

Original Research Article

The influence of sedation and general anesthesia to patients' psycho-emotional status undergoing wisdom teeth extraction: a pilot clinical trial

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Abstract – Background: Patients usually face negative psycho-emotional status during teeth extraction, therefore sedation and general anesthesia are often selected for wisdom teeth extractions. The aim of this study is to evaluate the difference between sedation and general anesthesia patients' psycho-emotional status and pain, using Universal Scale in Oral Surgery for Psycho-Emotional Rating (USOS), Visual Analogue Scale (VAS) and Modified Corah's Dental Anxiety scale (MDAS). **Methods:** In the period of 10/21/2019–01/31/2020 a prospective control study was held of adult patients for extraction of four wisdom teeth with sedation or general anesthesia. Patients were evaluated using self-reported questionnaires and physician questionnaire. **Results:** In total 53 patients were included in study: 43 in the sedation group (SG) and 10 in the general anesthesia group (GAG). Patients' psycho-emotional status was significantly ($p < 0.05$) more negative in both groups at the day of surgery than before it, but the difference of fear was higher in GAG ($p < 0.05$). Immediately after surgery GAG (3.80) felt statistically significantly ($p < 0.05$) more pain than SG (2.60). **Conclusion:** Sum of USOS, MDAS, dental fear data scores, pulse measurements directly correlated with time, *i.e.* statistics increased as surgery approached. The pain sensation differences were found only in the assessment immediately after surgery.

Introduction

Wisdom teeth are the rudimental type third molars, the most distal in the dental arch, usually germinating at the age of 18–20 years and are the least functional throughout the dental arch. The contact between the second and third molar complicates proper oral hygiene, which may eventually lead to many dental problems [1]. Also, due to the human's evolution and nutrition habits, the jawbones tend to shorten with the difficulties of proper third molars eruption. Retentive third molars may lead to infection, cysts formation, troubles in surrounding tissues and teeth [2]. Also, there are studies showing that third molars eruption forces may lead to teeth crowding, so orthodontic treatment usually includes third molars removal. Even if the third molar's eruption is not disturbed, because of the location and improper hygiene, they commonly get difficult and deep carious lesions and need to be extracted [3]. Taking all these factors into consideration, one of the most common oral surgical procedures in the world is the removal of third molars [4].

A significant proportion of patients coming for teeth removal experience tension, anxiety, fear and are stressed about possible pain during the procedure [5]. Patients that have negative psycho-emotional status about teeth extractions tend to delay the procedure which causes multiple complications. Even if fearful patients reach to the doctor, the procedure is usually exacerbated and prolonged. Negative psycho-emotional status affects not only the patient, but also the operating doctor. Patient's psycho-emotional status assessment before the procedure is needed to ensure the proper preparation, additional tools involvement and time planning for the procedure [6]. Proper assessment of psycho-emotional status can be achieved through communication, instrumental research methods or special questionnaires [7,8]. Vital signs measurement is the golden standard for patient's stress level evaluation and therefore is widely used for similar trials. In stressful situations patient's heartbeat ratio and blood pressure tend to increase, comparing to the rest values. Also, psychological questionnaires are used, when patients fear, and psychological condition is measured. There is wide range of questionnaires used in dentistry, but the most used questionnaires are the Modified Corah's Dental Anxiety scale (MDAS), Corah's Dental Anxiety Scale, Dental Fear Survey,

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General Geer Fear Scale and many others [9]. To ensure the most possible objectivity, usually multiple questionnaires are used in studies, even though they usually correlate one to each other. However, it should be noted, that not all the questionnaires are clearly adapted to oral surgery. It is important to mention that in oral surgery there is a special questionnaire called the Universal Scale in Oral Surgery for Psycho-Emotional Rating (USOS), designed to assess the level of anxiety [9,10].

After evaluating the patient's anxiety, preferences, medical history and the number of teeth to be removed, the most appropriate method of anesthesia is selected for the procedure [11]. Often, out of great fear, patients express a desire to have their teeth removed using sedation or general anesthesia rather than local anesthesia [12]. Sedation is usually more popular than general anesthesia because patients tend to choose this method at first place [13]. However, all medical interventions should have strict indications and if it can be managed without medicative interventions, patient's psycho-emotional status should be managed in other ways. Also, it should be noted that general anesthesia and sedation are interventions by themselves, which also affects patient's psycho-emotional status and does not have positive effect in long time. If patient and doctor want to control psycho-emotional status not only once, but for lifelong, the least interventive methods could be selected [14].

