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Evaluation of Anesthesia-related Knowledge and Concerns of Patients According to Their Education Levels: A Survey Study

Ayşe Gül Ferlengez[1], Duygu Demiröz[2]

[1]University of Health Sciences Turkey, İstanbul Training and Research Hospital, Clinic of Anesthesiology and Reanimation, İstanbul, Turkey
[2]Malatya İnönü University Faculty of Medicine, Department of Anesthesiology and Reanimation, Malatya, Turkey

ABSTRACT

Introduction: The adequate level of anesthesia practices in the community and the role of aids in the hospital could not be reached. In this study, the purpose was to evaluate the relationship between the education level of patients receiving anesthesia, their knowledge, and fears about anesthesia.

Methods: The educational status of the patients was evaluated by questioning their age, educational status, and concerns about anesthesia.

Results: It was concluded that the level of knowledge about anesthesia increased as the level of education of patients increased, but the fears of patients related to anesthesia were similar.

Conclusion: As the education level of the patients increases, their level of knowledge about anesthesia increases. We think that communication with anesthesiologists in the preoperative period will reduce patients' fears about anesthesia.

Keywords: Anesthesiology, education level, questionnaire

Introduction

Although society has an interest in medical issues today, many people still do not have a sufficient level of knowledge about anesthesia practices and the role of an anesthesiologist in a hospital (1,2). Even many people do not know that the anesthesiologist is a medical doctor (3). Previous studies conducted revealed that the patients mostly do not know the anesthesiologists and do not have information about their educational status and are not aware of their duties in the operating room (1-3).

Books and brochures prepared to increase the level of knowledge of patients for anesthesia applications have been effective (4). Information about anesthesia applications reduces the anxiety and stress of the patient (5). Additionally, patient information before anesthesia reduces morbidity and increases patient satisfaction (6).

There is a fear of death during surgery and the inability to wake up from anesthesia in our country. For this reason, patients may experience intense distress when will to have surgery. Increasing the level of knowledge of patients will help reduce these fears (7,8).

In this study, the purpose was to evaluate the relationship between the education level of the patients scheduled to receive anesthesia in the preoperative period and their knowledge and fears about anesthesia.

Methods

The study was initiated after ethics committee approval. The survey questions to be applied were deconstructed by scanning electronic databases and selected from studies similar to our purpose (9,10). Using the G*Power 3.1 program to calculate the sample size, the effect power was taken as 0.5 and the sample number was found to be 100. However, since the number of patients admitted to the outpatient clinic of our hospital was high, a higher rate of patient participation was planned in our study. After receiving the approval of the ethics committee of the University of Health Sciences Turkey, İstanbul Training and Research Hospital (approval number: 1729, date: 01.03.2019), the survey study was briefly described verbally to the patients who applied to the anesthesiology and reanimation polyclinic of our hospital for preoperative evaluation within 3 months' period. A total of 290 patients between the ages of 18-75 who wanted to participate voluntarily were included in the study after receiving the written informed consent of the patients who agreed to participate in the study.

A 17-question survey was administered to the patients, which could be answered in an average of five minutes, questioning their gender, age, educational status, previous anesthesia experiences, and anesthesia-related concerns. The questions asked the patients are presented in Table 1. The questionnaire for illiterate patients was completed by reading by a doctor of anesthesiology and reanimation. A total of 40 patients who

Address for Correspondence: Ayşe Gül Ferlengez MD, University of Health Sciences Turkey, İstanbul Training and Research Hospital, Clinic of Anesthesiology and Reanimation, İstanbul, Turkey
Phone: +90 532 783 41 23 **E-mail:** aysegulsoylemez@yahoo.com **ORCID ID:** orcid.org/0000-0002-0440-2467

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could not answer all the questions for various reasons were excluded from the study, and 250 patients who answered the questions completely were included in the study and their research answers were evaluated.

Statistical Analysis

The data were analyzed in a 95% confidence interval in the IBM SPSS Statistics Version 22 package program in a computer environment. Since the ages of the cases were not normally distributed (Kolmogorov-Smirnov, $p<0.05$), Mann-Whitney U was used to compare the ages of men and women, Pearson chi-square, Fisher's exact test and chi-square trend statistical analyses were used to compare the categorical variables between the groups. In the study, a p-value of <0.05 was considered statistically significant. In the data analysis and statistical analysis in multiple-choice questions, the percentages were assessed by the researchers using the mean and standard deviation.

