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THE IMPACT OF SURGICAL GRAPHIC AL IMAGES ON DENTAL ANXIETY LEVELS IN LOWER 3RD MOLAR IMPACTION PATIENTS -AN PILOT STUDY

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ABSTRACT

Aim: The aim of this study is to compare the dental anxiety level of patients "Self exposed" to Graphical surgical images/content pertaining to that of Surgical removal of lower 3rd molar and Non exposed individuals – Pilot study. **Objective:** The objective of the study was to compare and investigate the dental anxiety level of patients, with a history of "Self Exposure" to graphical surgical images/contents pertaining to the surgical removal of lower 3rd molar, to that of patients who have nil history of self-exposure to graphical surgical images/content, through "Standardized Modified dental anxiety scale". **Methods: Study Design:** A comparative study was conducted with 60 patients reporting to the Department of Oral and Maxillofacial Surgery at Tagore Dental College and Hospital for lower third molar impactions. **Participants:** Patients were divided into two groups: **Group A (Exposed):** Patient who were self exposed to surgical and graphical images / content of mandibular third molar impaction surgery video through social media platforms before the procedure. **Group B (Non-Exposed):** Patients who are not exposed to surgical and graphical images / content of mandibular third molar impaction surgery video through social media platforms before the procedure. **Assessment Tool:** The Modified Dental Anxiety Scale (MDAS), administered through structured interviews and questionnaires. **Procedure:** Pre-operative anxiety levels were measured to determine any differences between the two groups. **Results:** The study revealed a statistically significant difference in the anxiety levels between the two groups. Group A (Self Exposed) demonstrated lower anxiety scores on the Modified Dental Anxiety Scale compared to Group B (Non-Exposed), indicating the exposure to procedural content reduces pre-operative anxiety during surgical removal of 3rd molars. **Conclusion:** The findings suggest that exposure to visual information regarding surgical procedures may help in reducing dental anxiety, highlighting the potential benefits of incorporating visual aids into patient education and pre-operative preparation strategies.

KEYWORD:- Dental anxiety, graphical surgical images, lower third molar, Modified Dental Anxiety Scale, patient education, pre-operative preparation, pilot study.

INTRODUCTION

Anxiety is a common condition in patients requiring surgical treatment. Anxiety is a term commonly employed to describe a state of nervousness. It is a distressing emotional condition, the origins of which remain uncertain. Mood and behaviour changes that are similar to those caused by fear often happen at the same time. It is acknowledged that dental treatments may evoke anxiety in patients.[1]

Anxiety occurs as an emotional state before encountering threatening stimuli, which may sometimes be unidentifiable. Fear arises as a reaction to a known or perceived threat, often triggering a fight-or-flight response. Dental anxiety is a specific response to perceived threats encountered in dental situations.[2]

Dental treatment involving anaesthetic injection and surgical extraction of teeth causes anxiety and fear, resulting in emotional uneasiness, prolonging the intervention and complicating postoperative recovery.[1]

Severity of dental anxiety can be assessed by using standardized pre structured questionaries, which is the tool well known and commonly used.

The most common problem faced by oral and maxillofacial surgeons are the patient fear and anxiety regarding the pain involving the procedure and discomfort associated with the several phases of the treatment. Hence, a Self-assessment scale was developed by 'Humphris et al' in 1995, the **Modified dental anxiety scale**. The Modified dental anxiety scale is a widely used tool in dental research and practice to assess dental anxiety levels. The purpose of this study was to determine the level of pre-operative dental anxiety especially in minor-oral surgical procedures.

METHODOLOGY
This questionnaire based study was conducted on 60 patients who were reporting to the Department of Oral and Maxillofacial Surgery, Tagore dental college and hospital for lower 3rd molar Dis-Impaction. All the patients will be informed with regard to the purpose of the study. After the consent of the patient, they were interviewed before the surgery and their Demographic information was collected using a structured questionnaire [name, age, gender] to determine their levels of pre-operative anxiety using the Modified Dental Anxiety scale.

Total of **60** patients will be divided into **2** groups. Each having **30** patients in group.
Group A – Patient who were self-exposed to surgical and graphical images / content of mandibular third molar impaction surgery video through social media platforms before the procedure.
Group B- Patients who are not exposed to surgical and graphical images / content of mandibular third molar impaction surgery video through social media platforms before the procedure.
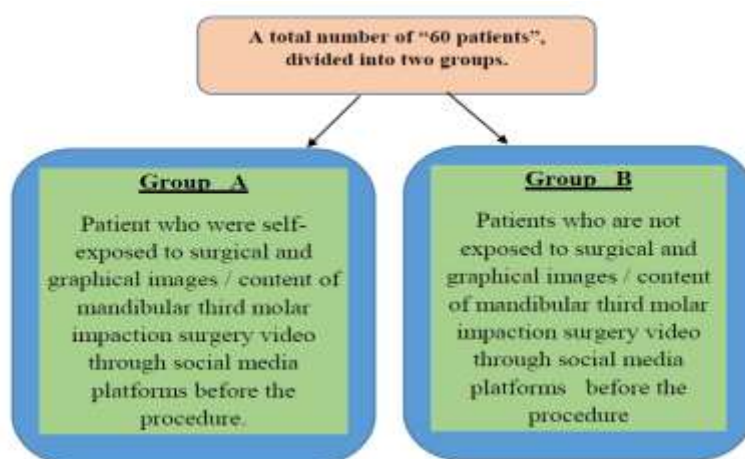
Inclusion Criteria & Exclusion criteria for both groups