We hypothesized that patients undergoing third molar extractions under sedation and general anesthesia should have different fear and stress levels. After evaluating the relevance of the topic, we decided to assess the preoperative psycho-emotional state and the effect on postoperative pain in patients undergoing wisdom teeth removal under the general anesthesia and sedation.

Materials and methods

In the period of 10/21/2019–01/31/2020 a pilot prospective control study was held including adult patients for extraction of four wisdom teeth with sedation or general anesthesia. Patients were evaluated the day before surgery, the day of surgery and 10 days after surgery. Just after the operation, the questionnaire was filled in by the surgeon as well. All operations and psycho-emotional status evaluations were done by same operating surgeon.

Research subjects

Research subjects were selected according to the following selection criteria:

Inclusion criteria:

- Patient's age \geq 18 years;
- Indicated removal of four wisdom teeth;

- NSAIDs, anticoagulants are not used;
- There is no acute inflammation in the operating area;
- Patients have agreed to participate in the study.

Exclusion criteria:

- Pregnant and lactating women;
- Patients who experienced radiotherapy;
- Patients who participated in another study related to the assessment of psycho-emotional status;
- Patients with intellectual disabilities that may cause difficulty in participating in the study;
- History of general conditions that contraindicate oral surgical treatment. For example, uncontrolled diabetes, cardiovascular disease, *etc.*

Grouping of subjects

- **Sedation group (SG).** Each patient is fully acquainted with the sedation procedure. With the help of intravenous medication, the anesthesiologist suppresses the patient's consciousness;
- **General Anesthesia Group (GAG).** Each patient is fully acquainted with the general anesthesia procedure. It is a controlled state of unconsciousness, during which the protective reflexes disappear, the patient cannot breathe on his own, does not respond to verbal commands. A special intubation tube is inserted into the airways.

Survey sample

Using the sample volume calculation formula and Hertzog pilot study requirements the minimum sample size was calculated to 23 [15].

Study protocol

The clinical trial was performed according to the protocol:

- 1 day before surgery:
- The patient is introduced to the study;
- Preoperative patient questionnaire is applied: acquirement of general patient information and assessment of psycho-emotional status;
- Pulse and blood pressure measurement;
- Assessment of the complexity of the upcoming operation;
- The patient's appointment to one of the groups as required.
- Operation day:
- The patient's psycho-emotional status is reassessed before surgery;
- Pulse and blood pressure are measured before the operation;
- Prior to surgery, the anesthesiologist applies premedication to the sedation group;

- The procedure is thoroughly documented;
- The questionnaire is filled in by the operating doctor;
- 10 days after surgery;
- Retrospective assessment of pain;
- Evaluation of postoperative complications, wound healing;
- Sutures are removed.

Operation protocol

- The operations were performed under aseptic conditions;
- The sedation or general anesthesia procedure is performed by an anesthesiologist. In the sedation group, for premedication, 20 minutes before the procedure, the patients were given a 5 mg tablet of Diazepam (Teva, Petah Tikva, Israel). Premedication was not used in the general anesthesia group.

Research ethics

The consent of the Lithuanian University of Health Sciences (LUHS) Bioethics Research Center for the research was obtained. Authorization No: BEC-OF-03.

Registered in Clinical trial registry. Number is NCT04259463.

Research questionnaire

- The research questionnaire consisted of three parts [6,10]:
- General part. Patients' information: gender, age, place of residence, education, local anesthesia applied, harmful habits: smoking, previous oral surgery experience, and procedures performed in the past such as tooth extraction, implantation, oral tumor removal, mucosal incision. *etc.*, drug allergies, general illnesses;
 - Special part. Questionnaire consisted of USOS [10], MDAS, and the Visual Analog Scale (VAS), (Appendices A-C). Also 5-points questions to rate patient's fear of anesthesia and fear of tooth extraction was given [6]. These questionnaires were selected as the most popular and useful in similar studies, also the questions seem to suit the study well;
 - The physician's part. Three generalized USOS three-point questions about the patient's sensitivity to pain, stress, and fear, based on the patient's pre- or postoperative reactions: from 1 (lowest) to 3 (highest), (Appendix A) [10].

