
Effect Of Different Modes Of Pre-Operative Communications On Anxiety Levels In Patients Undergoing Surgical Removal Of Third Molars

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ABSTRACT

BACKGROUND: Anxiety plays a very important part in patients undergoing surgical removal of third molars. Hence effectively managing this anxiety becomes an important aspect in the dental profession. Different modes of communication are employed which often yield varying results. Thus, understanding which mode proves best in reducing anxiety is highly pertinent.

OBJECTIVES: To comparatively evaluate the anxiety levels in patients undergoing surgical removal of third molars provided with written, verbal and audio-visual form of preoperative information.

METHODS: 80 patients were divided into three groups receiving different modes of pre-operative information; written, verbal and audio-visual (animated). They were then provided with a modified dental anxiety scale questionnaire before and after their respected form of pre-operative information provided to them. The recorded anxiety levels as well as vital signs such as heart rate and blood pressure were subjected to descriptive statistics.

RESULTS: The results showed that there was an increase in anxiety after the patients received written information, no significant changes in heart rate and blood pressure were observed; as for verbal form of information no significant changes were observed in anxiety, heart rate or blood pressure. For audio-visual form of preoperative information a significant decrease in anxiety levels, heart rate and diastolic blood pressure was noticed whereas no significant change in systolic pressure was noticed.

CONCLUSION: The present study depicted that audio-visual form of information in animated form is highly effective in reducing anxiety when compared with written and verbal form of information. Hence more oral surgeons should employ this technique for reducing preoperative information

KEYWORDS: Disimpaction, Preoperative anxiety levels, Preoperative information, Modified Dental Anxiety Scale, Vital signs.

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I. Introduction

Surgical removal of third molar is one of the most common dental treatments which is associated with fear and anxiety. This fear among patients can cause lack of cooperation and may require alteration in treatment plan.^[1] Anxious patient can increase stress for the surgeon, often leading to impaired surgical performance and increased operating time. Preoperative anxiety is widespread and adversely affects a patient's physical and psychological outcome.^[2] With constantly evolving communication technologies, it is essential for all dental professionals to try utilizing various methods in communicating with patients. This will lead to better healthcare outcomes and patient satisfaction.^[3] Pre-operative communication is the pre-surgical procedure discussion with the surgeon regarding patient optimization, peri-operative plan and likely peri-operative complications.^[4] There has been a large body of research investigating the role of different mode of information in preparing patients for surgical procedure.^[5] Most commonly used modes of communications used by dentist are verbal, written and audio-visual format. Audio-visual can be more engaging as a mode of communication. It can help convey information in a way that is easier to understand than written format. Its evidence indicates that combined sensory-procedural information yields the strongest and most consistent benefits.^[6] Managing patients anxiety during a surgery is necessary for oral surgeons, and to do so efficiently, it is crucial for them to know the most effective mode of pre-operative communication. Therefore, the present study is aimed to compare the difference in patient's anxiety level while using audiovisual versus written form of pre-operative information during surgical removal of third molars.

II. Methodology

The study was planned to measure the anxiety scale of patients undergoing surgical removal of third molars. A sample of 80 patients was selected based on following inclusion and exclusion criteria.

Inclusion criteria:

- Patients aging from 18-50 years.
- Patients with impacted mandibular third molars.

Exclusion criteria:

- Patients with previous experience of surgical removal of third molars.
- Patients with psychopathology.
- Patients with visual and hearing impairment.
- Patients contraindicated for surgical removal of third molars.

Ethical clearance was obtained from institutional review board. A self-designed questionnaire consisting of 5 questions according to Modified Dental Anxiety Scale (MDAS) was formulated. The Modified Dental Anxiety Scale is a brief, 5 item questionnaire with each item ranging from 'not anxious' to 'extremely anxious'. It is summed together to construct a Likert scale with a minimum score of 5 and a maximum of 25.^[7] The questions were pre tested among a group of 10 professionals in order to ensure the level of validity and degree of repeatability. The purpose and procedure of the study was informed to each patient prior to the study.

