317 women (82.55%) were housewives, 40 women (10.42%) were government employees, and 27 women (7.03%) were self-employed.

In the history of preterm labor, 219 cases (57.03%) had a history of preterm labor, and 165 cases (42.97%) had no history of preterm labor.

In terms of frequency in terms of history of general anesthesia, 230 women (59.90%) had a history of general anesthesia, and 154 cases (40.10%) had no such history.

In terms of frequency of women with a history of spinal anesthesia, 66 women (17.19%) had a history of spinal anesthesia and 318 cases (82.81%) had no such history.

The number of pregnant women varies depending on the type of anesthesia used.

As seen in the table and chart, 232 women (60.42%) chose general anesthesia and 152 women opted for (39.58%) spinal anesthesia.

The frequency of pregnancy in women according to the type of anesthesia recommended by nonsurgical staff.

According to the table and chart below, 165 cases (42.97%) were not advised by nonsurgical staff to choose the type of anesthesia and nonmedical staff advised women to choose general anesthesia in 101 cases (26.30%) and spinal anesthesia in 118 cases (30.73%).

Information about participants in the study based on factors related to the choice of general anesthesia.

According to the table and chart below, the reason for choosing general anesthesia in 130 cases (53.3%) was fear of seeing and hearing the surgical process, 157 cases (64.3%) were afraid of spinal cord injury, 121 cases (49.6%) were afraid of low back pain, 118 cases (48.3%) were afraid of paralysis, 123 cases (50.4%) were afraid of needles in the back, and 71 cases (29.1%) were afraid of pain during surgery.

Information of participants based on factors related to the choice of spinal anesthesia

The reason for choosing spinal anesthesia in 57 cases (40.7%) was a desire to be conscious at birth, 76 cases (54.3%) had a fear of not waking up, 56 cases (40%) had a fear of nausea and vomiting, 39 cases (27.9%) were afraid of postoperative pain, 36 cases (25.7%) feared urinary retention, 28 cases (20%) feared postoperative anorexia, 36 cases (25.7%) were afraid of postoperative headache, and 51 cases (36.4%) were afraid that they might not be able to breastfeed.

Relationship between age and choice of type of anesthesia

The Table 1 shows the relationship between age and choice of anesthesia, according to which this relationship is significant ($P = 0.002$). Women with ages less than 25 years and 36–40 years were significantly more inclined toward choosing spinal anesthesia, and more women aged 25–30 and 36–40 years opted

Table 1

Relationship between age and choice of anesthesia type

Variable	Number		*P* value
	General anesthesia [*n* (%)]	Spinal anesthesia [*n* (%)]	
Age(y)			
> 25	16 (6.9)	16 (9.9)	0.002
25–30	131 (56.5)	131 (46.7)	
31–35	30 (12.9)	30 (27.6)	
36–40	43 (18.5)	43 (10.5)	
< 40	12 (5.2)	12 (5.3)	

significantly for general anesthesia. Over the age of 40, however, there was no difference.

Relationship between age and choice of type of anesthesia based on factors related to the type of choice

The relationship between age and choice of type of anesthesia based on factors related to the type of choice showed that among women who chose general anesthesia, there was no significant relationship between age and factors related to the type of choice ($P = 0.429$). Among patients who chose spinal anesthesia, this relationship was significant ($P = 0.001$), such that the desire to be conscious during the surgery was greatest among women aged 25–40 years. While in the age group of less than 25 years and more than 40 years, none of the pregnant women chose this case. Among women under 25 years, fear of not waking up was the major reason, and in women over 40, fear of nausea and vomiting, postoperative pain, urinary retention, anorexia, and headache were the common reasons, respectively (Table 2).

Relationship between location and choice of type of anesthesia

Table 2 shows the relationship between residence and the choice of type of anesthesia was not significantly correlated ($P = 0.985$).