Evaluation of wisdom teeth localization

The complexity of the operation was assessed using Juodžbalys *et al.* [16] published classification of retention of lower third molars and classification of upper third molars according to Archer *et al.* [17]. The complexity was assessed by the researcher in discussions with the treating surgeon until a compromise was reached.

Measurement of pulse rate and blood pressure

Pulse and blood pressure were measured at rest one day before surgery and on the day of the surgery. Measurements were performed according to recommendations of Palatini *et al.* [18] and Muntner *et al.* [19]. The patient was required to be at rest for five minutes before the measurements. All measurements were taken at the arm artery of the left arm. Pulse and blood pressure were measured using an electronic instrument, the MICROLIFE BP A6 PC (Microlife AG, Vidnau, Switzerland), recognized by the British Hypertensive Society [20]. The scores for each patient were calculated from the two measurements by averaging the statistical analysis.

Research methodology

The study included adult hospitalized patients for the removal of four wisdom teeth between 2019-10-21 and 2020-01-31. Patients were selected for the current study from all hospitalized patients for third molars removal in study period time. The selection of participants was completed by choosing from all hospitalized general anesthesia and sedation patients. The coin tossing was chosen to complete random selection, where the number meant the patient is included in study and picture – not included. The type of anesthesia – general anesthesia or sedation – was chosen by operating doctor and patient.

All persons gave their informed consent prior to their inclusion in the study.

Statistical research

Statistical analysis was performed using SPSS software. Result dissemination analysis was performed, and parametric statistical criterion Student *t*-test as well as chi-square tests were applied. For a small sample, Mann-Whitney and Wilcoxon nonparametric statistical criteria were applied. Parametric data are expressed as mean and standard deviation (M (SD)).

Results

Data from subjects

The study included 53 patients: 43 in the sedation group (SG) and 10 in the general anesthesia group (GAG), (Fig. 1; Tab. I).

Patients' self-assessment: psycho-emotional status Universal scale in oral surgery (USOS)

USOS questionnaire responses are presented on a Likert scale ranging from 1 for the lowest value to 3 for the highest value. Analyzing the USOS questionnaire data, its value on the day of surgery was statistically significantly higher than on the day before surgery ($p < 0.001$). In SG, the mean score increased by 1.60 (0.48) and 1.78 (0.49), ($p = 0.00$), respectively, in GAG,

Table I. Descriptive statistics in sedation and general anesthesia groups.

	General	Group	
		SG	GAG
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Characteristics	53 (100.0)	43 (81.1)	10 (18.9)
Gender			
Female	41 (77.4)	34 (79.1)	7 (70.0)
Male	12 (22.6)	9 (20.9)	3 (30.0)
Age (years), (SD)	23,1 (3.6)	23,2 (3.3)	22,6 (4.6)
Residence			
City	42 (79.2)	35 (81.4)	7 (70.0)
Rural area	11 (20.8)	8 (18.6)	3 (30.0)
Education			
Unfinished secondary	5 (9.4)	4 (9.3)	1 (10.0)
Secondary	17 (32.1)	14 (32.6)	3 (30.0)
Vocational	7 (13.2)	7 (13.2)	0 (0.0)
Higher non-university	7 (13.2)	4 (9.3)	3 (30.0)
Higher	17 (32.1)	17 (26.4)	3 (30.0)
Smokers	13 (24.5)	13 (30.2)*	0 (0.0)*
Injection analgesia experience	41 (77.4)	33 (76.7)	8 (80.0)
Oral surgical procedures experience	11 (20.8)	7 (16.3)	4 (40.0)
General anesthesia experience	23 (43.4)	19 (44.2)	4 (40.0)
Sedation experience	7 (13.2)	5 (11.6)	2 (20.0)

According to the chi-square test, except for age. For age, *p* value is based on Student’s *t*-test for two independent samples. SG – sedation group, GAG – general anesthesia group; * *p* < 0.05.

