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Assessment of Knowledge of General and Local Anesthesia among Patients Undergoing Elective Surgery

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Abstract:

Objective: Adequate knowledge of anesthesia and anesthesiologists can reduce patient anxiety. However, patients in developing countries are known to have relatively lesser knowledge and awareness regarding anesthesia. This study aims to evaluate the knowledge of patients referred for elective surgery regarding regional and general anesthesia and related factors.

Methods: In this descriptive-analytic cross-sectional study, 370 subjects were evaluated by a simple non-random sampling method. The researcher constructed a questionnaire study tool to assess demographic variables, backgrounds, and patients' level of awareness. After the collection, data were entered into the SPSS 21 software and were analyzed using chi-square, variance analysis and independent t-test.

Results: The mean age of our patients was 43.09±17.79 years and the mean score of knowledge regarding general and local anesthesia was 3.62±1.35 and 2.65±1.53, respectively. In this study, patients' awareness about general and local anesthesia had a significant association with female gender, age group 30-40 years, postgraduate education, government job previous local anesthesia, trust in the physician, having a history of surgery and willingness to visit the anesthesiologist before the surgery. In addition, patients who had eyes, nose and throat surgeries, and their source of information was limited, had greater scores, $p<0.005$. Individuals were more aware of common side effects of local anesthesia than those of general anesthesia. However, over half of the patients preferred general anesthesia due to fear of live experience and sound during surgery.

Conclusion: Basedon the results of the study, the awareness of patients about general anesthesia was greater than regional anesthesia. Overall, increasing awareness by strengthening the level of confidence and trust in anesthesiologists can lead to better postoperative outcomes and reduce patients' anxiety levels.

Keywords: Surgery, Awareness, Knowledge, Anesthesiologist, Anxiety, Patients.

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1. INTRODUCTION

Anesthesia alone is not a standalone treatment option; it is not considered part of the therapeutic process [1]. Rather, this method allows for other therapeutic processes, such as diagnosis and treatment of chronic or painful conditions, to be performed without causing suffering to the patient [2]. The best anesthesia is a process that carries the least risk for the patient and provides the best therapeutic outcomes [3]. The choice of

anesthesia technique (or a combination of techniques) should be based on the type of surgery and patient's condition [4]. Patient safety, the surgeon's ability to perform the surgical procedure, and the patient's comfort during and after the procedure, along with perioperative care, are crucial factors in selecting an effective anesthesia method [5].

An appropriate method for anesthesia should ensure maximum patient safety and satisfaction, provide favorable conditions for the surgeon during the procedure, enable rapid recovery from anesthesia, and leave minimal postoperative side effects [6]. Additionally, the chosen anesthesia should be cost-effective and facilitate the patient's quick discharge from the post-anesthesia care unit [7]. The anesthesiologist should assess the patient's clinical conditions and select an anesthesia technique based on each patient's needs, offering recommendations accordingly [8].

Patient awareness of anesthesia, its type, administration method, as well as pre and post-care, are effective in reducing anesthesia-related complications [9]. For example, pre-anesthesia anxiety and its resulting problems (such as significant and excessive changes in hemodynamic parameters, arrhythmias, and sometimes dangerous hemodynamic complications for the patient during anesthesia, restlessness, and low pain threshold after surgery, *etc*.) are well-known within the surgical and anesthesia specialist's scope of work, and the necessity of addressing them has been the subject of numerous studies for years. Some studies have shown that having an appropriate level of awareness leads to greater patient satisfaction and improves the recovery process [10-14]. Many studies indicate that public knowledge about the complications of various types of anesthesia is insufficient in both developed and developing countries [15-17].

Considering the low reported level of patient awareness regarding anesthesia and its complications, as well as the demonstrated positive impact of awareness on the progression of recovery and reduction of anesthesia-related complications, and the lack of research in this area, we decided to conduct this study to investigate the awareness level of surgical candidates in Khorramabad, Iran.

2. METHODS

This study cross-sectional descriptive study was conducted among patients referred for elective surgery at Shohada-ye Ashayer Hospital. In this study, patients of both sexes and older than 18 years, with any occupation, level of education, marital status and any type of surgery were included in the study. The sampling method was two steps. In each ward, patients were selected in proportion to the surgical burden of that ward and therefore, the number of patients evaluated from each ward was not the same.