A total of 80 patients were selected for the study. Written consent was obtained from each patient. Patients were then given the questionnaire to assess their anxiety levels pre-operatively. Each patient's vitals were also recorded using a multi-para monitor. They were randomly divided among Group A, Group B and Group C which received information regarding the surgical removal of third molars via verbal, written and animated audio-visual video respectively. After receiving the pre-operative information patients were again asked to fill the same questionnaire along with monitoring their vitals. Data of each patient was collected physically. Difference of anxiety levels and changes in vitals were recorded were subjected to descriptive statistics.

III. Results

The descriptive analysis was done for proportions, means and standard deviation for the collected data using 't'-test and Chi square test.. For all statistical analysis, probability levels of $p < 0.05$ was considered statistically significant.

Table 1: Mean difference of written form of information (Group A)

Sample	Variables		Mean ± SD	Mean difference ± SD	T value	p value
27	MDAS	Pre	11.33±4.46	-1.48±2.49	-3.10	0.005 *
		Post	12.81±4.09			
	HEART RATE	Pre	83.67±15.43	-1.85±9.71	-0.99	0.331
		Post	85.52±10.49			
	SBP	Pre	128.07±12.28	-0.67±8.2	-0.42	0.676
		Post	128.74±7.13			
DBP	Pre	80.15±9.57	-1.74±6.97	-1.30	0.206	
	Post	81.89±8.04				
<p style="text-align: center;">* p value ≤ 0.05 is significant MDAS: Modified Dental Anxiety Scale SBP: Systolic blood pressure DBP: Diastolic blood pressure</p>						

Table 1 shows comparison of the mean values of MDAS, Heart rate and Blood pressure, before and after receiving written form of information (Group A). On comparison of the mean values of Pre-Information MDAS score and Post-Information MDAS score the mean values of Post-Information MDAS score was higher, which is statistically significant with a p value of 0.005. Post-Information Heart rate and Blood pressure was higher too but it was statistically not significant.

Table 2: Mean difference of verbal form of information (Group B)

Sample	Variables		Mean ± SD	Mean difference ± SD	T value	p value
26	MDAS	Pre	15.27±4.35	0.69±2.29	1.54	0.136
		Post	14.58±4.17			
	HEART RATE	Pre	86.12±9.95	-0.81±3.88	-1.06	0.298
		Post	86.92±10.17			
	SBP	Pre	133.85±8.43	-0.31±4.07	-0.39	0.703
		Post	134.15±7.78			
	DBP	Pre	84.31±6.11	0±4.16	0.00	1
		Post	84.31±5.56			
<p>* p value ≤ 0.05 is significant MDAS: Modified Dental Anxiety Scale SBP: Systolic blood pressure DBP: Diastolic blood pressure</p>						

For verbal form of information (Group B), the difference of mean values of MDAS, heart rate, and blood pressure, before and after receiving verbal form of information was not statistically significant (Table 2).

TABLE 3: Mean difference of audiovisual form of information

Sample	Variables		Mean ± SD	Mean difference ± SD	T value	p value
27	MDAS	Pre	12.11±4.62	3.11±2.86	5.65	<0.001*
		Post	9±2.83			
	HEART RATE	Pre	90.59±10	5±6.7	3.88	0.001*
		Post	85.59±10.61			
	SBP	Pre	129.26±7.07	2.15±6.61	1.69	0.103
		Post	127.11±9.35			
	DBP	Pre	82.67±7.8	3.74±5.3	3.67	0.001*
		Post	78.93±6.71			
<p>* p value ≤ 0.05 is significant MDAS: Modified Dental Anxiety Scale SBP: Systolic blood pressure DBP: Diastolic blood pressure</p>						

For audio-visual form of information (Group C), the mean values of MDAS, Heart rate and Diastolic blood pressure decreased after receiving the information which was statistically significant ($p \leq 0.001$). No statistically significant difference was observed in Systolic blood pressure (Table 3).

IV. Discussion

Anxiety is a negative emotional state characterized by concern, tension, and an increase in physiological arousal due to perception of danger that threatens the organism and its integrity.^[8] Furthermore, it has been shown that anxiety is related to the perception and tolerance of pain. Therefore, a patient's anxiety may impair how well the practitioner performs delicate and complex treatment procedures.^[5] Managing patients anxiety prior to the surgery is an important aspect of patient-doctor relationship.