Results

Of the 290 patients who applied to anesthesiology and reanimation outpatient clinic for preoperative evaluation, 40 patients were excluded from the study because they did not answer all the questions, and 250 of the cases were included in the study. Of the patients, 124 were female (49.6%) and 126 were male (50.4%), with an average age of 46.2 years. When the educational status of the patients was evaluated, 30% were in primary school, 12.8% were in secondary school, 20.8% were in high school, 10.4% were university graduates, and 26% of the patients were illiterate (Table 1).

In the questions where the anesthesia information was evaluated according to the educational status of the patients, the patients were asked "Do you know what surgery you will have?". When 128 patients answered "Yes" to this question were examined, it was seen that primary school graduates ranked first with 77.3% and university graduates followed them with 73.1%. Of the 122 patients who answered "No," the highest proportion was found to be in illiterate people (61.5%).

To the question, "What does an anesthesiologist do?", 54% of the patients gave the correct answer, and the highest number of university graduates of the patients had an idea about this issue compared to 80.7%.

To the question, "Do you know why you came to the anesthesia clinic?", 69.6% answered "Yes" and 30.4% answered "No." When examining the cases that answered "Yes," it was observed that this was the highest rate among university graduates with 100%, while 76.9% of those who answered "No" were made up of a non-literate group.

Table 1. Demographic data for the patients

		n (%)	%
Gender	Female	124	49.6
	Male	126	50.4
Educational status	Primary	75	30
	Secondary	32	12.8
	High school	52	20.8
	University	26	10.4
	Illiterate	65	26

To the question, "Who decides if the patient is fit or not to be able to have surgery?", whereas 60.4% of the patients answered "anesthesiologist," it was observed that the largest proportion of these patients were university graduates 84.6%, and the lowest proportion belonged to illiterate ones.

To the question, "Who applies anesthesia during surgery?", whereas 60.4% of the total number of patients gave the correct answer to the question, it was found that the highest proportion of this group were university graduates (84%) and 32.4% of the patients responded to the doctor who would perform the surgery.

To the question, "Who monitors the patient's vital functions such as heart rate and blood pressure during surgery?", whereas 67.2% of anesthesiologists answered the question, the highest proportion of university graduates was 88.4%, and the lowest proportion of illiterate people was 24.6%.

To the question, "Who ensures that the patient wakes up comfortably after surgery?", 48.4% of the patients answered anesthesiologist, while the surgeon's answer was the least given with 12%. When those who gave the correct answer to this question were investigated, the highest proportion was found with 53.8% in university graduates (Table 2).

In the questions where the anesthesia fears of patients were evaluated according to their educational status, 66.8% of patients answered the question "Do you want to be informed in detail by the anesthesia doctor before surgery?" as they want to receive detailed information, while 10.4% of patients stated that they did not want to receive detailed information for fear of worrying.

The patients who had anxiety fear were highest among primary school graduates, while this rate was the lowest among university graduates, and 6.4% of the patients answered "No" to this question with the least proportion.

To the question, "Are you afraid of anesthesia?", 39.6% of patients answered "Yes," while this rate was the highest among the illiterate 58.4%, followed by university graduates 38.4%, and the lowest was primary school graduates at 28%.

To the question, "What are your fears about the anesthesia process?", while 50.4% of the patients had the highest fear that they would experience pain, 30.4% of the patients stated that they had no fear and 20.8% of the patients felt that they could not wake up from anesthesia, while 10% of the patients stated that they had a fear of death. The fear of pain was the highest among the illiterate at 66.1%, while the second place was occupied by university graduates at 57.6%. The fear of death was found to be the highest among university graduates. While 30.4% of the patients stated that they did not have any fear, the highest proportion of those who were illiterate 30.7% gave this answer (Table 3).

To the question, "What do you think about the pain after surgery?", 52.4% of the patients answered "a normal condition and is tolerable." The highest proportion of these patients was university graduates (69.2%). In this study, 20% of the patients answered that the pain would be unbearable and the highest proportion of these patients was illiterate 36.9% (Table 3).