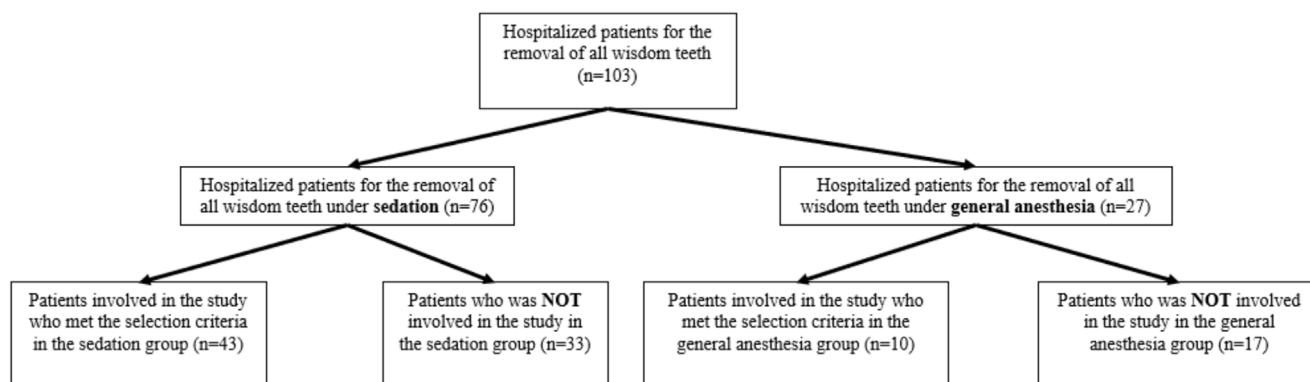


Fig. 1. Distribution of subjects in groups.

respectively by 1.48 (0.50) and 1.83 (0.42), (*p* = 0.00); the results were statistically significant. However, there was no statistically significant difference between the groups.

Modified dental anxiety rating scale (MDAS)

The MDAS questionnaire is rated on a Likert scale, ranging from 1 for “no fear” to 5 for “maximum fear” for the sum of all questions. The MDAS value on the day of surgery was statistically significantly higher than the day before surgery (*p* < 0.001). In

SG, an increase of 11.60 (5.26) and 12.63 (5.37) was recorded, respectively, and in GAG 11.70 (3.59) and 14.20 (4.61), respectively. There was a statistically significant increase (*p* < 0.05) in both groups, but no statistically significant difference (*p* > 0.05) was found between the groups.

Assessment of tooth extraction fear

Fear of tooth extraction on the day of surgery was statistically significantly higher than the day before

surgery: it changed from 3.08 (1.27) to 3.45 (1.26) for all subjects ($p < 0.05$). Assessing separately in groups: in SG the value increased from 3.09 (1.32) to 3.35 (1.29), ($p < 0.05$), in GAG the value increased from 3.00 (1.05) to 3.90 (1.10), ($p < 0.05$). There was also a statistically significant difference in the values between the groups: GAG patients felt more fear ($p < 0.05$).

Assessment of fear of analgesia

An analysis of fear of analgesia also records an increase. The results of one day before surgery and day of surgery yielded 2.58 (1.34) and 2.83 (1.36), respectively, over the entire study sample, but the difference was not statistically significant. No statistically significant difference was obtained when comparing the results both individually within groups and between groups.

Part of doctors' evaluation

Assessment of patients' psycho-emotional status

The patient's sensitivity to pain was determined by analyzing a physician evaluated USOS questionnaire. In SG and GAG, the most common score is 2 (51.2% and 50.0%), evaluating stress, the most common score is also 2 (53.5%, 60.0%), while evaluating fear, in SG the most common score is 1 (53.5%) and 2 points (50.0%) in GAG. Overall, the psycho-emotional status was moderate (55.8%) in SG and negative (50.0%) in GAG.

Assessment of pulse and blood pressure

Pulse measurements showed that on the day of surgery it was statistically significantly higher than the day before surgery, 82.89 (13.96) and 72.74 (8.82), respectively ($p < 0.001$). Analyzing the groups separately: in SG pulse increased from 73.72 (9.06) to 82.30 (14.19), ($p < 0.001$), and in GAG pulse increased from 68.50 (6.42) to 85.40 (13.38), ($p < 0.05$), the pulse increased more in GAG ($p < 0.05$).

