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Patient's satisfaction with anesthesia based on the polish version of the of Iowa Satisfaction with Anesthesia Scale. Satisfaction with anesthesia in patients with craniofacial trauma

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ABSTRACT

Purpose. The article presents an assessment concerning patient satisfaction with anesthesia as based on the Polish version of the Iowa Satisfaction with Anesthesia Scale.

Material and Methods. The study group consisted of 198 patients with maxillofacial injury admitted to the Clinical Ward of Maxillofacial Surgery. The quality of the anesthesiological care was evaluated with the Polish version of Iowa Satisfaction with Anesthesia Scale.

Results. It was stated that the level of satisfaction with the anesthesia in patients operated on due to maxillofacial injury used was average. According to the Polish version of the Iowa Satisfaction with Anesthesia Scale, the average score in the studied population was 0.8 on a scale from -3 to +3, SD 2.41. There were differences observed depending on patient age (18-30 years old ($p = 0.0001$)) and clinical condition.

Conclusion. The level of satisfaction with anesthesia in patients with craniofacial trauma is moderately positive, however, in patients with an injury of the upper face and in patients with ASA scale I and II, the same level of satisfaction is higher. Among the analyzed socio-demographical factors only the age determines the level of satisfaction with anesthesia. The level of satisfaction is higher in older patients.

Keywords. satisfaction with anesthesia, patient after maxillofacial trauma, Polish version of the Iowa Satisfaction with Anesthesia Scale

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Participation of co-authors: A – Author of the concept and objectives of paper; B – collection of data; C – implementation of research; D – elaborate, analysis and interpretation of data; E – statistical analysis; F – preparation of a manuscript; G – working out the literature; H – obtaining funds

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Introduction

According to Pascoe, patient 'satisfaction' is defined as their subjective reaction to the health care they receive at the time.[1] Each patient compares his or her health care experience with an expectation. The expectations can have various levels such as an ideal one, a minimal level of expectations, an average level, all deriving from recent experience. Only the patient can spot the differences between the expected health care standards and what he or she actually experienced. The transition in the level of satisfaction occurs when the difference between the actual and expected level of satisfaction is significant for the patient. Low level of satisfaction does not necessarily mean that the patient was not happy with the care received, because the patient may have very little expectations towards the health care. Patient's satisfaction is based on emotions, internal psychological features (for example a tendency to be grateful), a cultural approach towards health and health care as well as a combination of all of these elements.[2-5] Current research results emphasise the importance of assessing the level of patient 'satisfaction' with anesthesia making it one of the significant areas of quality management.[6-9] Dexter et al. claims that the anesthesiological team has to be able to measure patient satisfaction with anesthesia due to at least three reasons. First of all, the care quality ought to be evaluated from the patient's point of view, not only the anesthesiologist's. Secondly, the satisfaction assessed by means of a standardized scale may be used to measure preferences of various patient groups when types of anesthesia and anesthetics are concerned. Lastly, the results of such evaluation can indicate when and how to improve the care quality.[7-11] A patient's assessment and their satisfaction may mirror many aspects of care such as current patient needs, the patients participation in the decision making process, as well as the effects of efficacy of communicating with patients and giving them information, which are very difficult to evaluate in any other way.[5,12-15]

The main aim of this article was to assess the level of patient's satisfaction with anesthesia on the basis of the Polish version of the Iowa Satisfaction with Anesthesia Scale (ISAS) in patients operated on due to a maxillofacial injury.

