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The influence of an anesthesiologist's postoperative visit on patient satisfaction with anesthesia for the reconstruction of the anterior cruciate knee ligament

Uticaj postoperativne vizite anesteziologa na zadovoljstvo anestezijom bolesnika podvrgnutih rekonstrukciji prednjeg ukrštenog ligamenta kolena

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Abstract

Background/Aim. When it comes to anesthesia, patient satisfaction (PS) is more difficult to assess than in any other medical specialty. The aim of this study was to construct a tool for assessing PS with anesthesia and then examine the effects of postoperative care provided by anesthesiologists on PS. **Methods.** The study included patients undergoing general anesthesia due to the reconstruction of the anterior cruciate knee ligament who were considered the American Society of Anesthesiologists (ASA) 1 and ASA 2 classes. Patients were divided into three groups: group 1 included 74 patients who had a postoperative visit performed by an attending anesthesiologist; group 2 included 70 patients who had a postoperative visit performed by a nurse anesthetist after surgery; group 3 included 74 patients who did not have postoperative visit during postoperative care by an anesthesiologist nor a nurse anesthetist. The tools used in the research were the Anesthesia Patient Satisfaction questionnaire specially designed for this study and the Post Anesthetic Recovery Scoring System (PAS). ANOVA and Pearson's correlation coefficient were used to estimate the statistical significance of the obtained results between the groups. **Results.** Association between an objective assessment of the postoperative status of patients on day zero and satisfaction with the anesthesiologist's patient management showed statistical significance ($p < 0.05$). Patients who had a postoperative visit by an anesthesiologist tolerated better preoperative and postoperative physical symptoms. Patients visited by an anesthesiologist were most satisfied with postoperative care ($p < 0.05$). **Conclusion.** The use of a highly reliable questionnaire for the evaluation of PS with anesthesia could improve the postoperative condition of patients and enable faster recovery during the postoperative period.

Key words:
anesthesiology; health personnel; patient satisfaction; postoperative care; surveys and questionnaires.

Apstrakt

Uvod/Cilj. Zadovoljstvo bolesnika (ZB) je teže proceniti u oblasti anestezije nego u bilo kojoj drugoj medicinskoj specijalnosti. Cilj rada bio je da se ispita uticaj postoperativne vizite anesteziologa i korišćenja prethodno konstruisanog psihometrijskog instrumenta na ZB podvrgnutih rekonstrukciji prednjeg ukrštenog ligamenta kolena. **Metode.** Ispitanici koji su pripadali *the American Society of Anesthesiologists* (ASA) 1 i ASA 2 klasi su metodom slučajnog izbora bili podeljeni u tri grupe. Prvu grupu činila su 74 bolesnika koje je postoperativno na odeljenju obišao anesteziolog koji je davao anesteziju. Drugu grupu činilo je 70 bolesnika koje je posle operacije obišao medicinski tehničar koji nije učestvovao u anesteziji. Treću grupu činila su 74 bolesnika koja nisu imala postoperativnu vizitu anesteziologa ili medicinskog tehničara na anesteziji. U istraživanju su korišćeni sledeći instrumenti: Sociodemografski upitnik, Upitnik o ZB anestezijom i Postanestezijski sistem skoringa. Za procenu statističke značajnosti razlika dobijenih rezultata korišćena je analiza varijanse (ANOVA). Za proveru povezanosti varijabli korišćen je Pirsonov koeficijent korelacije. **Rezultati.** Subjektivno i objektivno stanje bolesnika posle operacije bilo je povezano sa ZBA ($p < 0,05$). Bolesnici koji su imali postoperativnu vizitu od strane anesteziologa su lakše podnosili preoperativne i postoperativne fizičke simptome i bili su zadovoljniji postoperativnom negom od ispitanika druge dve grupe ($p < 0,05$). **Zaključak.** Korišćenje veoma pouzdanog psihometrijskog instrumenta za procnu ZB

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anestezijom može da poboljša postoperativno stanje bolesnika i utiče na brži oporavak u postoperativnom periodu.

Ključne reči:
anestezija; zdravstveno osoblje; bolesnik, zadovoljstvo; postoperativna nega; ankete i upitnici.

Introduction

Anesthesiologists from around the world work daily to improve the quality of their work, building on their knowledge and skills and following the development of technology that facilitates work and broadens horizons. One of the most important requirements for improving the quality of work for anesthesiologists is an insight into patients' experience and satisfaction with anesthesia [1–6].