The sample size was calculated using PASS Sample Size Software. The required sample size with p = 0.32, which was extracted from similar studies, with a 95% confidence level, considering the 5% error. The sample size was calculated to be 334. With a 10% drop in volume, the final sample of 370 participants was calculated. The sampling method in this study was simple and accessible and based on the eligibility of patients to participate in the study. Thus, different working days and shifts in the morning, evening and night were referred to the research environment, and the necessary coordination was made with the management of different wards of the hospital to determine how many patients are candidates for surgery on average in each ward (except Friday). Eligible patients were then interviewed before surgery. In this hospital, patients underwent general surgery (maxillofacial, orthopedics, urology, neurosurgery, eyes, nose and throat (ENT)) under general and local anesthesia.

Data collection tools in this study were prepared by the researcher. The study tool was a researcher-made questionnaire composed of two parts: The first part was for measuring demographic and contextual variables (including age, sex, occupation, marital status, level of education, *etc*.) and the second evaluated the awareness/knowledge of the patients (including patients' awareness of anesthesia complications such as lung infection, muscle pain, headache, cardiac arrhythmia, tendency to be examined before surgery, *etc*.). The questionnaire included 40 questions in total. There were 23 questions to measure demographic, contextual, and related risk factors, trust in physicians, and informed consent, and from question 24 onwards, specific questions were designed as multiple-choice questions to measure patient awareness of the effects of general anesthesia and local anesthesia (appendex 1).

The right answer was graded 2 points, the wrong answer was marked zero, and “I don’t know” was 1. Demographic data was recorded in the form of frequencies whereas, graded questions were recorded from a score of 0-42 and were divided into good, medium, and poor knowledge. To determine the reliability and validity of the initial questionnaire, face validity, and the opinions of the target group were used. The opinions of several experts in anesthesiology, social medicine, and health education were used to assess the scientific validity of the instrument. To determine the reliability, Cronbach's alpha coefficient above 7 was accepted.

Patients with a good ability to read, read the questionnaire themselves, whereas those who were not able to read and understand were assisted by the research team. The collected data were entered into SPSSv21 software. Descriptive analysis, such as graphs and indicators of appropriate concentration and dispersion, were used to present the data. Chi-square test, analysis of variance and independent T-test were used for analytical analysis. The study was approved by the board of research ethics of Shohada Ashayer Hospital (IR.LUMS.REC.13 97.144). https://ethics.qresearch.ac.ir/ProposalCertificateEn.php?id=39712&Print=true&NoPrintHeader=true&NoPrintFooter=true&NoPrintPageBorder=true&LetterPrint=true.

Table 1. The frequency and percentage within each age group and gender category.

Ages	Frequency	%
30<	105	28.4
30-40	80	21.6
40-50	39	10.5
50-60	69	18.6
60≥	77	20.8
gender	Frequency	%
Male	202	54.6
Female	168	45.4
Total	370	100

3. RESULTS

In the present study, we evaluated the demographic characteristics and other characteristics of 370 patients. Individuals were placed in 5 age groups: 18-30, 31-40, 41-50, 51-60 and over 60 years. The highest number of patients were in the age group 18-30 (28.4%) whereas, the lowest number of patients were in 41-50 (10.5%) age group. In terms of gender, 202 (54.6%) of the total population were men and the rest were women (Table **1**).

The marital status of the patients was divided into single, married, widowed, and divorced. The highest frequency of the patients was in the married group, 61.6% whereas, the lowest frequency 2.7% was in the divorced group. In terms of education, patients with a diploma were the most, 132 patients (35.7%) and patients with a master's degree and above had the lowest percentage, 20 patients (5.4%). Other patients were in the range of illiterate to bachelors. The greatest frequency of the people, in terms of occupation, was seen in a freelance group, 124 patients (33.5%) whereas, the least of that was in a retired group, 36 patients (9.7%).

In the next step, we examined the history of anesthesia, the type of surgery, the history of the disease, allergies, and drug use in patients. The results showed that 252 patients (68.1%) underwent general anesthesia and 98 patients (26.5%) experienced local anesthesia and 20 patients (5.4%) were never anesthetized. Most of the patients underwent general surgery, 120 patients (32.4%) whereas, the least of our patients received maxillofacial and ENT 32 patients (8.6%), each. In terms of medical history, 180 patients (48.6%) did not have any history of disease. 2.4%, 9 patients had a history of neurological disease, whereas the frequency of other diseases, including diabetes, hypertension and heart disease, was about 2%. A total of 224 patients (60.5%) did not have a history of any allergies. In terms of substance abuse, 82 people (22.2%) smoked cigarettes regularly, whereas 10 people (2.7%) were drug users.