Blood pressure altered slightly. The systolic blood pressure of the whole sample one day before surgery and on the day of surgery did not show statistically significant difference. In SG, the systolic change was 0.84 (7.84) and the diastolic change was 0.72 (5.45). In GAG, the systolic change was 5.5 (2.27), the diastolic change was 2.7 (2.00), and a statistically significant change in systolic and diastolic blood pressure was found ($p < 0.05$). A statistically significant change in systolic blood pressure was found between groups, with a greater increase in GAG patients ($p < 0.05$).

Postoperative evaluation of patients

10-day pain rating scale (VAS)

Comparing the pain sensation of SG and GAG patients, a statistically significant difference ($p < 0.05$) was found in the assessment immediately after surgery, with GAG patients experiencing greater pain (Fig. 2).

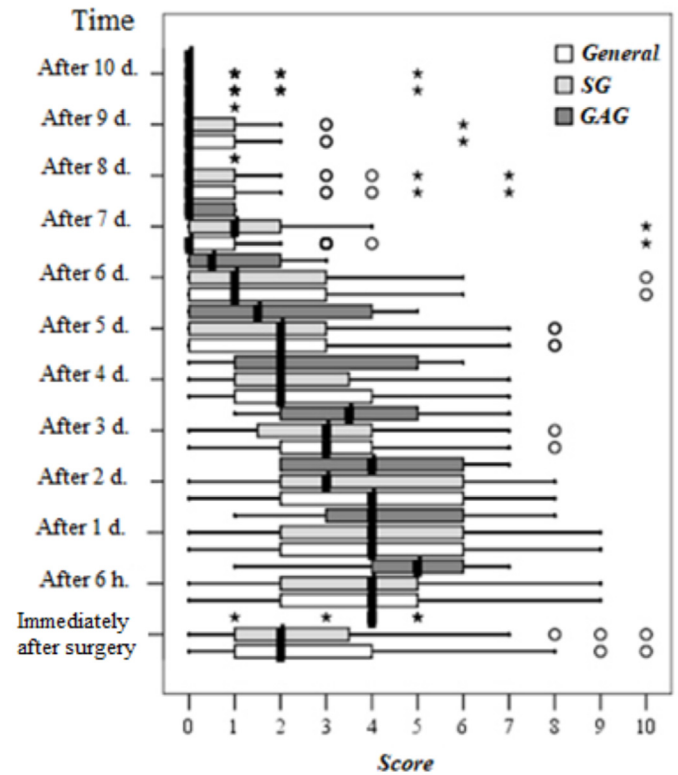


Fig. 2. A rectangular chart of 10-day pain rating scales. Vertical dashes indicate the scale (0–10). A value less than ½ of the interquartile difference from the third quartile is indicated by circles, a value more than ½ of the interquartile difference from the third quartile is indicated by asterisks. SG – sedation group, GAG – general anesthesia group.

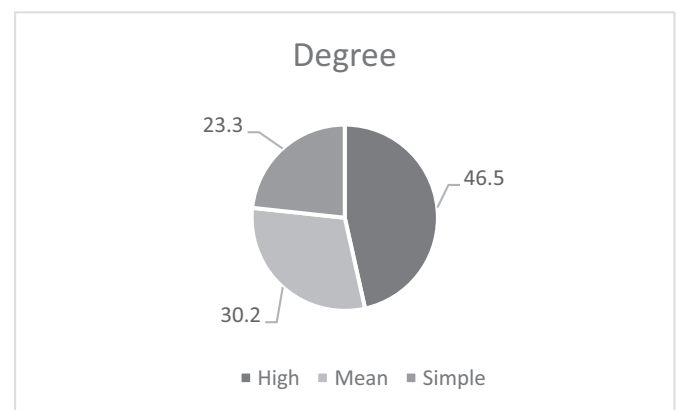


Fig. 3. Degree of risk for the complexity of lower third molar surgery in SG.

Evaluation of wisdom teeth localization

Examining the retention classification of the lower third molars to determine the complexity of the operation, SG had a high severity of 46.5% and a mean degree of risk in GAG was 50.0% (Figs. 3 and 4).