Patient satisfaction (PS), when it comes to anesthesia, is more difficult to assess than in any other medical specialty. Fear related to anesthesia affects patients more than fear of surgical procedures. Immediately after surgery, patients may have amnesia induced by premedication. A major problem is a relatively short time an anesthesiologist spends with their patients [2]. Assessing PS with anesthesia is a challenge because it is a multidimensional concept [1–3].

Detection of the adverse events during anesthesia is a relevant step in assessing the patient's satisfaction with anesthesia, but it is not the only indicative factor of the patient's contentment regarding the anesthesia. Patient morbidity and mortality are certainly important for assessing the outcomes but are not appropriate when it comes to the assessment of PS.

Patients seek emotional support from their anesthesiologists in order to feel safer [5]. Continuous monitoring, evaluation, and adaptation to changes in patients' expectations are the basis for continuous assessment of PS with anesthesia [3].

In 2014, the American Association of Anesthesiologists (ASA) issued recommendations on how to continuously monitor and assess PS with anesthesia [7]. They recommended that each hospital around the world construct a valid psychometric instrument for assessing PS with anesthesia [8]. The recommendation highlighted the importance of obtaining information about the operating procedure and patients' demographic data, as well as the construction of a psychometric instrument for assessing PS and its continuous use in the clinical setting. In Europe, the Joint Commission International (JCI) is in charge of monitoring and assessing the quality of healthcare. Part of the quality assessment is an insight into the PS provided with healthcare.

In the Republic of Serbia, the quality of healthcare is evaluated on an annual basis by the Ministry of Health. There is a specific set of guidelines assessing the quality of healthcare. The data collected are general data on every level of healthcare. When looking at tertiary healthcare institutions, the rulebook generally refers to the quality of surgical procedures without giving much consideration to anesthesia. The evaluation is performed with an assessment of patients' lethality rates, the length of hospital treatment, the total number of patients, and the need for patients to be treated in the intensive care unit (ICU) [9].

Aside from the general assessment of PS with the treatment in tertiary healthcare institutions, which is centered around surgery, there are no other assessment tools for PS and the quality of care provided in our country. Anesthesia, without which surgical work or any perioperative management would not be feasible, should be evaluated according to PS in order to provide better medical care in the future. With that in mind, creating a universal psychometric tool capable of assessing PS with anesthesia would be very beneficial for the field.

The aim of this study was to construct a tool for assessing PS with anesthesia and then examine the effects of postoperative care provided by anesthesiologists on PS with anesthesia after knee ligament reconstruction.

Methods

The research was a prospective clinical study that included patients undergoing reconstruction of the anterior cruciate ligament (ACL) of the knee in general anesthesia at the Clinic for Anesthesia and Intensive Therapy and the Clinic for Orthopedic Surgery and Traumatology of the University Clinical Center of Vojvodina, Serbia. The study was conducted from January to October 2014 and included 218 patients. The study included patients of both sexes, who signed an informed consent form, underwent the ACL reconstruction of the knee under general anesthesia, were over 18 years of age, spoke and wrote well in Serbian, and were classified as the American Society of Anesthesiologists (ASA) 1 or 2 patients according to the classification of the ASA. The study excluded patients who were not under general anesthesia for this type of surgical procedure, patients under 18 years of age, patients who did not speak or write well in Serbian, patients who previously experienced anesthesia for surgical procedures, and ASA 3 and ASA 4 patients.

Patients were divided into three groups by a method of random sorting. A randomization plan for treatment assignment to patients was generated using online randomization (https://www.randomizer.org/). We used simple randomization (Figure 1) based on a single sequence of random assignments, so each participant had an equal chance of being assigned to each group and had been assigned to a group independently of other participants [10–12]. The group 1 included 74 patients who had a postoperative visit performed by an attending anesthesiologist; the group 2 included 70 patients who had a postoperative visit performed by a nurse anesthetist after surgery; the group 3 included 74 patients who did not have a postoperative visit during postoperative care by an anesthesiologist nor a nurse anesthetist.