Regarding patients' knowledge about general and local anesthesia, 174 (47%) believed that general anesthesia is intravenous and inhalational, whereas 26 people (7%) answered that general anesthesia is only injectable and 4 people (1.1%) did not answer. 54 patients (41.6%) answered that local anesthesia is both injectable and topical drugs, whereas 34 people (9.2%) are neither injectable nor topical.

Patients were asked about their desire for more information about the complications of general anesthesia, of which 216 (58.4%) answered yes, and 6 patients (12.4%) didn't want to know. 162 patients (43.85) wanted to know more about the effects of local anesthesia and 56 people (15.1%) did not want to know. Regarding the wish of patients to obtain information regarding the type of anesthesia, 244 patients (65.9%) were affirmative and 56 patients (15.1%) answered negatively and the rest expressed indifference. 248 patients (67%) intended to visit an anesthesiologist before surgery and 80 patients (21.6%) were indifferent.

In terms of surgical history, most of the patients, 214 patients (57.8%), had no surgical history, whereas the least of them, 46 patients (12.4%), were unaware of their surgical history. Similarly, regarding the history of anesthesia, most of the patients did not have any history, 204 patients (55.1%), whereas the least of the patients were unaware of their history in terms of anesthesia administration, 52 patients (14.7%). A total of 54 (47.4%) had a history of general anesthesia, 8 patients (7%) did not know the type of anesthesia they were administered before. In terms of patients' satisfaction with anesthesia, 196 patients (53%) answered "I do not know" whereas 14% answered "no". Patients were asked if the doctor had given them enough information about the anesthesia procedure during the preoperative visit. People with a positive answer had the highest frequency, 188 patients (50.8%) and patients with an "I don't know" answer had the lowest frequency, 98 patients (26.5%) with the lowest number. Patients were asked if they trusted their anesthesiologist. 198 patients answered "I do not know" (53.8%) and 26 patients (7.1%) answered "No".

In terms of patients' preference for the type of anesthesia, 204 patients (56%) chose general, and 76 patients (20.9) chose local anesthesia. Among patients who chose "general anesthesia" the fear of seeing and hearing during surgery was seen in 112 patients (54.9%) and fear of needles in 16 people (7.8%). Among patients who chose local anesthesia, fear of not regaining consciousness and nausea after surgery were highest 30 patients (32.6%), and the response "fear of general anesthesia" was lowest in 12 patients (13%).

In terms of common complication of general anesthesia, the correct answer to this question was "muscle pain" Out of 370 patients, 144 (38.9%) answered correctly, 90 (24.3%) patients answered, "I do not know". Patients were also asked about the rare side effects of

general anesthesia. The correct answer was “memory loss” which 174 patients (47%) answered correctly and “I do not know” was answered by 54 patients (14.6%).

In terms of common complications of local anesthesia, the correct answer to this question was lower back pain, which was given by 232 people (62.7%), whereas 58 people (15.7%) answered, “I don’t know”. Patients were also asked about the rarest side effect of local anesthesia, where lung damage when the anesthetic needle and shortness of breath were the expected answer, 178 people (48.4%) answered wrong and 94 (25.5%) answered, “I do not know”.

To assess the level of knowledge about care in general anesthesia, three questions were placed in a questionnaire. The maximum score that a person could get was 6 and the minimum was zero. The mean score obtained in this section was 3.62±1.35. Women scored higher than men with a mean of 3.73±1.31 (0.175). At different levels of “age”, the highest mean was 7.73±1.12 in the age group of 50-60 years and the lowest was 3.3 ± 1.47 in the age group of 40-50 years. In terms of education, the highest score was in the patients with postgraduate degrees, 4.30±1.45 and the lowest was in illiterate individuals 3.36±1.31 (Table **2**).

Table 2. How to care in general anesthesia.