Material and Methods

The study group consisted of patients operated on due to a maxillofacial injury from random accidents. Usually these apply to young people, aged between 20-44 years and the majority of them were male (70–80 %). The main causes of such injuries are road accidents, fights, sport injuries etc.[16] Fractures of the craniofacial skeleton happen by two main mechanisms, which may or may not occur together in one injury. The indirect mechanism is a result of crashing and the direct mechanism is a result of a straightening of the physiological curvatures of the skeleton.[17-18] There are many classifications of facial fractures. For the sake of the study, a three-level distinction has been applied. Types of injury were defined as type I injury - upper face fracture/ forehead sinus/the bridge of nose/ethmoid bone, type II injuries - mid face fracture including maxilla, the base of nose as well as malar bones and malar arches and type III lower face fracture, mandible.[17-18] The research was conducted from January to December 2009 in the group of 198 patients, who were admitted to the Clinical Ward of Maxillofacial Surgery with a Third reference level. It is the only ward of this type in the Subcarpathian region. Patients with a maxillofacial injury are transported there directly from the emergency room or from other hospitals. The choice of the study group was purposeful. The patients were successively included at the time of being admitted to the Clinical Ward for the Maxillofacial Surgery. They had to fulfill the following criteria: hospitalization due to maxillofacial injury, surgical procedure performed, no cognitive disorders, a conscious written consent for taking part in the research, and an age over 18. The exclusion criteria were a life threatening condition, postsurgical transfer of the patient in an induced coma to an ICU for further treatment, lack of written consent, age ≤18. Every patient was informed about the aim of the research as well as the time needed to complete the questionnaire. The study was conducted in line with the regulations by the Bioethical Committee at the Medical University in Poznan (No 1239, December 18th 2008).

To evaluate the satisfaction with anesthesia, we used a method of a diagnostic survey and a questionnaire technique. The Polish version of Iowa Satisfaction with Anesthesia was employed as a research tool. Iowa Satisfaction with Anesthesia Scale (ISAS) is a questionnaire measuring the level of patient's satisfaction with health care after anesthesia. It was invented by a team of scientists lead by Professor Dexter from the Department of Anesthesiology at the Iowa State University in 1997.[7] ISAS consists of 11 questions (5 negative and 6 positive ones). Three of them ask patients to assess the pain they experience, six concern every other sensation or ailment experienced by the patients during anesthesia. Two questions require patients to directly evaluate the anesthesia experience.[7-9,19] Every question includes a six-point answer form in the Stapel scale (strongly disagree, disagree, partially disagree, partially agree, agree, strongly agree) form -3 to +3. The values were properly reversed in the negative questions. The final result constitutes a mean of all of the 11 questions. We obtained the consent for cultural adaptation of the Iowa Satisfaction with Anesthesia Scale to Polish conditions.

Statistical Analysis

The analysis was performed using the statistical package STATISTICA 10, Polish version along with the SPSS program. The statistical analysis included basic measurement adjusted to the variables that is mean, standard deviation, minimal and maximal values. The variables were measured on a quotient scale- age was described using arithmetic mean and standard deviation (SD). The variables measured nominally were sex, education, source of income and were presented as numerical data as quantity (n) and percentage showing the share of a given variable in the study group. The variables measured ordinal scale, such as pain level, and were presented with descriptive statistics including median, minimal and maximal values. The following nonparametric tests were incorporated: Mann Whitney test, Spearman rank correlation coefficient, Kruskal-Wallis test, and the Fischer test (for small groups). The following rules were set: $p<0.5$ is a statistically significant dependency (marked by *); $p<0.01$ is a highly significant dependency (marked by **); $p<0.001$ is a dependency of extremely high significance (marked by ***). In the evaluation of psychometric equivalence criteria of the Polish version of Iowa Satisfaction with Anesthesia Scale with the original Iowa Satisfaction with Anesthesia Scale, the Alfa Cronbach coefficient was used, with values 0.6-1.0 accepted as values confirming the scale's validity. Theoretical correctness of the scale was investigated with the Spearman rank correlation coefficient. For both test elements and the general result values <0.4 were set as the threshold ones. The Polish version of ISAS complies with chosen psychometric equivalence criteria of the original scale. The Cronbach coefficient was 0.598. The values of Spearman's rank correlation coefficient were from 0.454 to 0.744.

Results

In the study 198 questionnaires were distributed, 100% was returned. Finally 195 of the total were qualified for further analysis. It constituted 98% of the patients qualified for the study at the time of admittance to the ward. The majority of the respondents were aged 21-30 (33.8%). The smallest subpopulation was the elderly, aged 81 or more (0.5%). The biggest group consisted of 96 patients (49.0%) who live in the countryside followed by 70 (36.0%) people living in a county town, and 29 patients (15.0%) lived in the region's capital.