Table 2. Distribution of anesthesia information according to the educational status of patients

		Primary, (%)	Secondary, (%)	High, (%)	University, (%)	Illiterate, (%)	Total, (%)	p
Do you know what surgery you will have?	Yes	58 (77.3)	13 (40.6)	25 (48.1)	19 (73.1)	25 (21.7)	128 (51.2)	<0.001
	No	17 (22.6)	19 (59.3)	27 (51.9)	7 (26.9)	40 (61.5)	122 (48.8)	<0.001
Have you ever heard of such a word as "anesthesia"?	Yes	69 (92)	26 (81.2)	49 (94.2)	26 (100)	56 (86.1)	226 (90.4)	0.081
	No	6 (8)	6 (18.7)	3 (5.7)	0 (0)	9 (13.8)	24 (9.6)	0.081
What does an anesthesiologist do?	Puts the patient to sleep who will have surgery	24 (32)	8 (25)	5 (7.9)	2 (7.7)	24 (6.9)	63 (25.2)	<0.001
	He puts the patient who will have surgery to sleep, follows and wakes him up during the operation	41 (54.6)	16 (50)	42 (31.1)	42 (80.7)	13 (20)	135 (54)	<0.001
	Does the surgery	2 (2.6)	0 (0)	0 (0)	0 (0)	2 (3.1)	4 (1.6)	<0.001
	Not know	8 (16.6)	8 (25)	5 (10.4)	5 (9.6)	26 (40)	48 (19.2)	<0.001
Do you know why you came to the anesthesia clinic?	Yes	59 (78.6)	23 (71.8)	51 (98.1)	26 (100)	15 (23.1)	174 (69.6)	<0.001
	No	16 (21.3)	9 (28.1)	1 (1.9)	0 (0)	50 (76.9)	76 (30.4)	<0.001
Who decides whether the patient is fit to undergo surgery or not?	The doctor who will perform the operation	6 (8)	12 (37.5)	11 (21.1)	4 (15.3)	48 (73.8)	81 (32.4)	<0.001
	Anesthesiologist	61 (81.3)	20 (62.5)	38 (73.1)	22 (84.6)	10 (15.3)	151 (60.4)	<0.001
	Nurse	1 (1.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	<0.001
	Not Know	7 (9.3)	0 (0)	3 (5.7)	0 (0)	7 (10.7)	17 (6.8)	<0.001
Who performs anesthesia during surgery?	The doctor who will perform the operation	6 (8)	12 (37.5)	11 (21.1)	4 (15.3)	48 (73.8)	81 (32.4)	<0.001
	Anesthesiologist	61 (81.3)	20 (62.5)	38 (73.1)	22 (84.6)	10 (15.3)	151 (60.4)	<0.001
	Nurse	1 (1.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	<0.001
	Do not know	7 (9.3)	0 (0)	3 (5.7)	0 (0)	7 (10.7)	17 (6.8)	<0.001
Who monitors the patient's vital functions such as heart rateand blood pressure during surgery?	The doctor who will perform the operation	7 (9.3)	4 (12.5)	2 (3.8)	0 (0)	12 (73.8)	25 (10)	<0.001
	Anesthesiologist	59 (78.6)	22 (68.7)	48 (92.3)	23 (88.4)	16 (24.6)	168 (67.2)	<0.001
	Nurse	1 (1.3)	1 (3.1)	0 (0)	2	20 (7.6)	24 (9.6)	<0.001
	Technician	1 (1.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	<0.001
	Do not know	7 (9.3)	5 (15.6)	2 (3.8)	1 (3.8)	17 (26.1)	32 (12.8)	<0.001
Who ensures a comfortable awakening of the patient after surgery?	The doctor who will perform the operation	8 (110.6)	5 (15.6)	2 (3.8)	1 (3.8)	14 (21.5)	30 (12)	<0.001
	Anesthesiologist	40 (53.3)	13 (40.6)	35 (67.3)	22 (84.6)	11 (16.9)	121 (48.4)	<0.001
	Nurse	10 (13.3)	4 (12.5)	4 (7.6)	1 (3.8)	24 (36.9)	43 (17.2)	<0.001
	Do not know	10 (13.3)	10 (31.2	11 (21.1)	2 (7.6)	16 (24.6)	56 (22.4)	<0.001
Who ensure that the patient wakes up painlessly after surgery?	The doctor who will perform the operation	18 (24)	3 (9.3)	6 (11.5)	1 (3.8)	13 (20)	41 (16.4)	0.061
	Anesthesiologist	26 (34.6)	14 (43.7)	15 (28.8)	14 (53.8)	14 (21.5)	83 (33.2)	0.061
	Nurse	9 (12)	4 (12.5)	12 (23.1)	5 (19.2)	16 (24.6)	46 (18..4)	0.061
	Do not know	22 (29.3)	11 (34.3)	19 (36.5)	6 (23.1)	22 (33.8)	80 (32)	0.061

Discussion

In this study, it was concluded that the level of knowledge about anesthesia increases as the level of education of patients increases, but the fears of patients related to anesthesia are similar.