Variables		Mean + SD	p-value
Gender	**Female**	**1.31±3.73**	**0.075**
	Male	**1.38±3.54**	
Age	30>	1.18±3.68	0.384
	30-40yr	1.72±3.73	
	40-50yr	1.47±3.3	
	50-6-yr	1.12±.7.73	
	60≤	1.24±3.44	
Education	Illiterate	1.31±3.36	0.001>
	High school	1.37±3.39	
	Diploma	1.09±3.57	
	Undergraduate	1.38±4.14	
	Master of science ≤	1.45±4.30	
Job	Self-employed	1.49±3.56	0.32
	Governmental	0.98±3.90	
	Home-keeper	1.36±3.64	
	Re-tried	1.35±3.66	
	Unemployed	1.32±3.37	
Kind of anesthesia	General	1.39±3.62	0.033
	Local	1.28±3.69	
	Unknown	1.10±3.20	
Kind of surgery	General surgery	1.28±3.80	0.001
	Facial & jaw	1.47±3.62	
	Fractures and bones	1.25±3.17	
	Bladder and urinary tract	1.37±3.29	
	Neuro-surgery	1.45±4.08	
	ENT	1.12±3.87	
History of surgery	Yes	1.12±4.05	0.001>
	No	1.44±3.49	
	Unknown	1.14±3.17	
History of anesthesia	Yes	1.39±3.92	0.001>
	No	0.74±4.38	
	Unknown	1.38±1.75	
Previous surgical anesthesia	General	1.39±3.92	0.001
	Local	0.74±4.38	
	Unknown	1.38±1.75	
Data source	Friends	0.73±4.00	0.017
	Read books	1.46±4.63	
	mass media	0.84±4.00	
	relatives	1.22±3.55	
	Doctor	1.58±3.62	

Individuals with government jobs received 3.90±0.98 score and unemployed individuals had an average of 3.37±1.32. According to the results, people who underwent local anesthesia were more aware of post-anesthesia care than those who underwent general anesthesia. Individuals who underwent neurosurgery had an average score of 4.08±1.45 and had the highest knowledge and individuals with fracture and bone surgery had an average score of 3.17±1.25 with the least knowledge. Also, patients who had a history of surgery had a higher mean score than people who experienced their first surgery. Patients without a history of anesthesia had a mean of 4.38±0.74. Also, those who had undergone local anesthesia in their previous operation had an average of 4.38±0.74 and were more aware than those who had undergone general anesthesia in their previous operation. Finally, in comparing the scores obtained in the levels related to the variable "source of information", it was observed that those who had obtained their information from books had a score of 4.63±1 and those who had obtained their information from relatives had the lowest score, 3.55±1.22 (Table **2**).

Similarly, for local anesthesia, the average score was 2.65±1.53. Women with a mean of 3.72±1.31 scored higher than men. At different levels of the "age" variable, the highest mean was 3.15±1.91 among patients aged 40-50 years and the least was 1.98±1.41 among patients aged over 60 years. In terms of qualification, patients with postgraduate degrees obtained 3.50±1.14 and the lowest average was among patients with undergraduate degrees, 1.83±0.38. Individuals with government jobs obtained 3.10±1.65 and retired individuals had an average of 2.00±0.87. Patients who underwent local anesthesia were more aware of post-anesthesia care than those who underwent general anesthesia. Also, patients who had a history of surgery had a higher mean score than people who experienced their first surgery, and people with a history of anesthesia had a mean of 3.58±1.73 which was also higher than those without the history. Those who had undergone local anesthesia in their previous surgery had an average of 4.26±1.76 and were more aware than those who had undergone general anesthesia in their previous surgery. Patients who obtained their information from books had a mean of 3.72±1.52 and had the highest score and those who had obtained their information from friends had an average score of 1.8±1.31, which was the lowest (Table **3**).

Table 3. How to care in local anesthesia.

Variables		Mean + SD	p-value
Gender	**Female**	**1.31±3.72**	**0.001>**
	Male	**1.37±3.53**	
Age	30>	1.43±2.84	0.001>
	30-40yr	1.59±2.88	
	40-50yr	1.91±3.15	
	50-6-yr	1.19±2.55	
	60≤	1.41±1.98	
Education	Illiterate	1.52±2.33	0.003
	Sub-diploma	1.89±2.69	
	Diploma	1.38±2.65	
	Post- diploma	1.83±0.38	
	Bachelor	2.94±1.58	
	Master's degree and higher	3.50±1.14	
Job	Self-employed	1.20±2.32	0.001>
	Governmental	1.65±3.10	
	Home-keeper	1.78±3.08	
	Re-tried	0.87±2.00	
	Unemployed	1.56±2.55	
Kind of anesthesia	General	1.46±2.41	0.001>
	Local	1.56±3.18	
	Unknown	1.48±3.10	
Kind of surgery	General surgery	1.57±2.65	0.10
	Facial & jaw	1.71±2.62	
	Fractures and bones	1.35±3.32	
	Bladder and urinary tract	1.51±2.52	
	Neuro-surgery	1.47±3.04	
	ENT	1.54±3.06	

(Table 3) contd.....