When asked about the source of income the respondents listed: professional work- 85 patients (45.9%), pension/retirement- 12 people each (6.5%), no regular income- 16 people (16.2%), other sources- 24 people (24.9%). 10 patients did not answer the question. Among the 195 respondents, 77 people (39.5%) presented a secondary education, 50 (25.6%) vocational education, 49 (25.1%) primary and 19 people (9.7%) higher education (Table 1).

Table 1. Demographic characteristics of the patients

Variable	N
Age	**all: 195**
Min –Max	18–82
Mean ±SD	34.8(14.6)
Sex	**all: 195**
F	22 (11.3%)
M	173 (88.7%)
Place of residence	**all: 195**
Regional city	29 (15.0%)
County town	70 (36.0%)
Countryside	96 (49.0%)
Education	**all: 195**
Primary	49 (25.1%)
Vocational	50 (25.6%)
Secondary	77 (39.5%)
University	19 (9.7%)
Source of income	**all: 195**
Professional work	85 (45.9%)
Retirement	12 (6.5%)
Pension	12 (6.5%)
No fixed source of income	16 (8.6%)
Other	24 (13.0%)
	36 (19.5%)

Patient satisfaction with anesthesia on the basis of the Polish version of the ISAS

The results for question 1 which was 'I vomited or felt nauseous' are presented next. It was stated that 36.0% of the respondents did not experience vomiting or nausea in the early postoperative stage. A majority, 74.0%, conveyed vomiting or nausea (negative answers from -3 to -1 were elicited). An analysis of the second question 'I would like to have anesthesia again' makes it possible to notice that the most commonly chosen answer was positive (+3) - strongly agree for 70.2% of the respondents. In question 3 which was 'I felt itchy', the majority of the patients in the study answered 'strongly agree' and 'partially agree', which shows that pruritus may constitute a problem after the procedure. Less than half of the group (46.1%) said there were no problems with itchiness after anesthesia. Question 4 evaluated the level of relaxation in the direct postoperative stage. The majority of the respondents (81.1%) answered positively to this question (+3,+2,+1). Not many people (18.9%) responded negatively (-1 to -3). In the following questions of the Polish version of the ISAS, the patients were asked about the level of pain they experienced. Less than half of the respondents (49.7%) were in pain after the surgery (the answers ranged from -3 to -1). 50.3% did not experience any pain. The question 'I felt safe' was answered positively by 50.3% of the patients (answers +3 to +1) while 28.8% chose 'strongly disagree'. In the question concerning mood the patients assessed whether they felt

too cold or too hot. More than a half (55.5%) did not experience such sensations, whereas 45.5% confirmed the presence of such symptoms. The vast majority (85.9%) of the respondents gave positive answers (from +1 to +3) when asked about their satisfaction with anesthesiological care. Only 14.1% evaluated it negatively.

In the study group, 30.9% confirmed they experienced pain (+3 to +1). The majority (88.2%) felt good after the anesthesia. The rest of the patients (17.8%) felt uncomfortable.

When asked whether they felt sore, the majority admitted to feeling unwell (54.4%), 45.6% negated the statement. The general analysis showed that 64.2% of patients answered positively, choosing one of the options and the results are present as follows, +3(41.3%), +2 (11.7%), +1(11.2%). Negative answers were given by 35.8% of the patients, -3(18.2%), -2 (9.8%),-1(7.8%) (Table 2).

The average result of the assessment of the satisfaction with anesthesia in the population in this study was 0.77% (-3 to+3) M=2, SD=2.41. The lowest score was '0' which means a neutral attitude and was marked in 5 questions, which constitutes 45.5% of the total number of questions. A '1' was given to 4 questions (36.3%), '2' was given by 2 questions (18.2%), which indicates that the level of satisfaction in study was high (Table 3).

The results presented in Table 3 indicate a differentiation in the assessment concerning patient satisfaction with anesthesia. The average of the answer value (0.8) for 11 questions was positive. The respondents ranked 5 questions with '0', including the question, 'I vomited or felt nauseous'. In the light of the analysis of respondent answers there were no negative answers noted in the range between 'disagree' and 'strongly disagree'. The average of the answer score for ISAS was 0.8 SD=2.41.