Relationship between location and choice of type of anesthesia based on factors related to the type of choice

Table 3 shows the relationship between residence and choice of type of anesthesia based on factors related to the type of choice, according to which, among women who chose general anesthesia, no relationship was observed between residence and factors related to the type of choice ($P = 0.100$). Among women who chose spinal anesthesia, this relationship was significant ($P = 0.010$), such that among women living in the city, the most common reason for choosing spinal anesthesia was the desire to be conscious at birth. This was one of the least common choices among women living in the villages, while the most common reason was the fear of not waking up.

Relationship between education and choice of anesthesia

The relationship between education and choice of anesthesia was statistically significant ($P = 0.002$).

Relationship between education and choice of type of anesthesia based on factors related to the type of choice

Table 4 shows the relationship between education and choice of type of anesthesia based on factors related to the type of choice, according to which, among women who chose general anesthesia, the relationship between education and the factor related to the type of choice was significant ($P = 0.001$). Those with education less than undergraduate, chose general anesthesia commonly due to the fear of needles in the back whereas women who had diplomas had the fear of back pain. Among the postgraduate group, the fear of seeing and hearing surgery and the fear of needles in the back were significantly most common, and for women with an undergraduate degree and above, there was a fear of spinal cord injury. Also, in people who chose spinal anesthesia, this relationship was significant ($P = 0.001$), such that women with a diploma and less had the fear of not waking up, while among women with postgraduate, bachelor's, and higher education, this was least common and the fear of postoperative nausea and vomiting was most common.

Table 2

Relationship between age and the choice of anesthesia type based on the factors related to the type of choice

Factors related to the type of choice	> 25 [*n* (%)]	25–30 [*n* (%)]	31–35 [*n* (%)]	36–40 [*n* (%)]	> 40 [*n* (%)]	*P* value
General anesthesia						
Fear of seeing and hearing in the operating room	12 (18.75)	72 (18.5)	18 (21.4)	24 (17.8)	4 (8.3)	0.429
Fear of spinal cord injury	12 (18.75)	95 (24.3)	12 (14.3)	27 (20)	12 (25)	
Fear of back pain	8 (12.5)	57 (14.6)	20 (23.8)	24 (17.8)	12 (25)	
Fear of being paralyzed	16 (25)	59 (15.1)	15 (17.9)	20 (14.8)	8 (16.7)	
Fear of needles in the back	8 (12.5)	72 (18.5)	11 (13.1)	24 (17.8)	8 (16.7)	
Fear of pain during surgery	8 (12.5)	35 (9)	8 (9.5)	16 (11.8)	4 (8.3)	
Spinal anesthesia						
The desire to be alert at the time of the birth of the baby	0	30 (19.4)	19 (16.1)	30 (45.4)	0	0.001
Fear of not waking up	15 (48.4)	30 (19.4)	15 (12.6)	16 (24.1)	0	
Fear of nausea and vomiting	8 (25.8)	16 (10.4)	20 (16.)	4 (6.1)	8 (20)	
Fear of pain after surgery	4 (12.9)	15 (9.7)	16 (13.6)	0	4 (10)	
Fear of urinary retention	0	12 (7.8)	12 (10.1)	4 (6.1)	8 (20)	
Fear of anorexia	0	8 (4.5)	8 (6.8)	4 (6.1)	8 (20)	
Fear of headache	0	16 (10.4)	8 (6.8)	4 (6.1)	8 (20)	
Fear of not being able to breastfeed	4 (12.9)	27 (17.4)	12 (10.1)	4 (6.1)	4 (10)	

Table 3

Relationship between age and the choice of anesthesia type based on the factors related to the type of choice

Factors related to the type of choice	Urban, *n* (%)	Rural, *n* (%)	*P* value
General anesthesia			
Fear of seeing and hearing in the operating room	79 (18.8)	51 (17.1)	0.100
Fear of spinal cord injury	101 (24)	56 (18.7)	
Fear of back pain	77 (18.3)	44 (14.7)	
Fear of being paralyzed	58 (13.8)	60 (20.1)	
Fear of needles in the back	67 (15.9)	56 (18.7)	
Fear of pain during surgery	39 (9.3)	32 (10.7)	
Spinal anesthesia			
The desire to be alert at the time of the birth of the baby	45 (17.7)	12 (9.6)	0.010
Fear of not waking up	38 (14.9)	38 (30.4)	
Fear of nausea and vomiting	36 (14.2)	20 (16)	
Fear of pain after surgery	24 (9.4)	15 (12)	
Fear of urinary retention	24 (9.5)	12 (9.6)	
Fear of anorexia	20 (7.9)	8 (6.4)	
Fear of headache	28 (11)	8 (6.4)	
Fear of not being able to breastfeed	39 (15.4)	12 (9.6)	