| Group	Inclusion criteria	Exclusion criteria
Group A: Patients Exposed to Surgical Graphical Images	Patients between the ages 18-35 years. Patients scheduled only for surgical removal of mandibular third molars. Patients who have voluntarily self-exposed themselves to educative surgical and graphical images/content of mandibular third molar impaction surgery through social media platforms before the procedure. Videos/images must explicitly depict the surgical extraction of mandibular third molars performed by healthcare professionals. Educational content that provides detailed information about the surgical procedure. Patients who provide voluntary	Patients classified as ASA III and ASA IV. Patients who have not been exposed to surgical and graphical images/content of mandibular third molar impaction surgery through social media platforms. Patients who have been exposed to animated videos featuring cartoon-like representations of surgical procedures. Pregnant women and lactating mothers. Patients who do not provide voluntary consent to participate in the study.

	consent to participate in the study.	
Group B: Patients Not Exposed to Surgical Graphical Images	Patients aged 18-35 years. Patients scheduled for surgical removal of mandibular third molars. Patients who have not been exposed to any kind of surgical and graphical images/content of mandibular third molar impaction surgery through social media platforms before the procedure. Patients who provide voluntary consent to participate in the study.	Patients classified as ASA-III and ASA-IV. Patients who have been exposed to surgical and graphical images/content of mandibular third molar impaction surgery through social media platforms at any kind. Patients who have been exposed to animated videos featuring cartoon-like representations of surgical procedures. Pregnant women and lactating mothers. Patients who do not provide voluntary consent to participate in the study.

Study variables

The study divides participants into two groups, **Group A** & **Group B**, to compare anxiety-related outcomes. Age is treated as a continuous variable to investigate its correlation with anxiety and identify any significant differences between the groups. The primary outcome variable is the Modified Dental Anxiety Scale (MDAS) score, which measures the participants' anxiety levels.

Participants are also categorized by gender (male / female) to analyse their distribution and explore potential associations with group membership. Furthermore, MDAS scores are classified into four categories—Low, Moderate, High, and Severe—to assess the severity of anxiety and examine how group membership affects anxiety levels.

'MDAS' Scores categorization
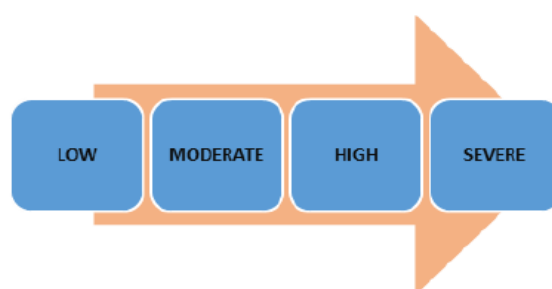
Statistical analysis

This study employed various statistical analyses to evaluate differences in anxiety level between two participant groups. A Chi-Square test was used to investigate the relationship between group membership (Group A and Group B) and gender (Male and Female), offering insights into participant distribution across these categories. Independent samples t-tests compared the mean of age and MDAS scores between the groups, with Levene's test assessing the equality of variances. Descriptive statistics, including mean and standard deviations, were calculated for each group to summarize the data. Furthermore, cross tabulation was utilized to

illustrate the relationship between group membership and categorized levels of anxiety (Low, Moderate, High and Severe).

RESULT

There were total of 60 patients out of 30 in each group, table 1 represents the descriptive statistics for age and MDAS scores for both Group-A & Group-B. It shows the number of participants (N), Mean scores, Standard deviations, and Standard error means. Group-A has a lower mean MDAS score compared to Group-B, indicating lower anxiety levels in Group-A comparatively.

Table 1: Descriptive Statistics for Age and MDAS Scores by Group.					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Age	Group A	30	42.40	9.350	1.707
	Group B	30	39.93	9.815	1.792
Mdas score	Group A	30	8.50	1.042	.190
	Group B	30	20.00	1.762	.322

Table 2: Independent Samples T-Test Results for Age and MDAS Scores by Group.

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Df
Age	Equal variances assumed	.279	.600	.997	58
	Equal variances not assumed			.997	57.864
1 Das score	Equal variances assumed	5.664	.021	-30.773	58
	Equal variances not assumed			-30.773	47.085

This table shows the results of the t-test comparing the ages of participants in both groups. Levene's test indicates that the variances are equal (p > 0.05). The t-test results show no significant difference in age between the two groups (p = 0.323).

Table 3: Levene's Test for Equality of Variances for Age and MDAS Scores.