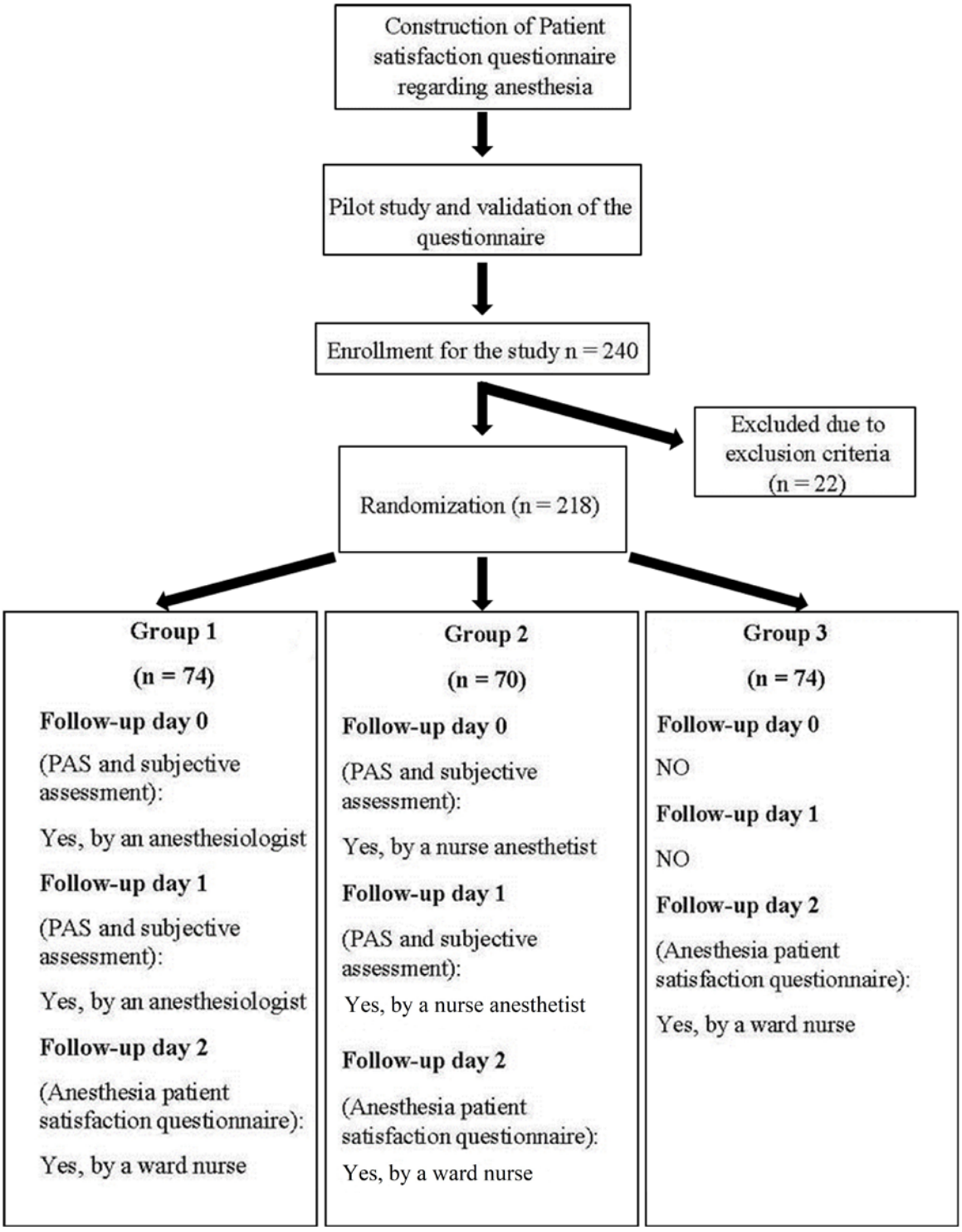

Fig. 1 – Randomization scheme diagram.

The tools used in the research were a sociodemographic questionnaire, Anesthesia Patient Satisfaction Questionnaire (APSQ), and Post Anesthetic Recovery Scoring System (PAS) [13, 14].

APSQ was constructed for the purposes of the study (Appendix 1) and previously validated in a pilot study that included 100 subjects. Based on the theoretical framework of the study, 21 items were formulated. Using factor analysis, the list of key factors was brought down to 4. The first factor was "satisfaction with the relationship between the anesthesiologist and the patient" which consists of ten items. The coefficient of reliability was measured to be 0.90 using Cronbach's alpha. The second factor, "perianesthesia comfort" consists of three items and relates to physical symptoms after surgery, which may be the result of anesthesia. The coefficient of reliability for the second factor

was measured to be 0.56 using Cronbach's alpha. The third factor, "dissatisfaction with postoperative care", consists of five items that focus on the professionalism and behavior of anesthesiologists and other team members before and after surgery. The coefficient of reliability for this factor was measured to be 0.80. The fourth factor, "fear of anesthesia", consists of three items and relates to the patient's stance on and fear of anesthesia. The coefficient of reliability for the fourth factor was measured to be 0.75. The coefficient of reliability for the entire questionnaire measured on the study sample population using Cronbach's alpha was 0.889. The "perianesthesia comfort" factor had weaker metrics when compared to the remaining three factors. Therefore, the questionnaire can be administered without the three items relating to factor two, and the high overall coefficient of reliability for the questionnaire makes it possible to implement a scoring system, which would indicate the PS with anesthesia. During this study, all four factors were used in order to have as much insight into PS.

