The Effect of Age and Education Level as a Source of Information on Internet Use in Preoperative Patients

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Abstract: Most patients rely on the internet to access a medical information source. Patients undergoing surgery use the internet and social media to gain information about anesthesia and surgery. In our study, it has dealt with the use of the internet and social media for news in patients who will undergo surgery and the impact of age and education on this situation. Every patient who came to our clinic for surgery between August 1, 2019 and December 31, 2019 was asked to complete a survey preoperatively. This questionnaire includes questions about internet use. The rate of using the internet as the source of anesthesia information was 24.3% in young patients, this rate found to be 7% in the middle age patients, and none of the elderly patients used the internet as the source of anesthesia information. In terms of operation information, the rate of those using internet as a source of information in the young patients was 29.7%, whereas it was 14% in the middle age patients, and the rate was 5.3% in the elderly patients. Some of the patients (21%) who came to the clinic used internet and social media as a source of information. This study has been found useful in the sense that anesthesiologists and surgeons send information about themselves on the internet and be accessible via social media.
Keywords: age; education; internet use; source of surgery information; source of anesthesia information.

INTRODUCTION

The Internet widely used today to obtain information about surgery and anesthesia, as well as in many other areas. In this sense, it seems that patients use the Internet to get information[1]. Furthermore, the impact of education and age on internet use is noticeable; in some studies, the rate of internet usage increases as the level of education increases[2].

When we consider the developments in the field of informatics, age is particularly important in terms of adaptation to technology[3]. Along with the effect of the existing surgical conditions on the health status of the patients, the pre-surgical stress of the patients increases gradually[4]. Also, uncertainties about anesthesia and fear of awakening during anesthesia are among the apparent sources of stress in patients[5]. information about surgery and anesthesia among adult patients. It is crucial to know how much information patients have to reduce stress and what sources of information are and what conditions affect this situation. Our study is the first to question the source of surgery and anesthesia information at the same time.

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MATERIALS AND METHODS

The questionnaire, which prepared within the scope of the study, was performed between August 1, 2019, and December 31, 2019, in adult patients who scheduled for elective surgery in Konya Training and Research Hospital. Necessary permissions obtained from the University of Health Sciences, Konya Training and Research Hospital, Turkey Education committee(48929119/774). The patients who had undergone elective surgery were upper 18 years old and preferred in the selection of patients. Our exclusion criteria are; emergency operations, patient was refusal to participate in the questionnaire, incomplete filled questionnaire form, and patients who could not communicate. The survey performed before the anesthesia application in the operation room. Patients asked to complete a questionnaire only once. Empty answers not included in the data analysis. In the preparation of the survey, the studies in the related literature considered age, education level, preoperative anxiety levels of the patients, and the sources of anesthesia and surgical information categorized according to the associated studies. We used education level as numbered 0 unschooled, numbered one primary school, numbered two secondary schools, numbered three high schools, and numbered four universities graduated. Sources of information also grouped as one internet, two relatives and friends, three healthcare friends, four own doctors, five related books, six no knowledge, seven previous experience.

The other question was the importance of surgery, and we measured the level of significance with a Likert scale. One point meant that the operation was not critical. Five points said that yes, the surgery was significant for me. We used the Clavien-Dindo Classification system for standardization[6], as there are many different types of surgery (Table 1).

Table 1. The Clavien-Dindo Classification system

Grade I	Any deviation from the ordinary postoperative course without the need for pharmacological treatment or surgical, endoscopic and radiological interventions Allowed therapeutic regimens are drugs as antiemetics, antipyretics, analgesics, diuretics and electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside.
Grade II	It requires pharmacological treatment with drugs other than such allowed for grade I complications. Blood transfusions and total parenteral nutrition are also included.
Grade III	Requiring surgical, endoscopic or radiological intervention III a: Intervention not under general anesthesia III b: Intervention under general anesthesia
Grade IV	Life-threatening complication (including CNS(Cerebral nerve system) complications) requiring ICU(Intensive care unit)-management IV a: single organ dysfunction (including dialysis) IV b: multi-organ dysfunction
Grade V	Death of a patient

Statistics

With a sample size of over 90 patients, the study had 80% power to detect differences of a 5% level of significance, adjusted for multiple comparisons. This sample size also enabled the calculation of 95% limits of agreement with associated confidence limits of ± 0.4 SD of measurement differences.

Patients divided according to age, education, and preoperative anxiety—comparisons made to note the differences between the groups. Data analyzed with SPSS 22.0 package program for statistical analysis. As a result of the normality test; While the differences between education and age groups examined, parametric Independent Samples t-Test used for normally distributed variables, and a nonparametric Mann Whitney U test used for non-normally distributed variables. And we used correlation tests to evaluate the effect of parameters. We estimated the r-value for each correlation. While the differences between the groups examined, 0.05 used as the level of significance, and $p < 0.05$ if there is a significant difference between the groups, $p > 0.05$ stated that there is no significant difference between the groups.

