

ORIGINAL RESEARCH

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Factors affecting selection of anesthesia type in elective cesarean operations and pregnant preferences for anesthesia outcome**Baris Arslan, Nilgun Kavrut Ozturk, Zinet Asuman Arslan Onuk, Bilge Karsli***Antalya Training and Research Hospital, Department of Anesthesia and Intensive Care, Antalya, Turkey*Received 19 July 2018; Accepted 10 September 2018
Available online 08.11.2018 with doi:10.5455/medscience.2018.07.8924*Copyright © 2019 by authors and Medicine Science Publishing Inc.***Abstract**

The aim of study is to determine the factors having an effect on the selections of anesthesia type for the pregnant. The research was performed on 274 female patients, who applied to Antalya Research Training and Research Hospital within a 2-months period. Firstly, the pregnant were asked for their sociodemographic attributes, obstetric histories, fears and anesthesia preferences in the survey. Secondly, the outcomes that they desire to avoid was evaluated by describing the most frequently seen nine outcomes related to anesthesia. The rate of selecting general anesthesia was 64.2% while the regional anesthesia rate was 35.8%. An increase in the choice of regional anesthesia was observed as the level of education and income increased. Anesthetist and gynecologist have shown favorable contributions to the selection of regional techniques of pregnant. In our study, the cognitive dysfunction was the least desired outcome. The physicians' recommendations were seen as the most important factor of directing the patients to select the regional anesthesia.

Keywords: Cesarean, patient preference, cognitive dysfunction**Introduction**

The most important intervention is cesarean in the obstetric surgery and has an increasing incidence. While the cesarean rate identified by the World Health Organization (WHO) were minimum 5% and maximum 15%; this rate was 27.3% in America, 41% in India, 22.8% in Nigeria and 37% in Turkey in 2002 [1,2]. The regional anesthesia methods used for the cesarean operation differ according to the institutions as mentioned in the studies performed in our country. Tore et al. determined that the regional anesthesia rates increased from 15.3% in 1998 to 36.1% in 2005 when they reviewed the anesthesia applications for their studies containing 51 hospitals [3]. While rate increases are drawn attention to the regional anesthesia preferences, there are also differences in private hospitals, university hospitals and state hospitals [3]. Despite the low rate in Turkey, this ratio is 84 % in the UK and % 95-97 in the USA [4]. Development of the obstetric anesthesia as a fellowship and establishment of epidural services significantly decrease the maternal mortality related to anesthesia. The obstetric anesthesia's

reliability increased by the development of the epidural anesthesia application services and increment of the regional applications, and maintaining the prevalence of these services is suggested [4].

The factors being effective should be firstly determined in the selection of patients' anesthesia preferences to increase the regional anesthesia rates used in the cesarean operations in our country. We investigated factors affecting the selection of anesthesia type for cesarean delivery. As a secondary aim, we tried to find out that the pregnant women want to avoid the most common outcome associated with the anesthesia. Also, whether anesthesia related outcome pregnant wanted to avoid were an effect on the choice of anesthesia type were also examined.

Material and Methods

After the ethics committee approval number:54, from the beginning of October to the end of November 2012 within 2 months interval, 274 women undergoing elective cesarean surgery who agreed to participate in the study were included in the study. Due to the ethical values, patients who have stillbirth or abortion history and need the emergent operations were excluded from the study.

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Formation of Survey

The survey consists of 4 sections.

1st Section: It contains the socio-demographic characteristics and medical history. The patients' name, surname, age, education status, income level, previous pregnancy number, smoking, operation history, previous anesthesia experience and anesthesia related outcomes were asked.

2nd Section: The patients were asked for what anesthesia method they preferred. The effect of healthcare personnel, anesthetist, gynecologist, relative, TV, radio, Internet and book was asked for their anesthesia type choice.

3rd Section: The patients anesthesia related phobias were asked; hearing the surgical noises and seeing something during the surgery, headache anxiety, low back pain anxiety, fear of paralysis.

4th Section: Outcomes. It is necessary here to clarify exactly what is meant by anesthesia outcome; anesthesia related unexpected death or complication during surgery or after the surgery [5].

10 most common anesthesia related outcome were explained and defined to the pregnant. Each outcome was given together with their explanations constituted in such a way that the patients could easily understand them and occurred by 10 to 25 words with the survey form. Firstly, the patients were asked to order 10 outcomes backwards by giving number from 10 to 1 they wanted to avoid from the most to least. Thus, ranking value of each outcome was formed. Then, the patients were asked to imagine they had 100 TL (Turkish Lira) only they could spend to avoid outcome. Patients were asked to spend all their money imagining that the outcome they were spending more money was less likely to be encountered.