During the first phase of the study, basic sociodemographic data were collected, and patients were interviewed. General balanced anesthesia was then administered to the patients during the second phase of the study. In the third phase of the study, one hour after awakening from anesthesia, in the recovery room, the group 1 was visited by the anesthesiologist during the postoperative care, while the group 2 was visited by a nurse anesthetist. The group 3 did not have a visit during postoperative care.

During the postoperative visit, we objectively (PAS score) and subjectively estimated the state of the patients (the groups 1 and 2). The second visit for the groups 1 and 2 was performed on the first day after the surgery, and subjective and objective assessment was also performed.

On the second postoperative day, all three groups of patients were given a questionnaire for measuring PS with anesthesia by a hospital ward nurse who was not involved in the postoperative care.

This study was approved by the Ethics Committee of the Faculty of Medicine in Novi Sad (issued on 26th June 2013) and the Ethics Commission of the University Clinical Center of Vojvodina, Serbia (issued on 11th June 2013, No 00-79/400).

Data were collected using a standardized questionnaire, verified by the author, coded, and entered into a specially created database on a personal computer. The basic descriptive statistical parameters used for qualitative and quantitative estimates of the results were arithmetic mean and standard deviation. Variance analysis (ANOVA) was used to estimate the statistical significance of the difference in obtained results between the groups. Pearson's correlation coefficient was used to examine the relationship between variables. We used factor analysis to determine the factor structure of the questionnaires used. For all tests, levels of statistical significance (*p*-values) were specified.

Results

The sample consisted of 218 subjects with a mean age of 29 years (18 to 50 years old). The majority (144) of respondents were male. The overall PAS score during the zero postoperative day was an average of 13.20 in the range of 11 to 14, where a lower score indicates a worse postoperative condition of the subject. The overall mean PAS score on the first postoperative day was 13.94 in a range from 12 to 14 (Table 1). Based on an objective estimate of the patient's health by the anesthesiologist, following the reconstruction of the ACL, it can be inferred that the patients were in good health.

The overall mean score of the subjective assessment of the postoperative condition during day zero (the indicators were pain, drowsiness, hunger and thirst, body tremors, fainting and headaches, nausea and vomiting, dyspnea, and subjective experience of whether they are feeling well) was 12.16 (maximum possible value for subjective assessment was 16, while patients assessed their condition with a maximum of 14 points). The mean subjective assessment score on day zero indicates that subjects were mostly satisfied with their health and did not experience any major issues.

On the first postoperative day, the overall mean score of subjective assessment was 7.95 in the range from 7 to 10 (Table 1). The maximum score of 10 during the first postoperative day implies the overall score of the indicators: pain, drowsiness, hunger and thirst, shortness of breath, and subjective assessment of whether they feel good. Indicators relating to fainting and headache, nausea and vomiting, as well as body tremors, were not measured on the first postoperative day. Patients assessed their subjective condition as excellent on day zero and day one.

Since the subjects reported their postoperative assessments immediately after the surgery and on the first postoperative day, as well as the fact that the PAS score was obtained, which is an objective measure of the patient's condition, a correlation analysis was performed on the data to determine whether there is a relationship between the subjective and objective scores of the patients' postoperative conditions.

Table 1

Mean values of Post Anesthetic Recovery Scoring System (PAS) score and subjective assessment of the subject's postoperative condition

Variable	Minimum	Maximum	Mean	SD
PAS score, zero postoperative day	11.00	14.00	13.20	0.87
PAS score, first postoperative day	12.00	14.00	13.94	0.30
Subjective assessment, zero postoperative day	7.00	14.00	12.16	0.92
Subjective assessment, first postoperative day	7.00	10.00	7.95	0.29

SD – standard deviation.

Based on Table 2, it can be observed that subjective and objective assessments of the postoperative condition of the patients are statistically positively correlated. This positive correlation tells us that subjective and objective assessments of the postoperative condition of the patient are as equally valid and relevant.

To investigate whether there is a relationship between the patient's subjective assessment of the postoperative condition and their satisfaction with anesthesia, we conducted a correlation analysis.

The results of the correlation analysis indicate a positive association between perianesthesia comfort and the subjective assessment of the postoperative state on day zero (Table 3). Based on the results of this analysis, we see that patients who were more satisfied with perianesthesia comfort also reported better postoperative health on day zero. On the other hand, patients who were not satisfied with perianesthesia comfort assessed their subjective condition as worse.