Recently, many studies have been conducted to investigate the knowledge of patients with anesthesia applications and anesthesiologists (11,12). In developing countries, the perception of anesthesia and the role of the anesthesiologist are still lagging behind the developed world (13). Anesthesiology gradually progressed after the first application of anesthesia in 1846 and has reached an important point in the field of medicine (14). Unfortunately, it is not known to many individuals that anesthesiology is a branch that requires special expertise or even that an anesthesiologist is a doctor. In the studies conducted, the knowledge

Table 3. Patients' fears according to their educational status

		Primary, n (%)	Secondary, n (%)	High, n (%)	University, n (%)	Illiterate, n (%)	Total, n (%)	p
Do you want to be informed in detail by the anesthesiologist before the operation?	Yes, I would like detailed information	54 (72)	25 (78.1)	37 (71.1)	24 (92.3)	32 (49.2)	172 (68.8)	<0.001
	Yes, but I would not like to have too detailed information for the fear that I will worry	10 (13.3)	3 (9.3)	4 (7.7)	1 (3.8)	8 (12.3)	26 (10.4)	<0.001
	No, I would not	4 (5.3)	1 (3.1)	10 (19.2)	0 (0)	1 (1.5)	16 (6.4)	<0.001
	I do not know	7 (9.3)	3 (9.3)	1 (1.9)	1 (3.8)	24 (36.9)	36 (100)	<0.001
Are you afraid of anesthesia?	Yes	21 (28)	11 (34.3)	19 (36.5)	10 (38.4)	38 (58.4)	99 (39.6)	0.006
	No	54 (72)	21 (65.6)	33 (63.5)	16 (61.6)	27 (41.5)	151 (60.4)	0.006
What are your fears about the anesthesia process? (you can mark more than one)	I'll feel pain	40 (53.3)	15 (46.8)	13 (25)	15 (57.6	43 (66.1)	126 (50.4)	<0.001
	I will have nausea and vomiting	9 (12)	4 (12.5)	6 (11.5)	4 (15.3)	6 (9.2)	29 (11.6)	0.944
	I can not wake up from anesthesia	21 (28)	9 (28.1)	9 (17.3)	7 (26.9)	6 (9.2)	52 (20.8)	0.047
	I wonot recognize the surroundings	3 (4)	2 (6.2)	8 (15.3)	1 (3.8)	1 (1.5)	15 (6)	0.025
	My throat will hurt	3 (4)	0	6 (11.5)	3 (11.5)	1 (1.5)	13 (5.2)	0.039
	I wonot be able to fully wake up from surgery	4 (5.3)	3 (9.3)	7 (13.4)	6 (23.1)	1 (1.5)	21 (8.4)	0.007
	I'll lose my blinker and do things I don't want to	8 (10.6)	5 (15.6)	19 (36.5)	9 (34.6)	6 (9.2)	47 (18.8)	<0.001
	I will die	6 (8)	5 (15.6)	2 (3.8)	5 (19.2)	7 (10.7)	25 (10)	0.188
	I do not have any fears	17 (22.6)	11 (34.3)	22 (42.3)	6 (23.0)	20 (30.7)	76 (30.4)	0.164
What do you think about postoperative pain?	A normal condition, tolerable	42 (56)	18 (56.2)	30 (57.6)	18 (69.2)	23 (35.3)	131 (52.4)	<0.001
	This is an indicator of recovery	5 (6.6)	5 (15.6)	6 (11.5)	4 (15.3)	17 (26.1)	37 (14.8)	
	Pain medication should be used	10 (13.3)	5 (15.6)	13 (2)	3 (11.5)	1 (1.5)	32 (12.8)	
	It is an unbearable condition	18 (24)	4 (12.5)	3 (5.7)	1 (3.8)	24 (36.9)	50 (20)	

acquisition rate with anesthesia was 5.8% in the study by Şahinkaya et al. (9) in Denizli, 17.7% emphasized that the patient did not hear the word anesthesia (15,16). In their survey study, showed that there is a significant relationship between educational status and the level of knowledge about anesthesiology (DEC1). In our study, similarly, it was observed that as the level of education increased, the level of knowledge of the patients also increased. It was concluded in our study that 9.6% of patients did not hear the word anesthesia. We consider that the high number of illiterate patients participating in our study is associated with this result. The highest proportion was in secondary school graduates and the lowest was in university graduates.