4 outcomes of general anesthesia and 4 outcomes of regional anesthesia were formed as follows. Pubmed, Google Academic, Turkish Anesthesiology and Reanimation Journal Archive were searched with. The words of "outcome, adverse, side effect and complication" were searched with "general anesthesia and regional anesthesia" in Pubmed, Google Academic, Turkish Anesthesiology and Reanimation Journal Archive. 23 of 122 articles were accepted for evaluation. Some of them were mentioned in the references section. The most common anesthesia related outcomes were determined by using 23 articles for each anesthesia type. The most encountered outcomes with the regional anesthesia were headache, low back pain, nausea-vomiting, itching and urinary retention. The most encountered outcomes with the general anesthesia were throat ache, nausea, vomiting, sleepiness and shivering.

Although all the side effects could be seen both in two anesthesia types, while the most frequent four side effects seen during the regional anesthesia included in the regional group, the most frequent four side effects seen during the general anesthesia were taken into the general group. The nausea and vomiting were included in the general anesthesia group, as they were in the highest position in the general anesthesia group. The cognitive dysfunction was added to these 8 possible side effects due to experiencing the similar incidences of the general and regional anesthesia.

Statistical Analysis

The SPSS 16 program was used in the statistical analysis. The data

was stated as the mean±standard deviation. While T-test was used in the data suitable for the normal distribution when comparing the mean values, the Mann Whitney U test and Kruskal-Wallis H tests were used for the others. The monetary and ranking values were evaluated by the Pearson correlation. The Chi-square and Fishers Exact tests were used while comparing the percentages. The p values less than 0.05 were considered statistically significant. The income level was categorized based on the data onto the Confederation of Workers' Trade Unions. It was accepted that the lowest income level was as the hunger threshold, the middle-income level was as the poverty threshold and higher income level was as those having an income over the poverty level.

Results

During 2 months period, 274 patients were studied and their responses were analyzed. The sociodemographic details were shown in Table 1. The participants' mean age was 28.12 ± 5.5 . After one patient who did not remember the previous anesthesia type was dropped; 23.1% of the pregnant (n=63) did not have any anesthesia experience previously, Whereas 5.5% of them (n=15) experienced both type anesthesia experience. Only one type of anesthesia experience was found as 71.4% (n=195). However, 64.2% of the pregnant (n=176) had a cesarean operation before.

Table 1. Socioeconomic characteristics of the pregnant

Age (years)		28.12± 5.5
Monthly income in local currency	(TL† /month)	1398.8±953.7
< 960TL	%	29.6
960-3124TL	%	65.7
> 3124TL	%	5.5
Education Level	(years)	7.9± 4.0
< 9yıl	%	61.3
9-10-11yıl	%	23
> 12yıl	%	14.6
† Turkish Lira		

While 64.2% of the pregnant (n=176) preferred the general anesthesia for the operation, 35.8% of them (n=98) preferred one of the regional anesthesia methods. While 68.7% of the pregnant (n=138, p=0.011) having the general anesthesia experience preferred the general anesthesia again, selecting one of the regional anesthesia methods of 76% of them (n=19, p=0.000) having the regional anesthesia experience were statistically found significant. When considered the pregnant experienced both the anesthesia methods previously, the selection rate of regional anesthesia method was observed higher (66.7% against 33.3%, p= 0.011).

The rise of regional anesthesia preference rates was statistically found significant with increasing the income level (p=0.06). Preferring the regional anesthesia technique much more was statistically found significant with increasing the education level (p=0.003).

Compared to media (TV, radio, newspaper, internet), anesthetists and gynecologists has a higher effect on the pregnant' preference of regional anesthesia (p=0.001). The other physicians, spouse, friend, relative, auxiliary healthcare personnel, midwife and nurse did not have a statistically significant effect in the anesthesia type

preference.

Fear of seeing and hearing something, fear of being paralyzed, loss of control and pain during needle at the back were the fears that lead patients to choose more general anesthesia ($p < 0.05$).

76.6% of the patients ($n=203$) participating in the survey think that the anesthesia type they selected was more healthy. 89.4% of the patients ($n=84$) selecting the regional anesthesia type think that the regional anesthesia type they selected was more healthy rather than the general anesthesia.

The efficacy of outcome in choosing the type of anesthesia of the patients was statistically insignificant. However, the most scarring outcomes of patients participating in our survey were the cognitive dysfunction, nausea-vomiting and urinary retention; the cognitive dysfunction, low back pain and headache were the outcome that they want to avoid by spending more money. A positive correlation was found between the monetary values and ranking values of all the outcomes (Table 2).

Table 2. The amount of money to be paid to avoid outcome

Outcome	Ranking Value (median)	Monetary Value (mean)	Pearson coefficient	p
No side effect	1	0.4± 1.9	0.098	0.108
Throat ache	2	5.6± 12.56	0.588	0.000*
Sleepiness	3	6.12± 14.90	0.472	0.000*
Itching	4	4.28± 7.93	0.489	0.000*
Shivering	6	4.60± 8.74	0.567	0.000*
Backache	8	17.96± 22.06	0.625	0.000*
Headache	9	15.90± 21.15	0.586	0.000*
Urinary retention	9	10.01± 15.57	0.526	0.000*
Nausea and vomiting	10	13.9± 17.85	0.567	0.000*
Cognitive dysfunctions	10	20.81± 31.25	0.667	0.000*
* $p < 0.05$				

Discussion

The results of this study indicate that anesthesiologist, gynecologist, increased education level and income level are the main factors that affect the choice of regional anesthesia. The findings of the current study are consistent with those of Idil (2005) showed that the gynecologist and anesthetist were effective in selecting the regional anesthesia methods in their retrospective studies [6]. In our study, the rate of preferring the regional anesthesia methods was 35.2%. When considering the literature, while the regional anesthesia preference rates showed a parallelism as 36.1% being turkey average. it was still under the regional anesthesia selection rates that developed countries had as 84% to 97% [3,4].