To investigate whether there was a relationship between an objective assessment of a patient's postoperative condition and PS with anesthesia, we conducted a correlation analysis.

Table 4 shows a statistically significant positive correlation between an objective assessment of the postoperative condition of patients on day zero and PS with the anesthesiologist's relationship with them. If the patients were more satisfied with the anesthesiologist's attitude toward them, the objective postoperative condition was better.

To check for statistically significant differences in anesthesia satisfaction between different groups of patients (the group 1, group 2, and group 3), a one-way analysis of the variance was conducted. The groups were used as independent variables in the analysis, while the four factors related to PS with anesthesia were used as dependent variables. When it came to satisfaction with the anesthesiologist's relationship with the patient factor, the group 1 was more satisfied than the groups 2 and 3. In addition, the group 2 was more satisfied with the relationship with the anesthesiologist than the group 3 (Table 5 and Figure 2).

There was no statistical significance when examining the perianesthesia comfort, but based on Figure 3, it can be observed that the group 1 more easily tolerated preoperative and postoperative physical symptoms and felt more comfortable than the patients of the other two groups.

When it comes to dissatisfaction with postoperative care, the group 1 was most satisfied with postoperative care in relation to the other two groups (Table 5 and Figure 4).

Table 2

Intercorrelation of subjective and objective assessment of the postoperative condition of the patient

Variable	PAS (zero postoperative day)	PAS (first postoperative day)
Subjective assessment (zero postoperative day)	**0.27****	
Subjective assessment (first postoperative day)		**0.50****

PAS – Post Anesthetic Recovery Scoring System.

$^{**}p < 0.01$.

Table 3

Correlation coefficients between the subjective assessment of patient's condition on the day zero and day one and satisfaction factors with anesthesia

Variable	Satisfaction with the relationship between the anesthesiologist and the patient	Perianesthesia comfort	Dissatisfaction with postoperative care	Fear of anesthesia
Subjective assessment (zero postoperative day)	0.16	**0.26****	-0.15	-0.06
Subjective assessment (first postoperative day)	-0.01	0.05	0.02	0.10

$^{**}p < 0.01$.

Table 4

Correlation coefficients between objective assessment of the postoperative condition of patients on the day zero and day one and satisfaction factors with anesthesia

Variable	Satisfaction with the relationship between the anesthesiologist and the patient	Perianesthesia comfort	Dissatisfaction with postoperative care	Fear of anesthesia
PAS				
zero postoperative day	**0.21***	0.11	- 0.15	0.03
first postoperative day	- 0.00	0.00	- 0.11	0.08

PAS – Post Anesthetic Recovery Scoring System.

$^{*}p < 0.05$.

Table 5

Differences between groups regarding satisfaction factors with anesthesia

Dependent variable	Differences in mean values	Standard error	*p*-value
Satisfaction with the relationship between the anesthesiologist and the patient			
group 1 vs.			
group 2	**0.51**	**0**.10	**0.00**
group 3	**1.03**	**0**.16	**0.00**
group 2 vs.			
group 1	**-0.51**	0.10	**0.00**
group 3	**0.51**	0.17	**0.01**
group 3 vs.			
group 1	**-1.03**	0.16	**0.00**
group 2	**-0.51**	0.17	**0.01**
Perianesthesia comfort			
group 1 vs.			
group 2	0.25	0.15	0.22
group 3	0.36	0.16	0.07
group 2 vs.			
group 1	-0.25	0.15	0.22
group 3	0.11	0.18	0.82
group 3 vs.			
group 1	-0.36	0.16	0.07
group 2	-0.11	0.18	0.82
Dissatisfaction with postoperative care			
group 1 vs.			
group 2	**-0.41**	0.17	**0.04**
group 3	**-0.61**	0.16	**0.00**
group 2 vs.			
group 1	**0.41**	0.17	**0.04**
group 3	-0.19	0.16	0.43
group 3 vs.			
group 1	**0.61**	0.16	**0.00**
group 2	0.19	0.16	0.43
Fear of anesthesia			
group 1 vs.			
group 2	-0.15	0.16	0.61
group 3	**-0.42**	0.16	**0.03**
group 2 vs.			
group 1	0.15	0.16	0.61
group 3	-0.26	0.17	0.26
group 3 vs.			
group 1	**0.42**	0.16	**0.03**
group 2	0.26	0.17	0.26