Relationship between occupation and choice of type of anesthesia

The occupation of women was significantly associated with the choice of anesthesia ($P = 0.027$), such that housewives were more inclined to choose spinal anesthesia and women who were in government jobs chose general anesthesia.

Relationship between occupation and choice of type of anesthesia based on factors related to type of choice

Table 5 shows the relationship between job and type of anesthesia based on the factors related to the type of choice. Among women who chose general anesthesia, the relationship between education and the factor related to the type of choice was significant ($P = 0.006$). In housewives, the most common reason for choosing general anesthesia was the fear of needles and back pain, while there was no fear of back pain in self-employed women. The most common reason for self-employed women to choose general anesthesia is the fear of seeing and hearing during the surgery. Among women with government jobs, fear of spinal cord injury was the most common reason for the choice. This relationship was significant ($P = 0.001$) among the spinal anesthesia group too, such that in housewives, fear of not waking up was the common reason.

Relationship between a history of general anesthesia and choice of type of anesthesia

The history of general anesthesia and the choice of type of anesthesia were significantly correlated ($P = 0.389$).

Relationship between a history of general anesthesia and choice of type of anesthesia based on factors related to the type of choice

Table 6 shows the relationship between the history of general anesthesia and the choice of type of anesthesia based on factors related to the type of choice. The history of general anesthesia had no effect on the choice of factors. Among women who chose spinal anesthesia, this relationship was significant ($P = 0.010$), such that in women who had a history of general anesthesia, the fear of not waking up was less than in women who did not have a history of general anesthesia. And among these women, desire to be conscious during the surgery and the fear of headaches was the common reason, compared with women without the history.

Relationship between a history of spinal anesthesia and choice of type of anesthesia

The history of spinal anesthesia and the choice of anesthesia were not significantly correlated ($P = 0.389$).

Relationship between a history of spinal anesthesia and choice of type of anesthesia based on factors related to the type of choice.

Table 7 shows the relationship between the history of spinal anesthesia and the choice of type of anesthesia based on the factors related to the type of choice. The history of spinal anesthesia had no effect on the reasons for selection ($P = 0.079$). This relationship was not significant in women who chose spinal anesthesia ($P = 0.063$).

Table 4

Correlation between the level of education and the choice of the type of anesthesia based on the factors related to the type of choice

Factors related to the type of choice	High school, *n* (%)	Diploma, *n* (%)	Associate degree, *n* (%)	Bachelor's degree or higher, *n* (%)	*P* value
General anesthesia					
Fear of seeing and hearing in the operating room	39 (21.3)	36 (13.6)	15 (24.6)	40 (18.9)	0.001
Fear of spinal cord injury	32 (17.5)	50 (18.9)	12 (19.6)	63 (29.7)	
Fear of back pain	24 (13.1)	59 (22.4)	4 (6.6)	34 (16)	
Fear of being paralyzed	24 (13.1)	47 (17.8)	11 (18)	36 (17)	
Fear of needles in the back	44 (24)	40 (15.2)	15 (24.6)	24 (11.3)	
Fear of pain during surgery	20 (10.9)	32 (12.1)	4 (6.6)	15 (7.1)	
Spinal anesthesia					
The desire to be alert at the time of the birth of the baby	12 (12)	19 (14.5)	4 (14.8)	22 (10.2)	0.001
Fear of not waking up	20 (20)	44 (33.6)	0	12 (9.9)	
Fear of nausea and vomiting	16 (16)	16 (12.2)	4 (14.8.)	20 (16.5)	
Fear of pain after surgery	16 (16)	12 (9.2)	3 (11.2)	8 (6.6)	
Fear of urinary retention	8 (8)	12 (9.2)	4 (14.8)	12 (9.9)	
Fear of anorexia	8 (8)	4 (8)	4 (4.8)	12 (9.9)	
Fear of headache	12 (12)	4 (3.1)	4 (14.8)	16 (13.2)	
Fear of not being able to breastfeed	8 (8)	20 (15.3)	4 (14.8)	19 (15.7)	