Table 2. The results of assessing patient satisfaction for particular questions

Question No.	Type of answer												
	+3		+2		+1		-1		-2		-3		%
	N	%	N	%	N	%	N	%	N	%	N	%	
Question 1. I vomited or felt I was going to vomit	58	30.4	9	4.7	2	1.0	47	24.6	37	19.4	38	19.9	100
Question 2. I would like to have anesthesia again.	134	70.2	12	6.3	11	5.8	9	4.7	2	1.0	23	12.0	100
Question 3. I felt itchy.	72	37.7	12	6.3	4	2.1	27	14.1	15	7.9	61	39.1	100
Question 4. I felt relaxed.	70	36.6	42	22.0	43	22.5	3	1.6	8	4.2	25	13,1	100
Question 5. I was in pain.	62	32.5	8	4.2	26	13.6	19	9.9	21	11.0	55	28.8	100
Question 6. I felt safe.	80	41.9	36	18.8	23	12.0	5	2.6	20	10.5	27	14.1	100
Question 7. I was too cold or too hot.	51	26.7	23	12.0	32	16.8	14	7.3	23	12.0	48	25.1	100
Question 8. I was satisfied with the anesthesiological care.	82	42.9	45	23.6	37	19.4	2	1.0	2	1.0	23	12.0	100
Question 9. I was in pain during the procedure.	86	45.0	17	8.9	29	15.2	15	7.9	30	15.7	14	7.3	100
Question 10. I felt good.	105	55.0	31	16.2	21	11.0	9	4.7	17	8.9	8	4.2	100
Question 11. I was sore	68	35.6	11	5.8	8	4.2	13	6.8	31	16.2	60	31.4	100
All answers	868	41.3	243	11.7	236	11.2	163	7.8	206	9.8	382	18.2	

Table 3. The results for the average question values in ISAS

Question No.	Mean	SD
Question 1. I vomited or felt nauseous	0	2.39
Question 2. I would like to have anesthesia again.	2	2.09
Question 3. I felt itchy.	0	2.65
Question 4. I felt relaxed.	1	2.04
Question 5. I was in pain.	0	2.53
Question 6. I felt safe.	1	2.28
Question 7. I was too cold or too hot.	0	2.42
Question 8. I was satisfied with the anesthesiological care.	2	1.93
Question 9. I was in pain during the procedure.	1	2.19
Question 10. I felt good.	1	1.87
Question 11. I was sore	0	2.00
ISAS Result	0.8	2.41

The evaluation of dependencies between patient satisfaction with anesthesia and socio-demographic factors

This article analyses the satisfaction with anesthesia in relations to patient age, sex, education, place of residence, financial status and the type of injury on the ASA scale. The analysis indicates there is no connection between the patient's sex and satisfaction with anesthesia (p=0.89). The average value in the Polish version of ISAS for female patients was slightly higher (0.78) than for male patients (0.74). An analysis of the age impact on the level of satisfaction with anesthesia showed that the younger patients aged 18-30 ranked their satisfaction highest (p=0.0001). There was no relation found between patient education or place of residence and the level of satisfaction with anesthesia (p=0.3662 and p=0.089 respectively). There was no dependency found between the source of income and the general result of the Polish version of ISAS (p=0.2752). A significant difference was observed between patients suffering from injuries as classified into three types and the general result of the Polish version of ISAS. Higher levels of satisfaction with anesthesia was a characteristic of patients who had type I injuries which are upper face fractures (forehead sinus, the bridge of nose, ethmoid bone). Of the patients who were qualified for anesthesia with I and II in the ASA scale assessed their satisfaction level with the highest marks.

Discussion

The results show a moderately positive level of patient satisfaction with anesthesia, as based on the Polish version of ISAS. The average score for the entire scale was 0.77, M=2, SD=2.41 (scale range from -3 to +3). None of the 11 questions in the Polish version of ISAS obtained a negative result. However, a detailed analysis of particular answers presented the team with areas in the post anesthesia health care which got a majority of negative answers (from -3 to -1). It applied to problems such as: vomiting (Q.1)- 63.9% of negative answers, itchiness (Q.3)- 61.1%, felling sore (Q.11)- 54.4% of negative answers.