Variables		Mean + SD	p-value
Gender	**Female**	**1.31±3.72**	**0.001>**
	Male	**1.37±3.53**	
History of surgery	Yes	1.85±3.20	0.001>
	No	1.33±2.42	
	Unknown	1.18±2.39	
History of anesthesia	Yes	1.73±3.58	0.001>
	No	1.32±2.44	
	Unknown	1.72.±2.00	
Previous surgical anesthesia	General	1.20±2.62	0.001>
	Local	1.76±4.26	
	Unknown	1.30±2.00	
Data source	Friends	1.31±1.87	0.001
	Read books	1.52±3.72	
	mass media	1.77±3.11	
	relatives	1.64±2.34	
	Doctor	1.06±2.79	

To assess the level of awareness of patients about care in local anesthesia, 5 questions were included in the questionnaire, with a maximum score of 10. The average score obtained was 7.63±1.53. Except for the variable "gender", which did not show a significant difference between men and women (p = 0.20), there was a significant difference in the mean score obtained at the levels of the studied variables P<0.005 (Table **4**).

Table 4. Awareness score of anesthesia complications.

Variables		Mean + SD	p-value
Gender	**Female**	**1.73±7.51**	**0.20**
	Male	**1.58±7.73**	
Age	30>	1.27±8.31	0.001>
	30-40yr	1.58±8.11	
	40-50yr	1.57±7.33	
	50-6-yr	1.54±7.57	
	60≤	1.64±6.40	
Education	Illiterate	1.48±6.03	0.001>
	High school	1.62±7.24	
	Diploma	1.36±7.71	
	Undergraduate	1.05±7.91	
	Master of science ≤	1.40±8.70	
Job	Self-employed	1.67±7.55	0.001>
	Governmental	1.55±8.63	
	Home-keeper	1.30±7.17	
	Re-tried	1.44±7.75	
	Unemployed	1.99±7.42	
Kind of anesthesia	General	1.77±7.48	0.04
	Local	1.37±7.90	
	Unknown	1.20±8.10	
Kind of surgery	General surgery	2.01±7.34	0.02
	Facial & jaw	1.22±8.18	
	Fractures and bones	1.59±7.57	
	Bladder and urinary tract	1.34±7.45	
	Neuro-surgery	1.54±8.02	
	ENT	1.65±8.06	
History of surgery	Yes	1.88±7.29	0.001>
	No	1.46±8.01	
	Unknown	1.32±6.65	

(Table 4) contd.....

Variables		Mean + SD	p-value
Gender	**Female**	**1.73±7.51**	**0.20**
	Male	**1.58±7.73**	
History of anesthesia	Yes	1.65±7.60	0.001>
	No	1.48±8.06	
	Unknown	1.53±6.40	
Previous surgical anesthesia	General	1.29±7.83	0.001>
	Local	1.74±7.40	
	Unknown	1.78±3.87	
Data source	Friends	1.43±7.75	0.001>
	Read books	1.09±9.04	
	mass media	1.31±7.27	
	relatives	1.54±7.43	
	Doctor	1.49±7.93	