Dental anxiety is a prevalent problem that can have far-reaching effects.^[1] Dental anxiety, or dental fear, is estimated to affect approximately 36% of the population, with a further 12% suffering from extreme dental fear.^[7] It has been cited as the fifth-most common cause of anxiety by Agras S *et al* (1969).^[9] In a study performed by Stabholz A, Peretz B (1999)^[10], the results indicated that extraction caused the highest anxiety in patients.^[10] A study conducted by Humphris G *et al* (2009)^[7] observed that dental anxiety is four times greater in the younger age group (18–39 yrs) compared to older participants.^[7]

Dental practitioners over last 2 decades tried different modalities to reduce fear and anxiety. One of the most common methods to manage a patient's anxiety is through effective pre-operative communication. This research determined the effect of different modes of pre-operative information on anxiety levels of patients undergoing the surgical removal of the third molars. An animated form of audio-visual information was used alongside detailed written and verbal information regarding the procedure.

The variation in dental anxiety was measured using MDAS scale pre and post informing the patients. Although there are several methods and scales to measure dental anxiety before any dental procedure, Modified Dental Anxiety Scale (MDAS) was chosen, as it has reasonable psychometric properties, low instrumental effects and can be integrated into everyday dental practice as a clinical aid and screen for dental anxiety.^[7] According to Humphris G *et al* (2009)^[7] the internal consistency of MDAS was very high and the items appeared to describe a uni-dimensional construct which also provides a dimension of dental anxiety ranging from low to high.^[7] Another study done by Ilguy D *et al* (2005)^[11] concluded that MDAS gives acceptable sensitivity and specificity.

In recent literature, there are several conflicting views and conclusions about the effectiveness of audio-visual and written forms of pre-operative information. In our study, 21 patients out of 27 patients after receiving written form of information showed elevated anxiety levels with increase in mean MDAS score. Patients receiving verbal form pre-operative information did not show any significant change in anxiety levels according to MDAS, heart rate and blood pressure readings. In a study done by Omezli MM *et al* (2020)^[12] observed that patients viewing procedural video in an uncontrolled situation from websites before the surgery were prone to high anxiety. The verbal and written consent format resulted in satisfactory anxiety management. They have also emphasized that further studies are needed to clarify if different formats of audio-visual information, such as animation is effective in anxiety management.^[12]

According to our results, the anxiety levels of patients, undergoing third molar surgery, decreased after receiving audiovisual form of information. 23 patients out of 27 patients after receiving audiovisual information showed reduced anxiety levels with decrease in mean MDAS score. It has been proven by Daokar SG *et al* (2018)^[13] that audiovisual information effectively reduces patients anxiety because patients focus their attention on relaxation videos instead of anxiety-inducing dental equipment.^[13] Another study by Giath G *et al* (2016)^[14] had a similar conclusion. They stated that dental fear and anxiety associated with dental extractions under local anesthesia can be reduced by presenting a tooth extraction video to the patients pre-operatively.^[14]

Furthermore, patient's vitals were also recorded in the present study. Studies have shown that blood pressure and heart rate are related to the anxiety levels in patients. One such study was done by Sharma A *et al* (2019)^[15] which stated that, severe pre-operative anxiety was associated with significantly increased heart rate and blood pressure.^[15] In our study, similar observations were recorded. The elevated anxiety levels of patients, as recorded on MDAS scale, corresponded to the elevation in the heart rate and diastolic blood pressure, but no significant changes were marked in systolic blood pressure.

Anxiety control by oral surgeons plays an important role in pain perception and patient cooperation during the third molar disimpaction surgeries. Hence, to efficiently manage anxious patients, animated audio-visual form of pre-operative information acts as an encouraging technique as well as an excellent source of anxiety management for patients.

V. Conclusion

Anxiety was seen to have increased significantly after reading the written format but changes in heart rate and blood pressure were not observed. No significant change in anxiety, heart rate and blood pressure was observed with verbal information. Audio-visual form of information showed a significant decrease in anxiety, heart rate and diastolic blood pressure, whilst systolic blood pressure did not show any major difference. Hence, the present study concludes the usage of audio-visual format of pre-operative information in successfully reducing and managing patient anxiety before the procedure. This can also prove to be beneficial for the

operating surgeon as it increases patient cooperation and manages the pain perception which has been proved in link with anxiety.

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