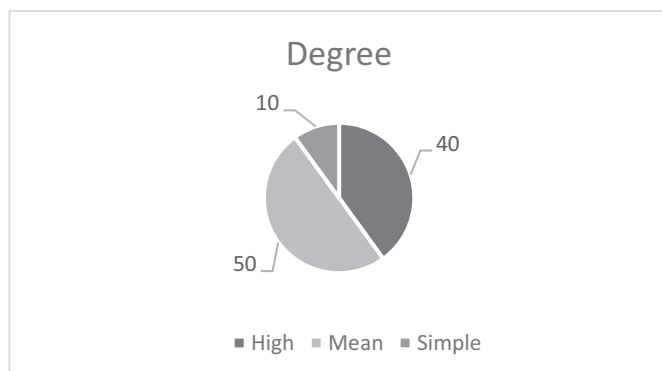


Fig. 4. Degree of risk for the complexity of lower third molar surgery in GAG.

Examining the retention classification of the upper third molars to determine the complexity of the operation: the position of the tooth is determined 48.8% in SG and 50.0% in GAG with the occlusal surface above the cement-enamel junction of the second molar. The localization of wisdom tooth did not correlate to postoperative questionnaires evaluations ($p > 0.5$).

Correlation between questionnaires

Statistically significant correlations between used questionnaires score changes at the day before the procedure to the surgery day were obtained in both groups – SG ($r=0.315$), ($p=0.04$) and GAG ($r=0.896$), ($p=0.00$). All the questionnaires' results correlated to each other in various coefficient with statistically significant rates ($p < 0.05$).

Discussion

The aim of this study was to evaluate changes in the psycho-emotional state of patients by removing four wisdom teeth in a single procedure using general anesthesia and sedation techniques. A previous study in New Zealand, Ong, Tong *et al.* [12] also addressed a similar topic in which patients with GAG showed greater preoperative anxiety compared with SG patients. Compared to the present study, significantly higher preoperative results were recorded in GAG, assessing only fear of tooth extraction, while in other questionnaires, the results were not statistically significant. Meanwhile, using VAS, Szalantzy *et al.* [21] estimated that patients in GAG also showed statistically significantly higher levels of anxiety than patients in SG. These findings may lead to the hypothesis that patients with higher fear tend to choose general anesthesia versus sedation. In authors' opinion, same as in Szalantzy *et al.* [21] paper, anesthesia type was selected by operating doctor and patient in order to maximize patient's comfort. In our opinion, anesthesia type randomization would confront the ethical problems and is not possible,

therefore only random patients' selection could be performed. However, it should be noted that general anesthesia is a fearful trigger by itself for the patient, and it may even exacerbate patient's psycho-emotional status [22].

Analyzing data from the MDAS, in the present study on the same day before surgery, 14.2 (4.61) points were found for GAG patients and 12.63 (5, 37) regarding SG patients, while in comparison Aznar-Arasa *et al.* study [23] received as many as 12 (4.4) after examining 102 patients before removal of the lower wisdom teeth under local anesthesia. The scores in the present study are assumed to be higher as patients who are more afraid of tooth extraction procedures tend to choose general anesthesia or sedation. What is more, the MDAS survey was also conducted to patients who came to private clinics for dental consultation, with as many as 10.19 (4.64) points, and 21 patients (6.8%) scored ≥ 19 , in comparison to the present study, where as many as 9 (20.9%) SG and 2 (20.0%) GAG scored ≥ 19 MDAS on the day of surgery [24]. However, even though MDAS is very popular scale in dentistry, none of the questions are oriented to teeth extraction or oral surgery, therefore MDAS results in similar studies should be assessed critically.

Comparing the choice of sedation and general anesthesia in different treatment settings, in the present study there were 10 (18.9%) and 43 (81.1%) GAG and SG patients respectively, 17 (44.7%) and 21 (55.3%) respectively in Edinburgh Institute, and 57 (65.5%) and 30 (34.5%) respectively at St. John's Hospital in Livingstone [25]. The General Dental Council recommends [26] that pain and anxiety control methods should be considered before choosing general anesthesia [27]. As it can be seen, the method of anesthesia used by dental doctors is constantly changing, as in the last century, in a study by Edwards *et al.* [11], local anesthesia was used for 32.4% of patients, while sedation for only 6.3% patients, and general anesthesia was used in as many as 61.3%.