A very similar average general result was presented in a Spanish study incorporating the ISAS. The result was 0.80.[17-18] Higher scores were obtained in research conducted in Canada. The level of satisfaction with anesthesia amounted to 0.87. The Canadian study indicated as well that there is a statistically significant dependency between the level of study and variables such as the type of procedure, the anesthesiologist, the time of anesthesia, complications during the surgery, pain intensity, and any adverse events. It was not demonstrated, however, that there is any statistically significant connection between the general ISAS score and the type of sedatives used during the surgery.[8-9] Rodrigueset et al. presented following data: 82% of patients were very satisfied with the surgery, 12% - satisfied and only 6% of the patients expressed their dissatisfaction.[20] The study was based on the ISAS scale. Similar research was performed in Madrid in 2006 and in London in 2009.[21-23] Benatar-Haserfaty et al., assessed the level of satisfaction with anesthesia during a cataract surgery using the result of the study as a quality indicator for this type of surgery. The authors modified the point range of ISAS scale by introducing values from +1 to +6. There were 233 patients interviewed. The average result of the ISAS scale was 6.0 (inter quartile range 5.6-6.0). 10 patients (4.3%) evaluated their pain level at 3 or more on the VAS scale. The average time of the procedure was 9 minutes.[21-22] The results point at a very high level of satisfaction with anesthesia and good pain management. Further studies conducted by the same authors concerned assessing satisfaction with anesthesia in a group of 58 patients.[21-22] In that case, the level of the satisfaction was 4.85 SD=0.80. Boezaart et al. showed that the level of satisfaction with anesthesia was dependent on the length of a patient's stay at the hospital.[24] The lowest level of the satisfaction was expressed by patients in the in the '0th' day where the score was 4.19 SD=1.10, 6 hours after the surgery 4.28 SD=1.01, two weeks after the surgery 4.69 SD=1.05. Sylvie Le May et al., demonstrated that there are 4 perisurgical factors influencing patients 'level of satisfaction with anesthesia: patient-anesthesiologist interaction, fear of anesthesia, prior anesthesia and pain treatment experience.[25] The global average satisfaction was 4.45 SD=0.64 (maximal score – 6.0). The main elements, which indicate high satisfaction level are: satisfaction with premedication, anesthesiological staff's empathy, pain management. On the other hand, the main factors influencing dissatisfaction are: lack of information about blood transfusion and plans for extubation. In the study discussed in this article it has been presented that the patient's evaluation according to the ASA scale has an impact on patients' satisfaction with anesthesia. This dependency has been identified as statistically significant. The sick from the first and second group on ASA scale ranked their satisfaction level definitely higher. According to many authors the peri-surgical condition assessed on ASA scale does not influence patient's satisfaction with anesthesia.[20-22,26] The analysis of the dependency between the source of income and the satisfaction with anesthesia proved that the abovementioned variable does not influence the satisfaction level in study. The patients who earned less were more satisfied with anesthesia.[8-9] The original study has indicated that the most common cause of hospitalisation were fractures of the mid and upper face. The type of injury had influence on the level of satisfaction only

in one group. The patients diagnosed with type I injury, the upper face fracture (forehead sinus/the bridge of nose/ethmoid bone,) assessed the service provided to them as high. 88.7% of them were men, with average age approximately 34.8. The instruments used in the investigation should be properly constructed and verified in order to meet the desired psychometric requirements, including patient's specificity. If improving patients' satisfaction with anesthesia should become a goal in the medical services the growing number of publications suggest that the anesthesiological staff has to consider patients' former experience with anesthesia, and their expectations and how it may influence the expectations associated with the future anesthesia. Therefore, a process of constant improvement is required in the medical field so as to keep the patients' satisfaction at the highest possible level.

Conclusions

The level of satisfaction with anesthesia in patients with craniofacial injury based on the Polish version of ISAS is moderately positive whereas in patients with upper face fractures and ASA I and II patients it is even higher.

Among the socio-demographic factors analysed only the age seems to make an impact on the level of satisfaction with anesthesia. The level of the satisfaction is higher in younger patients.

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