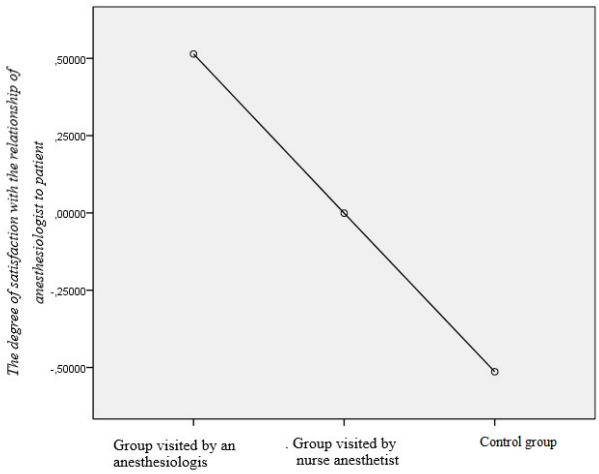

Fig. 2 –Tendency of differences between groups in the degree of satisfaction with the relationship of the anesthesiologist to the patient.

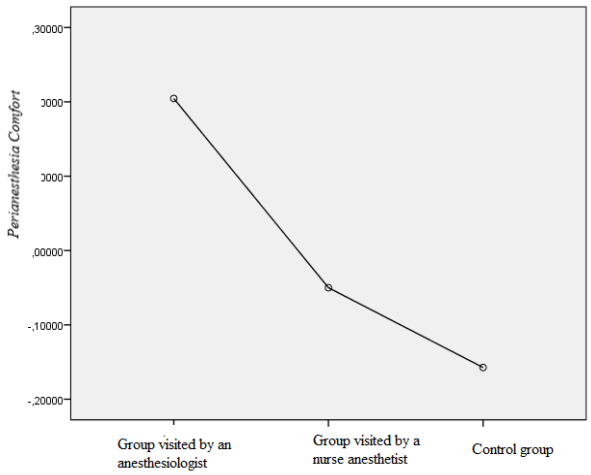

Fig. 3 – Tendency of group differences in perianesthesia comfort.

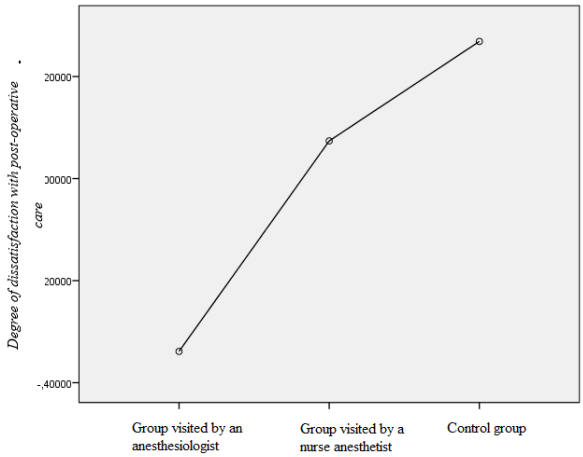

Fig. 4 – Tendency in the difference between groups in the degree of dissatisfaction with postoperative care.

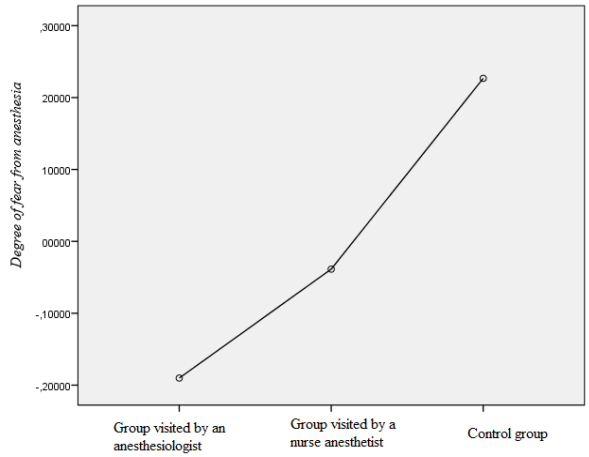

Fig. 5 – Tendency of differences between groups in the degree of fear of anesthesia.

Patients in the group 3 had a more pronounced fear of anesthesia than patients from the group 1 (Table 5). The two groups did not differ statistically from each other, but it can be seen that patients from the group 2 exhibited less fear of anesthesia than patients from the group 3 (Figure 5).

Discussion

Subjective and objective condition of patients after surgery is associated with PS with anesthesia. Patients who are objectively better in general condition are more satisfied with the relationship with their anesthesiologist, while the subjective assessment of the patients about postoperative recovery during day zero is more important for satisfaction on all factors, including satisfaction with anesthesia.