RESULT AND DISCUSSION

There were 99 patients completed the survey for this study of those who completed the survey. The average age was 46.43±18.35 years (over 18 years) when we looked at the education levels. Patients divided into five groups. The first group was unschooled patients(n=14,14.1%), 2nd group was primary school graduates(n=45, 45.5%), 3rd group was secondary school graduates(n=7,7.1%), 4th group was high school graduates(n=17,17.2%), 5nd group was university graduates(n=16, 16.2%)(Figure1).
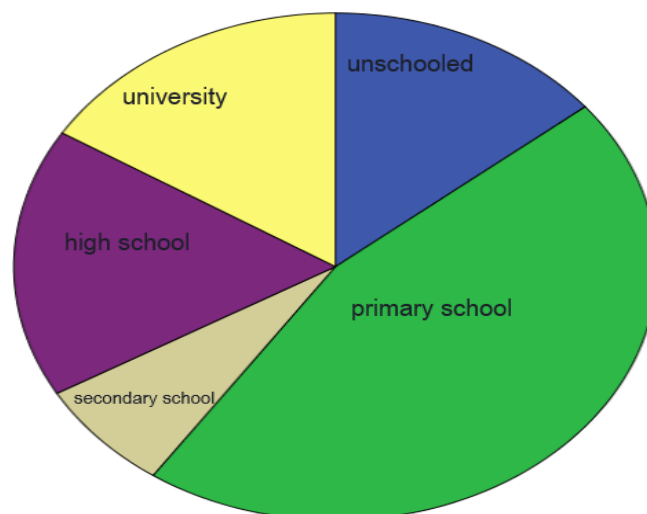

Figure 1. Education level, number and rates of patients (The first group was unschooled patients (n=4, 4%)(O), 2nd group was primary school graduates(n=45, 45.9%)(O), 3rd group was secondary school graduates(n=27, 27.5%)(O), 4th group was high school graduates(n=18, 18.3%)(O), 5nd group was university graduates(n=4, 4%)(O).
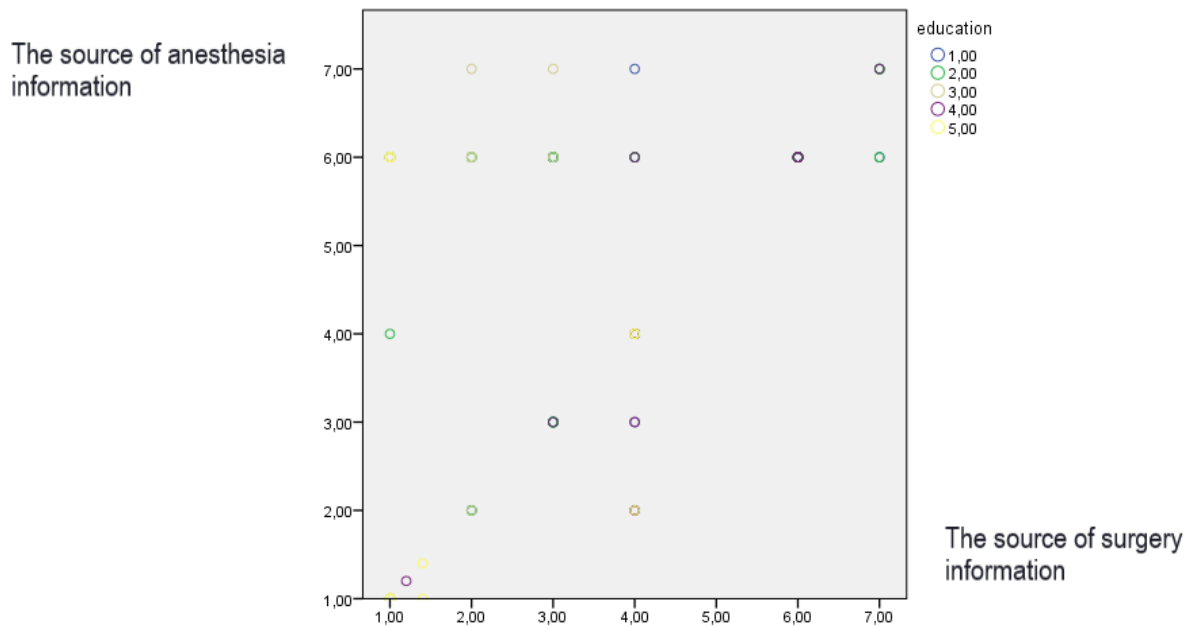
Figure 2. The source of anesthesia and surgery evaluation of the between parameters according to the education levels (Numbered one unschooled, numbered two primary schools, numbered three secondary schools, numbered four high schools, and numbered five universities graduated. Sources of information also grouped as one internet, two relatives and friends, three healthcare friends, four own doctors, five related books, six no knowledge, seven previous experience).