Mitchell et al reported that, the rate of regional anesthesia selection increases as education level increases [7]. Factors found to be influencing patients' regional anesthesia preference have been explored in several studies [7,8] The level of knowledge about

anesthesia with preference of neuroaxial techniques increase as education level increases. Knowing anesthetist as a doctor from the developing countries to the developed countries is increased in terms of higher education levels [9]. In a study, the lower regional anesthesia selection rate was found in housewives [10]. An unexplained issue in the previous studies is about the anesthesia experience on preference of anesthesia type [7,10,11]. Ideally, previous anesthesia and surgery experience should have increased the patients' knowledge related anesthesia and have effect on patients to choose a safer anesthesia type. Similarly, there was no effect of previous anesthesia experience in patients' choice of anesthesia type in our study.

Previous studies have shown that the incidences of many common fears about anesthesia type selection change widely between patient populations chosen and the type of survey instrument used. In some studies indicated that pain, fear of needles, low back pain, being awake, fear of seeing and hearing something is the reason for refusing patients' regional technique during the operation [8,10-12]. In consideration of phobias and fears, seeing and hearing something, being paralyzed, loss of control and pain during needle at the back are the reasons why pregnant chose general anesthesia in our study. In a study conducted in Pakistan, relatives and previous experiences were found to be effective in choosing regional anesthesia, whereas needle phobia, back pain and preference of unconsciousness during the procedure was the most common reasons for rejection of neuroaxial anesthesia [12]. Unlike our study, the favorable influence of relatives on preference neuroaxial anesthesia can be explained by the different cultures, knowledge and beliefs that societies possess.

Contrary to expectations, this study did not find a significant difference between the choice of anesthesia and outcomes. What is surprising is that the cognitive dysfunction is the main outcome which is most wanted to be avoided when the patients are known. Although cognitive dysfunction was first described in 1955 after surgery, awareness of the cognitive effect of anaesthesia and surgery is still limited among the medical profession [13]. To our knowledge, this is the first study to show the importance of avoiding cognitive dysfunction for the patients' preference. In previous studies vomiting and pain was the least desirable outcomes. [14-16]. It seems possible that these results are due to selection of different outcomes and methods. In our survey, selected outcomes represents both the general and regional anesthesia equally. In contrast to previous studies, pain is subdivided as throat ache, headache and backache.

There are methodological studies performed by giving the monetary value of sorting the side effects before the operation in the obstetric population [14]. In these studies, of which reliability was proven in the different patient groups, the side effects in a certain amount are determined by the literature searching [14-18]. The patients are requested to rank outcomes that they desire to encounter least by giving the highest number. Thus, the monetary value is constituted by asking them how much money they spend to avoid these outcome from the budget determined imaginary against the outcomes constituting the ranking values. In anesthesia practice to respond patients' preferences and to avoid undesirable outcomes, if possible, are very important to the physicians by considering that how the patients perceive and attach importance

of outcomes. Therefore, these studies are very important, as they are used in developing the anesthesia applications providing the answers to the patient's questions in order to give particular importance to the patient.

Our study has few limitations. Fears of pain, hearing or seeing the surgery were prominent, especially among female patients. Also, the tendency to choose general anesthesia is higher in women. Thus, the results of the current study may lead to different outcomes in different patient groups .

Conclusion

The regional anesthesia is accepted as more reliable rather than the general anesthesia for the cesarean. The general anesthesia causes some parts of the maternal mortality when the cesarean rates are considered as higher rather than the world average in our country, in which we know the fertility rate is high. We, as the anesthetists, incumbent upon the pregnant to tell the regional anesthesia, raise the awareness of the public and eliminate the fears and anxieties in order to decrease the maternal mortality in our country. Thus, we concluded with our study that the pregnant preferred the regional anesthesia in larger quantities, as they were affected by the anesthetists and gynecologists.

Another important result coming into existence of our study was that least desirable outcome was the cognitive dysfunction. The cognitive dysfunction was firstly discussed in this kind of methodological study. The patients spent more money not to encounter with the cognitive dysfunction, as they showed it as least desirable outcome.

As a summary; the education level increase and income level increase, effect of the anesthetist and gynecologist positively affect the patients to prefer the regional anesthesia. Another important result coming into existence of our study was that the cognitive dysfunction was one of the most important side effects in terms of the patients.

Competing interests

The authors declare that they have no competing interest

Financial Disclosure

The financial support for this study was provided by the investigators themselves.

Ethical approval

Before the study, permissions were obtained from local ethical committee.

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