The overall PAS score during the zero postoperative day was an average of 13.20 in the range of 11 to 14, where a lower score indicated worse postoperative conditions. The overall average PAS score on postoperative day one was 13.94 in a range of 12 to 14. Based on the objective assessment of the postoperative condition of the patients by an anesthesiologist, it can be concluded that the respondents were in good general condition after surgery. Based on the patient population's age, ASA score, and the type of surgical intervention, it was expected to see patients in good postoperative condition. The high PAS score amongst the patients correlates well with data found in other literature [15–17].

The objective assessment of the postoperative condition of patients is extremely important for further treatment, as well as for early rehabilitation [18, 19]. Patients in good general condition – with minimal to no postoperative pain - will be able to tolerate more easily the early activation that comes on the first postoperative day after ACL reconstruction [20–22]. The way patients feel often correlates well with the objective assessment of their condition [23–25]. Patients who are feeling well do not have postoperative pain and side effects of anesthesia, hence their subjective assessment of their condition will be good [26–27]. In this study, subjective and objective assessment of the postoperative condition of patients is statistically significantly related, indicating the uniformity of assessments and contributing to a better

understanding of the assessment of the condition and satisfaction with anesthesia. This mutuality indicates that objective and subjective assessments of the patient's postoperative condition are equally important [28–30].

A statistically significant relationship exists between the objective assessment of the postoperative condition of patients on day zero and the "satisfaction with the relationship between the anesthesiologist and the patient". Patients who are more satisfied with the anesthesiologist's attitude towards them are also in a better objective postoperative state.

In this study, the subjective and objective condition of the patient after ACL reconstruction in general anesthesia correlates well with PS with anesthesia. Patients who are objectively in better condition are more satisfied with the relationship with the anesthesiologist, while the subjective condition of the patient on postoperative day zero has a bigger impact on all factors regarding satisfaction with anesthesia. Bost et al. [16] also showed a statistically significant correlation between the subjective and objective condition of the patient with the patient's satisfaction with anesthesia.

As in the study by Saal et al. [31], where significant differences in the level of satisfaction with anesthesia between groups were recorded, statistically significant differences were also found in our study. In our study, group 1 scored higher when it came to factors such as "satisfaction with the relationship between the anesthesiologist and the patient" and "perianesthesia comfort" when compared to the other two groups.

Subjects were also asked about their fear of anesthesia, with 52.8% of subjects stating they felt fear of anesthesia. More than half of the subjects felt fear of anesthesia prior to the surgery, and the control group (group 3) in the postoperative period had higher scores on the "fear of anesthesia" factor. This result validates data from literature where the level of fear of anesthesia is significantly higher in groups that did not have a postoperative visit by an anesthesiologist [32, 33]. Amongst the study population, group 3, which had no postoperative visit, had the highest score when it came to "dissatisfaction with postoperative care". In the study by Saal et al. [31], the experimental group, which had a postoperative visit by an anesthesiologist, scored higher regarding the "continuous care by an anesthesiologist and trust". There is no statistically significant difference between the groups visited by an anesthesiologist and medical technician from the department.

There was a statistically significant difference between groups when it comes to "satisfaction with the relationship between the anesthesiologist and the patient", "fear of anesthesia", and "dissatisfaction with postoperative care".

When it came to the "satisfaction with the relationship between the anesthesiologist and the patient", patients in the group 1 were more satisfied with this aspect than patients in the other two groups. Moreover, patients in the group 2 were more satisfied with the relationship with the anesthesiologist than in the control group. In the study by Saal et al. [31], a statistically significant difference was observed only when compared to the control group; no significant difference was observed between the groups that were visited by an anesthesiologist and medical technician. Ateleanu et al. [32] and Sultan et al. [34] observed a statistically significant difference in postoperative visits between anesthesiologists and other members of the anesthesiology team.

There was no statistically significant difference between groups regarding the assessment of "perianesthesia comfort". However, one can infer that the patients visited by an anesthesiologist handled pre- and postoperative symptoms more easily and consequently felt more comfortable than the other two groups.

When it comes to "dissatisfaction with postoperative care", the group 3 significantly differed from the other two experimental groups. Patients in the group 3 were more dissatisfied with postoperative care. The group 1, which was visited by an anesthesiologist, was the most satisfied with postoperative care of all groups. The additional attention provided by an anesthesiologist helps the patient feel safer and more satisfied with postoperative care. When looking at PS with anesthesia, the literature highlights the importance of the care provided by an anesthesiologist [33, 35, 36].