When we looked at the parameters in their self, there was a significant difference in the education levels(p=0.001). There was a substantial difference in the importance of surgery (p=0.001). There was a considerable difference in the information about anesthesia(p=0.001). There was a significant difference in the news about surgery(p=0.001).

For the importance of surgery, 1 point meant that the operation was not essential, but if the 5 points said that the surgery was crucial. We used a Likert scale fort in evaluation. The mean value of the importance of operation was 3.31 in totally. The patients who used the internet for anesthesia knowledge answered the stress of surgery questions as 3.40 points. The patients who used the internet for surgery knowledge answered the importance of surgery questions as 3.38 points.

Classification numbers and percentages according to the Clavien-Dindo Classification system used to standardize surgical types are as follows; class III an (Intervention not under general anesthesia)(n:51, 51.5%), class III b (Intervention under general anesthesia)(n:42, 42.4%), class IV a (single organ dysfunction (including dialysis))(n:6, 6.1%). According to the correlation test, the Clavien-Dindo Classification system was not a significant difference in anesthesia knowledge by using the internet

(p=0.932, r= - 0.009). And the Clavien-Dindo Classification system was not a substantial difference for surgery knowledge by using the internet (p=0.201, r= - 0.130).

About evaluation of the between parameters according to the education levels. There was no significant difference in the importance of surgery (p=0.521). There was a substantial difference in the information about anesthesia(p=0.001). There was a considerable difference in the news about surgery(p=0.001). According to the correlation test, education level was a significant difference in anesthesia knowledge by using the internet (p=0.001, r=- 0.368). And there were significant differences in surgery knowledge by using the internet (p=0.001, r=-0.362)(Figure 2).

When we divided the patient groups between 18-39 as a young patient, between 40-64 as a middle-age patient and over 65 years as elderly patient, while the rate of using internet as the source of anesthesia information was 24.3% in the young patients, this rate found to be 7% in the middle age patients, and none of the elderly patients used the internet as the source of anesthesia information. In terms of operation information, the rate of those using the internet as a source of information in the young patients was 29.7%, whereas it was 14% in the middle age patients, and the rate was 5.3% in the elderly patients. According to the correlation test, being youth was not a significant difference in anesthesia knowledge by using the internet (p=0.222, r=0.124). But being a kid was a considerable difference in surgery knowledge by using the internet (p=0.019, r=0.235)(Table 2).

Table 2. Comparison of surgery and anesthesia by age as a source of information

Parameters	18-39 years (%)	40-64 years (%)	Over 65	Correlation test (r value)	p value
The source of anesthesia information	24.3	7	-	0.124	0.222
The source of surgery information	29.7	14	5.3	0.235	0.019

(The patient groups between 18-39 as a young patient, between 40-64 as a middle-age patient and over 65 years as an elderly patient, while the rate of using the internet as the source of anesthesia and surgery information).

In this study, we aimed to obtain information about surgery and anesthesia. There were statistically significant differences between education levels. In our research, it also found that the internet used as a severe source of information, especially in anesthesia and surgical information acquisition, especially in young patients.

In the study of Kiyohara et al., Patients were prepared to undergo anxiety. The patients informed in terms of diagnosis, surgery, and anesthesia. Spielberger State-Trait Anxiety Inventory (STAI) was used to measure patient anxiety levels. The patient education level did not affect the state anxiety level but was inversely related to the level of anxiety. Being unfamiliar with the surgical procedure increased anxiety levels (P = 0.021). A lower level of stress was found in patients who did not know the diagnosis but

knew the operation (P = 0.038). As a result, it has found that patients can decrease the state of anxiety levels and the increased information about the surgery[7].

In another study, the effect of preoperative information and other factors on patients' anxiety examined. Patients who planned to undergo a surgical procedure under spinal anesthesia before surgery and who previously evaluated as American Anesthesia Society 1-3 and who already had spinal anesthesia included in the study. Anxiety in patients receiving information assessed with the Amsterdam Preoperative Anxiety and Knowledge Scale questionnaire. A total of 330 patients included in the study. University graduates felt less anxious than other educational backgrounds. In addition to the detailed information provided by the anesthesiologist or surgeon, it has concluded that access to accurate and validated data in the multimedia form can reduce anxiety and desire for information[8].