Table 5

Relationship between occupation and choice of anesthesia type

Variable	General anesthesia [*n* (%)]	Spinal anesthesia [*n* (%)]	*P* value
Job			
House keeper	185 (79.7)	132 (86.8)	0.027
Government job	32 (13.8)	8 (5.3)	
Self-employment	15 (6.5)	12 (7.9)	

The relationship between the type of anesthesia recommended by nonmedical staff and the choice of type of anesthesia

Table 8 shows that the relationship between the recommendation of anesthesia by nonmedical staff and the choice of anesthesia was significant ($P = 0.001$) such that a large number of people who were recommended general anesthesia chose general anesthesia selected and also a large number of women who were advised to have spinal anesthesia chose spinal anesthesia.

Discussion

The use of different methods of induction of analgesia or anesthesia is an integral part of cesarean delivery, and the decision on choosing the type of anesthesia according to the conditions of the mother and fetus is of particular importance[10]. In many cases, especially elective surgery, the decision of the anesthesiologist also depends on the patient's desire[11]. The aim of this study was to determine the extent and causes of preference for general anesthesia and spinal anesthesia in patients undergoing elective C-section in public and private hospitals in Sari in 2019.

Of the 384 patients included, 60% chose general anesthesia and 40% chose spinal anesthesia. It seems that patients tend to choose general anesthesia over spinal anesthesia for C-sections. In a study by Sadeghi *et al*.[12], conducted in Tehran, 50% of women chose general anesthesia and 30% chose spinal anesthesia, and 20% did not choose any particular method[13,14].

Table 6

Correlation between history of general anesthesia and choice of anesthesia type based on factors related to choice type

Factors related to the type of choice	History of general anesthesia [*n* (%)] Yes	No	*P* value
General anesthesia			
Fear of seeing and hearing in the operating room	86 (18.6)	44 (16.9)	0.068
Fear of spinal cord injury	90 (19.6)	67 (25.8)	
Fear of back pain	79 (17.1)	42 (16.2)	
Fear of being paralyzed	78 (17)	40 (15.3)	
Fear of needles in the back	71 (15.5)	52 (20)	
Fear of pain during surgery	56 (12.2)	15 (5.8)	
Spinal anesthesia			
The desire to be alert at the time of the birth of the baby	34 (17.1)	23 (12.8)	0.020
Fear of not waking up	34 (17.1)	42 (23.3)	
Fear of nausea and vomiting	28 (14.1)	28 (15.6)	
Fear of pain after surgery	19 (9.6)	20 (11.1)	
Fear of urinary retention	20 (10)	16 (8.9)	
Fear of anorexia	16 (8)	12 (6.7)	
Fear of headache	28 (14.1)	8 (4.4)	
Fear of not being able to breastfeed	20 (10)	31 (17.2)	

Table 7

Correlation between history of spinal anesthesia and choice of type of anesthesia

Variable	General anesthesia [*n* (%)]	Spinal anesthesia [*n* (%)]	*P* value
History of spinal anesthesia			
Yes	31 (13.4)	35 (23)	0.014
No	201 (86.6)	117 (77)	

In other studies conducted in Iran, the preferred choice was general anesthesia such as those conducted at two hospitals in Torbate Heidayyeh, where 100% of C-sections were performed under general anesthesia[15] and at Shahrekord University Hospital where 64% of women chose general anesthesia[15]. Also, in the study by Bukar *et al*.[16] in Nigeria, most of the patients (70%) chose general anesthesia, which was similar to our study.