Pulse measurement is a method, which can be easily used in daily practice. In present study the pulse rate rises in both groups at the surgery day comparing with the day before it. Pulse data were also evaluated by Rashad *et al.* [28] before the tooth extraction procedure under local anesthesia. The study found a pulse rate of 88.00 (14.10) per minute in 61 patients. An identical study was also conducted by Tiwari *et al.* [29], in which 150 patients demonstrated a heart rate of 89.74 per minute. Regarding the present study, even lower measurements were recorded in both study groups: SG patients on the same day of surgery demonstrated 82.30 (14.19), and GAG patients showed 85.4 (13.38) pulse rate per minute. The normal average pulse rate is from 50 to 90 beats per minute in healthy adult individual, which changes according to age, body composition, general diseases. Nowadays with the growing popularity of smart watches and electronic technologies, heart rate monitoring became daily practice for many people. The stress level according to the pulse rate is measured usually by the differences between the resting heart rate and the pulse in stressful situation. If patient is daily monitoring pulse rate, it is much easier to evaluate stress level by single measurements [30].

Blood pressure data in the present study were very similar to those in teeth removal under local anesthesia. It was found that on the same day of surgery SG demonstrated a systolic blood pressure of 122.79 (10.63) and a diastolic blood pressure of 76.77 (8.57), while a GAG showed 129.30 (9.48) systolic and 83.60 (6.64) diastolic blood pressure. Compared to other studies on tooth extraction under local anesthesia, Tiwari *et al.* [29] reported very similar results with a mean systolic pressure of 130.70 and a diastolic pressure of 81.84. Lower readings were recorded by Reyes-Fernandez *et al.* [31], when the oral surgery under local anesthesia resulted in a systolic blood pressure of 119.70, a diastolic blood pressure of 75.40 with the usage of mepivacaine without epinephrine and 117.10 and 72.00 using epinephrine, respectively. The greater increase of blood pressure was found in GAG group, presenting the possibly higher stress levels than SG. The higher blood pressure is not only the stress marker itself, but it also increases risks of bleeding during the operation and after it if the blood pressure is poorly controlled. It should be noted, that in SG and GAG groups, there were not used local anesthetics with adrenaline. It should be taken into account, that in dental office third molar extractions are usually performed under local anesthesia with anesthetics containing adrenaline. Adrenaline injections, even in small concentrations, increase not only the pulse, but also the blood pressure, therefore it may distort the results [32].

Assessing postoperative pain according to VAS and comparing it with studies performed by other researchers, the present paper authors found that Kopalal *et al.* [33] performed a study in which only the lower wisdom teeth were removed under local anesthesia. After 7 days, it was determined that the control group had a VAS reading of 2.1 (1.4) points, and immediately after the procedure with low-level laser therapy, only 0.6 (1.2). In a published study by Yilmaz *et al.* [34], it was found that the removal of retentive lower teeth and the addition of hyaluronic acid to the alveolus under local anesthesia yielded 0.92 (0.81) points for VAS. In present study SG group patients showed lower pain just after the procedure compared to the GAG group. No statistically significant difference was found in later evaluation. It may be because SG patients received also local anesthesia during the procedure, which cleared away slower than the general drug effect.

The gender ratio in study groups was 79.1% females in sedation group and 70% in general anesthesia group. From the first view it could be left as unimportant information. However, this ratio shows that more females tend to choose general anesthesia or sedation than men. This could be explained by higher teeth extractions fear levels in females, from which arise higher intentions of having operation under general anesthesia or sedation [6].

The limitations of present study may include the sample size, which is suitable only for pilot study. Also, in present study only patients with elective third molars extraction surgeries were included. If we face patients with pain, infection and other complications in third molar

site before the operation, we might get different results. Patients fear and stress might be provoked due to the difficulties of operating site, however the need of operation can give the different view and understanding of the operation indications. Therefore, the study with wider sample sizing and extra third molar extraction patients, would be interesting and meaningful.

Conclusions

General anesthesia and sedation are usually chosen by patients because of the negative psycho-emotional status. Despite the increasing numbers of sedation, general anesthesia remains popular among the patients. Study results did not find any benefits of general anesthesia compared to sedation, on the contrary the pain after the procedure, blood pressure and heart rate changes were even higher in general anesthesia groups. Most parameters showed higher stress and fear levels in patients on the day of procedure, than the day before it.

Taking into account all the potential risks and the need of patient's future psycho-emotional status improvement, the anesthesia selection criteria should be strictly classified and carefully chosen.

Conflicts of Interest

The authors declare no conflict of interest.