Despite the innovations in anesthesia and the important role of anesthesiologists, Kong et al. (17) emphasized that patients know very little about anesthesiologists and their tasks, whereas Marulasiddappa and Nethra (18) documented that patients have insufficient knowledge about anesthesia and the role of anesthesiologists in developing and developed countries. In their study, reported that 48% of the patients stated that anesthesia should be performed by an anesthesiologist. Gençay and Aydın (19) emphasized that this ratio was 90% (11). In our study, this rate was found to be 60.4%. Similarly, the level of knowledge about anesthesia applications was also questioned with the question "Who decides if the patient is suitable to be operated on?" and we received the answer "anesthesia physician" at a rate of 60.4%. When our results were examined, it was found that illiterate people had the lowest rate of knowledge in both questions.

According to Bataineh et al. (20), the patients were asked questions about the intraoperative roles of the anesthesiologist and it was emphasized that the most obvious answers to the cases were to put the patients to sleep with 75%, to monitor them throughout the operation with 73%, to wake the patients with 72%. In their studies, Yoldaş et al. (11) reported that 54.6% of their patients knew that vital sign monitoring was performed by an anesthesiologist. In our study, it was also seen that 67.2% of the patients had information about the intraoperative tasks of the anesthesiologist, and the highest proportion of university graduates dominated the subject. We think that the high level of this information in patients is related to advanced technology.

The fact that the anesthesiologist introduces himself at the preanesthetic visit, informs them about anesthesia, and informs the patients about possible complications reduces the anxiety levels of the patients (21). Informing the patient will suppress the patient's fears and increase

their confidence in the health system (22). While 68.8% of our patients requested to be informed, 10.4% stated that they did not want detailed information in order not to worry. Most patients who wanted to inform were university graduates.

According to Ruhaiyem et al. (23), it was emphasized that 88% of the patients experienced fear before surgery and most of their fears were fear of postoperative pain at 77.3%, followed by the fear of intraoperative awareness at 73.7%. According to Çelik and Edipoglu (24), it was found that the greatest fear of patients was pain in 49.2% of cases, followed by the fear of death in 26.7%. Lim et al. (25) stated that the fear of not being able to wake up from anesthesia was the highest in elderly patients. Gençay and Aydın (19) reported that the fear of not being able to wake up in 53% of patients, the fear of pain in 17.5% of patients, and the fear of death in 10% of patients were emphasized. In our study, it was found that 39.6% of patients had fears about anesthesia, while in our study, we found that 58.4% of illiterates were the highest in this group, while the university graduates ranked second with 38.4%. In our study, it was found that 50.4% of patients felt pain in the first place, 20.8% felt inability to wake up from anesthesia, and 10% felt a fear of death, similar to other studies. Also, there was no relationship between education level and anesthesia-related fears. Since our study aimed to evaluate the relationship between education level and fears about anesthesia, the relationship between age-related fears was not evaluated. When we questioned thoughts about pain, we concluded that 52.4% of patients considered it a normal condition and university graduates think about it at a higher rate.

Study Limitations

Since this study was based on volunteerism, randomization could not be performed. Our study aim was explained in detail to each patient who came to the anesthesia clinic of our hospital for a preoperative visit, but those who wanted to participate could be included in our study. For this reason, the distribution of literacy levels in our sample did not come out at close values to each other. In our study, there are at least n=26 university graduate patients. To investigate the knowledge and concerns of patients about anesthesia, new prospective, randomized, new studies are needed whose literacy levels do not differ from each other. In our study, we think that the previous experience may be effective in addition to the education level of the findings, there is a need for more comprehensive studies on this subject.

Conclusion

In our study, it was seen that as the level of education of the patients increased, the level of knowledge about the anesthesiologist and anesthesia increased. However, it was concluded that the fears associated with anesthesia were similar, regardless of the level of education. We believe that introducing anesthesia physicians to themselves and informing patients about the anesthesia methods to be applied in the preoperative evaluation will increase the patient's level of knowledge about anesthesia and physicians and reduce their fears related to anesthesia.

Ethics Committee Approval: The study was approved by the University of Health Sciences Turkey, İstanbul Training and Research Hospital Ethics Committee (approval number: 1729, date: 01.03.2019).

Informed Consent: The written informed consent was obtained of the patients who agreed to participate in the study.

Peer-review: Externally peer-reviewed.

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