When the studies with anesthesia examined, a questionnaire applied to 100 patients who will be employed cesarean. The anesthesia preferences of the patients questioned. It observed that factors such as nausea and vomiting were useful in the selection of anesthesia[9]. In another study, 209 patients were provided with video and were informed about anesthesia. Patients who were to be operated interviewed before and after the operation and a questionnaire were applied. As a result of the study, it observed that the patients who received video information before the process had less anxiety[10]. Patients evaluated before anesthesia were informed preoperatively in another related anesthesia study. In 207 patients with sufficient information, significant advances observed in adaptation to anesthetics[11]. As can be understood from these studies, anesthesia information and training studies are usually given in clinics for patient compliance before anesthesia. However, in our research, education levels of the patients and sources of information were examined.

When we look at the studies on the importance of surgery for the patient, surgical importance studies, especially in cesarean patients, are generally related to fear and anxiety. Considering a meta-analysis of 65 studies related to depression and anxiety status and normal birth with elective cesarean section, it concluded that patients who had previously received psychiatric treatment were better in electoral cesarean decision and adaptation[12]. In a review on this subject, lumbar disc herniation (LDH) surgery discussed. Preoperative psychological factors have shown to be decisive for postoperative results. The aim was to review studies that prospectively examined the prognostic value of elements in the Fear Prevention Model (FAM), including back pain, leg pain, anxiety, anxiety, fear-avoidance, depression, physical activity, and disability, in patients who had systematic LDH surgery. Examinations from databases such as PubMed, CINAHL, and PsycINFO have conducted. In general, depression, fear-avoidance behaviors, passive pain coping, and anxiety FAM factors have shown to harm LDH surgical outcomes[13].

In our study, patients asked to score how important the operation was using the Likert scale. With this method, we aimed to question the importance of the surgery according to the patients and the relevance of the information sources to the degree of influence. In this sense, when we look at the results, it is seen that the importance of patients using the internet as an anesthesia and surgical information source is above the general average. Based on these results, we can say that the patients who care about the surgery are trying to access more information, and they used the internet for

this. We used the Clavien-Dindo Classification system to standardize the types of surgery. Because patients' elective operations were very diverse, and we had to use a classification method to rule out this difference. We also had to evaluate whether the importance of surgery in these patients affected the significance of the patients. At this point, when we look at the correlation between the patient's operation and the importance based on the classification system, there was no significant difference. In this result, we think that it is sufficient that patients cannot be aware of a technical system, but only when the importance demonstrated. Another parameter was the level of education of the patients. In this study, 283 students recruited. It observed that the higher the education level of these students, the more effective internet usage increases[14]. In a review investigating the relationship between social media use and higher education level, issues discussed in terms of terminology and friendship environment used in some social media platforms. And it was emphasized that adaptation to social media could be overcome more efficiently and comfortably, especially in people with high education levels[15]. In our study, as the level of education related to access to the information source of anesthesia increased, the use of social media increased. Still, no such significance found in surgery. We think that this difference is related to the low number of university graduates we grouped as high education levels.

Another parameter we looked at was the effect of age on the use of the internet. In a study, the differences between generations in terms of adaptation to new digital devices besides the internet examined. It has argued that younger generations are more successful in adapting to new methods, adaptation to the internet, and applications in these devices and practical use[16]. In another study, a comparison made on the internet usage and interests of middle-aged and elderly participants. In this sense, as age increases, it is presented that there is a decrease in internet usage, expectations, and practicality[17].

In our study, our age of patient groups was between 18-39 years as a young patient, between 40-64 years as a middle-age patient and over 65 years as an elderly patient. In these age groups, we divided the patients into three separate groups, between 18-39 years, and looked at internet usage as a source of information. Being youth was not a significant difference in both statistically and proportionally for the information about anesthesia. But being a kid was a substantial difference in both statistically and proportionally for the information about surgery. In this case, we conclude that the under-30 group, which can describe as young mothers, is more conscious and more curious about the contribution of the high level of education.

As for the limitations of our study, it observed that there was a small number of patients at some levels between the education levels of the patients. However, in this case, we think that the socio-cultural realities of the study area are active. Also, while looking at the internet usage, various media platforms could be asked separately, in which case the fact that the companies in question were commercial companies affected the reliability of the study.

CONCLUSION

In our study, it observed that the use of the internet increased in different age and education groups, especially in the young and high education level groups. In this

sense, while the patient information methods used today, we hope that our colleagues will be an element that will emphasize the need to change the means of informing patients according to these characteristics.

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CONFLICT OF INTEREST

There were no conflicts of interest with any organization in this study.

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