Source of funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Informed consent

Consent to Participate Informed consent was obtained from all individual participants included in the study, but no patient identifiable information is included in this article.

Authors' contributions

I. Astramskaite-Januseviciene: had full access to all the data used to generate the study population, conception and design, acquisition, analysis, interpretation, drafting of the manuscript, reviewing, statistical analysis. Z. Petronis: had full access to all the data used to generate the study population, conception and design, acquisition, analysis and interpretation, revision, administrative, technical, or material support and supervision. G. Juodzbalys Conception and design, acquisition, analysis, interpretation of the data, revision, statistical analysis, administrative, technical, material support and supervision.

Ethical committee approval

Ethical approval was granted by the University Hospital research ethic committee BEC-OF-03.

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Appendix A: Universal scale in oral surgery for patient's psycho-emotional rating

PATIENT'S PART OF USOS

Instruction: Please circle **one** numerical choice next to every following question.

Numerical meanings are listed above:

1 - disagree/low value.

2 - neither agree or disagree/the middle value.

3 - agree/high value.

1. Rate the highest pain in your previous oral surgery procedure (rate the pain level as 1 if you never had such a procedure before).

1 2 3

2. Rate the highest pain that you are expecting in upcoming oral surgery procedure.

1 2 3

3. I am feeling helpless during the procedures in oral surgery.

1 2 3

4. My heart beats faster before the surgical procedure.

1 2 3

5. My respiratory rate is higher before the surgical procedure.

1 2 3

6. Rate the intention of cancelling the appointment of oral surgery procedure.

1 2 3

DOCTOR'S PART OF USOS

Instruction: Rate the patient's pain sensitivity, stress and fear according to seen response in numerical rating.

Numerical rating meanings are listed above:

1 - low value.

2 - the middle value.

3 - high value.

The directing possible relations are listed above. (Note that these are only directing advices).

PART I. PATIENT'S PAIN SENSITIVITY

- Patient firmly shut off the eyes before specific parts of the procedure (anaesthetic injection, use of forceps etc.).
- Patient declared that anaesthetics hardly affected him in the past.
- Patient asks for more intensive anaesthetics.
- Patient felt pain during the procedure.
- Other recognizable options.

1 2 3

PART II. PATIENT'S STRESS

- Patient looked nervous before and/or during the procedure.
- Patient was swelling before/during the procedure.
- Patient's respiratory rate increased before/during the procedure.
- Patient reported that he/she is feeling stressful before/during the procedure.
- Other recognizable options.

1 2 3

PART III. PATIENT'S FEAR

- Patient did not or hardly opened mouth, when asked.
- Patient did not come or scheduled later appointment due to his fear (patient's given information).
- Patient asked to stop the procedure or cancelled it just before the start, due to fear.
- Patient asked many questions about the procedure itself and about the operating surgeon.
- Other recognizable options.

1 2 3

Appendix B: Modified corah’s dental anxiety scale (MDAS)

MDAS

Instruction: Please circle **one** numerical choice next to every following question where 1 – „non anxious“, o 5 – „extremely anxious“.

	Numerical choice				
If you went to your dentist for treatment tomorrow, how would you feel?	1	2	3	4	5
If you were sitting in the waiting room (waiting for treatment), yow would you feel?	1	2	3	4	5
If you were about to have a tooth drilled, how would you feel?	1	2	3	4	5
If you were about to have your teeth scaled and polished, how would you feel?	1	2	3	4	5
If you were about to have a local anaesthetic injection in your gum, about an upper back tooth, how would you feel?	1	2	3	4	5

Appendix C: Visual analogue scale

Post-operative pain	
Pain immediately after procedure	0 ● _____ 10 ●
Pain after 6 h	0 ● _____ 10 ●
Pain after 24 h	0 ● _____ 10 ●
Pain after 2 days	0 ● _____ 10 ●
Pain after 3 days	0 ● _____ 10 ●
Pain after 4 days	0 ● _____ 10 ●
Pain after 5 days	0 ● _____ 10 ●
Pain after 6 days	0 ● _____ 10 ●
Pain after 7 days	0 ● _____ 10 ●
Pain after 8 days	0 ● _____ 10 ●
Pain after 9 days	0 ● _____ 10 ●
Pain after 10 days	0 ● _____ 10 ●