In our study, among the reasons for choosing general anesthesia and not local anesthesia, the most common were fear of spinal cord injury, fear of seeing and hearing during the surgery, and fear of back pain. Among the reasons for choosing local anesthesia, the most common were fear of not waking up and a desire to stay conscious during the birth. In a study by Bukar *et al*.[16], the most common reason for choosing general anesthesia was different types of fear, and in the case of spinal anesthesia, the most common choice was to see childbirth in the operating room. In the study of Fassoulaki *et al*.[17], among women who chose spinal anesthesia, seeing a child in the operating room was the most important choice, and in the group of women who chose general anesthesia, the most important factor was fear of spinal cord injury.

In most studies, one of the reasons for not choosing spinal anesthesia is the fear of back and needle pain, which was relatively low in our study, however, the fear of needles was high. The technique of performing spinal anesthesia, which is characterized by the insertion of a needle into the lumbar region, seems to be a concern, but by providing adequate explanations and reassuring patients, this concern can be reduced. Studies have shown that women who present with greater preoperative anxiety are more likely to choose general anesthesia[18]. Therefore, educating them and providing detailed explanations can bring their choices closer to spinal anesthesia.

In the present study, based on the results, the relationship between a history of general anesthesia and the selection of general anesthesia was not significant, while in the case of spinal anesthesia, this relationship was significant. This indicated that women with firsthand experience of spinal anesthesia are more likely to choose this method again. Similar findings were presented in the study of Foruzeshfard *et al*[19].

Our study showed that women who chose spinal anesthesia and were aged between 25 and 40 years wished to be conscious during the birth, whereas, those under 25 years had the fear of not waking up. Women at this age seem to have more fear and stress due to their first surgical experience, and they need preoperative support in this regard.

In our study, the relationship between education and the choice of anesthesia was not significant, but the relationship between

Table 8

The relationship between the recommendation of the type of anesthesia by nonphysicians and the choice of the type of anesthesia

Recommending the type of anesthesia by nonphysicians	General anesthesia [*n* (%)]	Spinal anesthesia [*n* (%)]	*P* value
No recommendation	117 (50.4)	48 (31.6)	0.001
Recommendation for general anesthesia	81 (34.9)	20 (13.2)	
Recommendation for spinal anesthesia	34 (14.7)	84 (55.3)	

education and the reason for choosing anesthesia was significant. The findings of our study indicated that the reasons for choice were more scientific among more educated women. In the study by Jathar *et al*.[20], it was stated that there was a direct relationship between education level and awareness of anesthesia, which increased more after the preoperative visit to the anesthesiologist, that is, anesthesia visits were more effective and useful in people with higher education.

In the present study, the results showed that the relationship between the recommendation of anesthesia by nonphysicians and the choice of anesthesia was significant. A large number of people who were recommended for general anesthesia chose general anesthesia, and a large number of women who were recommended for spinal anesthesia also chose spinal anesthesia. In the Maheshwari study, the advice of nonphysicians was effective in choosing general anesthesia over spinal anesthesia[18]. Our study also reported a significant correlation between occupation and choice of anesthesia. These findings are also presented in the study by Maheshwari and Ismail[18].

Conclusion

The results of our study concluded that the rate of general anesthesia selection was slightly higher than spinal anesthesia, which was similar to other regional studies, and therefore required more attention and effort. Various factors can influence this choice, the most important of which are previous experience with general anesthesia or spinal anesthesia, level of education, and advice from nonphysicians. Most of the reasons given by mothers for not accepting spinal anesthesia were unscientific reasons that can be reduced by educating and providing sufficient knowledge to women. It is recommended to conduct further studies with a higher number of samples and also to examine the decisions about the type of anesthesia before and after training and preoperative counseling.

Ethical approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Sources of funding

None.

Author contributors

Dr F.H.K. and Dr S.A.E.: conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. Dr A.G.B. and Dr M.K.: designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript. Dr M.A.: coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.

Conflict of interest disclosure

The authors deny any conflict of interest in any terms or by any means during the study.

Research registration unique identifying number (UIN)

None.

Guarantor

Seyed Abdollah Emadi.

Consent

Informed consent was obtained from each participant.

Availability of data and materials

All relevant data and materials are provided with in manuscript.

Disclosure

None.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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