Patients in the group 3 felt a more pronounced fear of anesthesia when compared to patients in the group 1. The groups 1 and 2 did not differ significantly from each other. Patients in the group 2 showed lower levels of fear of anesthesia in comparison to patients from the group 3. The presence of an anesthesiologist, who explains to patients the anesthesia procedure and who is there to answer any possible questions, contributes to the reduction of anxiety and stress and represents a form of preoperative preparation which is very important for the patient's experience of surgery and later postoperative recovery [31, 34, 37].

Data from literature, which focuses on the importance of postoperative visits, indicates a statistically significant difference between patients who had a postoperative visit from anesthesiologists and those who did not [35–44].

The importance of a postoperative anesthesiologist's work is undeniable when considering PS with anesthesia [45].

Conclusion

Greater satisfaction with the relationship between the anesthesiologist and the patient, as well as with postoperative care and less pronounced fear of anesthesia in the subjects of the experimental group visited by an anesthesiologist, highlight the importance of proper communication with patients, i.e., communication of patients with the person they previously saw during the anesthesia procedure. A visit by the anesthesiologist who administered the anesthesia makes patients feel safer. That consequently increases the patient's level of satisfaction with the anesthesia and, even more so, the level of satisfaction with postoperative care and the relationship between the patient and the medical staff, more specifically with the anesthesiologist. We also constructed a highly reliable questionnaire for evaluating PS with anesthesia, which can be readily used in a clinical setting in our region. These results give us guidance for further work of the anesthesiologists in order to improve postoperative care and enable faster recovery, which is a consequence of the patient's greater satisfaction with anesthesia and postoperative care.

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Appendix 1

Question number	**Patient satisfaction questionnaire regarding anesthesia**
1	Are you satisfied with your anesthesiologist? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
2	Are you satisfied with anesthesia? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
3	Are you satisfied with the anesthesiologist's relationship with you? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
4	Are you satisfied with how much information regarding anesthesia you were given? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
5	Are you satisfied with the anesthesiologist's answers to the questions that you asked? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
6	Did you feel free to ask the anesthesiologist questions regarding anesthesia procedure? 1. I did not feel free to ask any questions; 2. I felt a little freedom to ask questions; 3. I am not sure if I felt free to ask questions; 4. I felt free to ask questions most of the time; 5. I felt completely free to ask any question regarding anesthesia procedure.
7	Was it significant to you that you were asked questions about your previous experience with anesthesia? 1. It did not have any significance; 2. It had little significance; 3. It was not significant, nor insignificant; 4. It was significant; 5. It was very significant.
8	Did you feel safe regarding anesthesia? 1. Unsafe; 2. Partly safe; 3. Not safe, nor unsafe; 4. Safe; 5. Very safe.
9	Did you feel relaxed regarding anesthesia? 1. Unrelaxed; 2. Partly relaxed; 3. Not relaxed, nor unrelaxed; 4. Relaxed; 5. Very relaxed.
10	Did you feel that your personal data were protected with regard to anesthesia? 1. I did not feel that my personal data were protected at all; 2. I did not feel that my personal data were protected most of the time; 3. I am not sure; 4. I felt that my personal data were protected most of the time; 5. I felt that my personal data were protected completely.

11	Were you satisfied with the professionalism of anesthesia team members? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
12	Did you feel fear of adverse events from anesthesia before talking to an anesthesiologist? 1 means no fear, 5 implies an intensive feeling of fear 1 2 3 4 5
13	Did you feel fear of adverse events from anesthesia after talking to an anesthesiologist? 1 means no fear, 5 implies an intensive feeling of fear. 1 2 3 4 5
14	How much are you satisfied with comfort in the recovery room after awakening from anesthesia? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
15	How comfortable did you feel on an operating table? 1 means completely uncomfortable, 5 means not uncomfortable at all. 1 2 3 4 5
16	How hard was it for you to tolerate pre-operative and perioperative fasting? 1 – it was extremely hard for me to tolerate the fasting 5 – I had no problem tolerating the fasting. 1 2 3 4 5
17	Did you experience postoperative nausea? 1 – I had severe nausea, 5 – I had no postoperative nausea at all 1 2 3 4 5
18	Are you satisfied with how much you waited between arriving at the operating theatre and the beginning of anesthesia? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
19	How much are you satisfied with the treatment of postoperative pain? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
20	How much are you satisfied with the visits from the anesthesiologist after the surgery? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
21	How much are you satisfied with the visits from other anesthesia team members after the surgery? 1. Dissatisfied; 2. Partly dissatisfied; 3. Not satisfied, nor dissatisfied; 4. Satisfied; 5. Very satisfied.
	What is your first memory after the surgery? _____ _____ Did you dream during anesthesia? Yes No