To calculate the total score of knowledge about general anesthesia and local anesthesia, the answers to all questions were added together and the mean score of knowledge was 26.48±5.13. Independent t-test and analysis of variance were used for comparisons. Women scored 27.27±4.79 and were more in number than men, however, it was not statistically significant, p=0.007. The highest mean was obtained among patients in the age group of 30-40 years, 28.11±5.43 and the lowest score was for patients over 60 years 23.57±4.41. Furthermore, the highest score was among patients with postgraduate degrees, 31.30±2.69 and the lowest was in illiterate individuals 23.71±4.25. Individuals with government jobs scored 30.20±4.90 and retirees had an average of 24.63±4.61, which was the highest and lowest among the group, respectively. Patients who underwent local anesthesia were more aware than those who underwent general anesthesia. Individuals who underwent ENT surgery had an average score of 28.37±3.58 with the highest knowledge and individuals with anterior fracture and bone surgery, with an average score of 24.67 + 5.06 had the least knowledge of general anesthesia and local anesthesia. Also, people who had a history of surgery had higher mean scores than people who experienced their first surgery. Similarly, people with a history of anesthesia with a mean of 29.1±5.01 scored higher than people without a history of anesthesia. Also, those who had undergone local anesthesia in their previous operation had an average of 29.44±5.01 and were more aware than those who had undergone general anesthesia in their previous operation. Patients who obtained their information from books scored 33.86±5.39 and had the highest score and those who obtained their information through relatives had the mean of 25.01±6.03 and scored the least. Patients who showed interest in visiting a doctor had the highest percentage with an average score of 27.37±5.34 compared to those who were indifferent to this issue and assigned the lowest percentage to themselves with an average score of 24.55±3.68.

The patients who trusted their doctor had an average score of 28.38±5.14 and was the highest compared to those who did not trust. All these differences were statistically significant, p<0.001, respectively (Table **5**).

Table 5. Patient awareness score.

Variables		Mean + SD	p-value
Gender	**Female**	**4.79±27.27**	**0.007**
	Male	**5.32±25.82**	
Age	30>	5.07±27.09	0.001>
	30-40yr	5.43±28.11	
	40-50yr	4.56±25.87	
	50-6-yr	4.67±27.27	
	60≤	4.41±23.57	
Education	Illiterate	4.25±23.71	0.001>
	Sub-diploma	4.34±25.19	
	Diploma	4.74±26.02	
	Post- diploma	3.76±25.25	
	Bachelor	30.10±5.50	
	Master's degree and higher	31.30±2.69	

(Table 5) contd.....

Variables		Mean + SD	p-value
Gender	**Female**	**4.79±27.27**	**0.007**
	Male	**5.32±25.82**	
Job	Self-employed	5.32±25.88	0.001>
	Governmental	4.90±30.20	
	Home-keeper	4.56±26.47	
	Re-tried	4.61±24.63	
	Unemployed	4.29±24.98	
Kind of anesthesia	General	4.92±26.13	0.001>
	Local	5.08±27.96	
	Unknown	6.21±23.70	
Kind of surgery	General surgery	5.46±26.04	0.001>
	Facial & jaw	4.59±27.78	
	Fractures and bones	5.06±24.67	
	Bladder and urinary tract	4.11±26.20	
	Neuro-surgery	5.84±28.36	
	ENT	3.58±28.37	
History of surgery	Yes	5.48±28.03	0.001>
	No	4.96±26.40	
	Unknown	3.08±23.15	
History of anesthesia	Yes	5.01±29.11	0.001>
	No	4.97±26.54	
	Unknown	3.07±22.71	
Previous surgical anesthesia	General	5.64±26.88	0.001>
	Local	29.44±5.01	
	Unknown	1.24±19.12	
Data source	Friends	4.04±26.75	0.001>
	Read books	5.39±33.86	
	mass media	3.34±28.11	
	relatives	6.03±25.01	
	Doctor	4.19±26.09	
Willingness to see a doctor	Yes	5.34±27.37	0.001>
	No	4.92±24.90	
	It does not matter	24.55±3.68	
Trust your doctor	Yes	28.38±5.14	0.001>
	No	24.84±4.89	
	I don’t know	25.24±5.12	

4. DISCUSSION

In the present study, we evaluated 370 patients, including 202 males and 168 females, for their level of awareness regarding general and regional anesthesia and related factors. Our results indicated that women scored 27.27±4.79 on average, which shows that women are more aware in regarding general and spinal anesthesia. These findings are also reported by Najafi *et al*. [18].

A probable rationale in this regard is that perhaps women experience more fear of anesthesia, hence they have a greater inclination to acquire knowledge in this area.

Another study that confirms our findings in this regard is the study by Shevde *et al*., who evaluated 800 patients in terms of their awareness, attitudes, and concerns related to anesthesia [19]; as well as the study by Van Wijk *et al*., who investigated the perspectives of 129 patients regarding anesthesia [20].

In the present study, both in the section regarding individuals' awareness of general anesthesia care and the section related to local anesthesia care, women demonstrated a higher level of awareness compared to men. However, considering the proximity of these two figures to each other, it can be concluded that women's awareness level regarding both general anesthesia and local anesthesia is equal.

A significant correlation was found between the level of awareness and gender in our study. The results of the study by Kohhn and colleagues in this regard contradicted our findings; as in this study, no significant correlation was found between patients' awareness of anesthesia and gender [18].

The level of awareness among individuals had a direct correlation with their educational level. The highest awareness was observed in individuals with postgraduate and higher education, while the lowest awareness was related to illiterate individuals. Although the level of this

awareness regarding care in the field of general anesthesia was higher than that of local anesthesia [21].

In the study by Huang Kohhn, Najafi, and colleagues, there was also a significant correlation between higher levels of education and awareness [18,22].

Government employees showed the highest awareness levels, with retirees demonstrating the lowest understanding of general and regional anesthesia. Surprisingly, government workers were more informed about regional anesthesia compared to general anesthesia, while the unemployed showed the least awareness of regional anesthesia. This suggests that social engagement, job interactions, and higher education levels contribute to increased knowledge acquisition, aligning with Najafi *et al*.'s findings [23].

Patients opting for regional anesthesia demonstrated a greater interest in comparing general and regional anesthesia techniques, reflecting a higher level of study and knowledge acquisition. Regarding surgical types, individuals undergoing ear, nose, and throat surgeries showed the highest awareness, while those with fractures and bone-related surgeries had the lowest understanding of anesthesia types. Interestingly, for general anesthesia care, awareness levels were highest among patients undergoing brain and nerve surgeries and lowest among those with fractures and bone surgeries [24].

In the context of regional anesthesia care, individuals undergoing jaw and facial surgeries exhibited the highest awareness, while those undergoing general surgeries had the lowest awareness levels.

In the current study, individuals with prior surgery had higher awareness levels compared to first-time surgery patients. Interestingly, while those without prior anesthesia experience showed higher awareness levels in general anesthesia care, individuals with anesthesia history had greater overall awareness, possibly due to previous exposure to anesthesiologist-provided information.

However, Kohhn *et al*. found no significant link between patient awareness and previous anesthesia experience. Similarly, Najafi *et al*. explored this relationship and found slightly higher awareness among patients with prior anesthesia experience, but the difference wasn't significant [18].

Scores based on the “source of information” showed that those who learned from books had the highest scores, while those relying on friends and relatives had the lowest. This may be due to the specialized nature of anesthesia science and limited media coverage, resulting in lower public awareness of anesthesia and anesthesiologists. Anesthesiologists should focus on raising awareness and educating the public about their specialty and role [25].

In our study, we found that the level of awareness in general and regional anesthesia correlated with the preference to consult a physician before anesthesia. Conversely, Nethra *et al*. found that all patients in their study preferred not to meet with the anesthesiologist before surgery, which contrasts with our findings.

In studies on “trust in the physician,” those who trusted their doctor had higher scores and percentages compared to those who didn't. Research by A. Najafi and F. Kohhn *et al* [18]. found a significant link between awareness and trust in the physician. Increasing awareness boosts patient trust, cooperation in anesthesia, and reduces anxiety. Patients feel less anxious if they know that an anesthesia specialist with specific skills is present throughout their procedure, mitigating risks.

In the study, patients were aware of common general anesthesia complications like “muscle pain” and rare ones like “memory loss.” However, their awareness of local anesthesia complications, such as “nerve damage during needle insertion” and “breathing difficulties,” was generally low. Despite this, most patients preferred general anesthesia due to fear of seeing or hearing during surgery [26-28].

CONCLUSION

In this study, people's awareness of general anesthesia was greater than local anesthesia. Overall, increasing awareness can lead to strengthening trust in the physician, resulting in the selection of a more suitable anesthesia method and reducing patient anxiety.

ABBREVIATION

ENT = Eyes, Nose and Throat

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the board of research ethics of Shohada Ashayer Hospital (IR.LUMS.REC. 1397.144).

HUMAN AND ANIMAL RIGHTS

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.

CONSENT FOR PUBLICATION

Written consent was obtained from all the participants for the participation in the study.

STANDARDS OF REPORTING

STROBE guidelines followed.

AVAILABILITY OF DATA AND MATERIALS

The authors confirm that the data supporting the findings of this research are available within the article.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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