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Age	Equal variances assumed	.323	2.467	2.475
	Equal variances not assumed	.323	2.467	2.475
1 Das score	Equal variances assumed	.000	-11.500	.374
	Equal variances not assumed	.000	-11.500	.374

This table presents the t-test results for the MDAS scores. Levene's test indicates unequal variances (p < 0.05). The t-test shows a significant difference in MDAS scores between the two groups (p < 0.001), with Group B experiencing significantly higher anxiety levels than Group A.

Table 4: Chi-Square Test for Gender Distribution.

Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.148[a]	1	.284		
Continuity Correction[b]	.646	1	.422		
Likelihood Ratio	1.153	1	.283		
Fisher's Exact Test				.422	.211
Linear-by-Linear Association	1.129	1	.288		
N of Valid Cases	60				

This table summarizes the Chi-Square test results for the distribution of sex across the two groups. The results indicate no significant association between sex and group membership (p = 0.284), suggesting that the distribution of males and females is similar in both groups.

Table 5: Cross tabulation of group by anxiety interpretation levels.

		Interpretation				Total
		Low	Moderate	High	Severe	
Group	Group A	24	6	0	0	30
	Group B	0	0	7	23	30
Total		24	6	7	23	60

This crosstabulation shows the distribution of participants' MDAS scores categorized by interpretation levels (Low, Moderate, High, Severe) across the two groups. Group A has all participants in the Low and Moderate categories, while Group B has a significant number in the High and Severe categories, indicating that Group B experiences higher levels of anxiety.

DISCUSSION
The study demonstrated that patients in Group A, who had self-exposed to surgical graphical images prior to undergoing lower third molar extraction, exhibited significantly lower anxiety levels compared to Group B, who had no prior exposure. This was reflected in the Modified Dental Anxiety Scale (MDAS) scores, where Group A showed an average score of 8.50 (±1.04), categorized as low anxiety, while Group B had a significantly higher average score of 20.00 (±1.76), falling into the severe anxiety category.

The statistical analysis confirmed that the difference in anxiety levels between the two groups was highly significant (p < 0.001), indicating a robust effect of prior visual exposure. Practically, these findings suggest that incorporating self-directed exposure to accurate surgical content could be an effective, low-cost strategy to

mitigate dental anxiety. Such an approach may improve patient cooperation, streamline surgical workflows, and enhance overall treatment experience. The findings of this study, which demonstrate a significant reduction in dental anxiety among patients exposed to graphical surgical images.

The study by Suresh et al. (2015) conducted in Western Maharashtra assessed anxiety levels in patients undergoing surgical tooth extraction and highlighted the prevalence of high anxiety levels among such patients, especially females, attributed to fear of pain and discomfort.

However, while the Suresh et al. study emphasized the role of preoperative assessments and reassurance to address anxiety, it did not explore the impact of graphical or visual aids.[1] This current study extends the understanding by suggesting that visual exposure to realistic surgical content may desensitize patients to the perceived threats of the procedure. The mechanism likely involves reducing uncertainty and increasing familiarity with the surgical steps, contrasting with the general reliance on verbal explanations and traditional reassurances observed in prior research.

Both studies underscore the need for targeted strategies to manage preoperative anxiety, yet they differ in the interventions examined. Where Suresh et al. primarily recommended enhanced communication and awareness of anxiety levels, this study advocates the incorporation of visual aids into preoperative preparation, providing an additional, evidence-backed tool for practitioners.[1]

The findings suggest combining traditional methods and modern digital solutions, like graphical surgical content, to better address dental anxiety. Further research is needed to confirm these methods and their effects on patient outcomes and satisfaction.

Exposure to graphical images related to surgical procedures appears to significantly reduce anxiety by addressing the fear of the unknown, a common driver of dental anxiety. Visual aids provide patients with a clear understanding of what to expect, increasing their familiarity with the steps involved in the procedure and reducing uncertainty.

Desensitization Theory
The observed reduction in anxiety can be explained through the psychological theory of **desensitization**, which suggests that repeated or voluntary exposure to anxiety-inducing stimuli can gradually reduce fear. By voluntarily viewing surgical images or videos, patients in Group A likely became accustomed to the visual and conceptual aspects of the procedure. This exposure may have allowed them to process and accept the reality of the treatment, reducing their anticipatory fear when approaching the actual surgery.

Strengths and Limitations
Strengths
1. **Validated anxiety assessment tool:** The study utilized the **Modified Dental Anxiety Scale (MDAS),** a widely accepted and validated tool for assessing dental anxiety. This enhances the reliability and comparability of the findings within the broader literature on dental anxiety.

2. **Comparative study design:** The clear division of participants into two distinct groups (exposed and non-exposed) allowed for a direct comparison of the impact of visual exposure on anxiety levels. This design effectively isolated the intervention's role in reducing anxiety.

3. **Focus on a relevant clinical issue:** Dental anxiety is a pervasive issue in clinical practice, often complicating treatments and outcomes. By addressing this problem, the study contributes practical insights that can improve patient care in dental and surgical settings.

4. **Real-World application:** The inclusion of self-directed exposure to surgical content through accessible platforms (e.g., social media or digital sources) reflects real-world behaviour, enhancing the study's ecological validity and relevance to current patient education practices.

Limitations
1. **Small sample size:** With only 60 participants, the study's findings may lack generalizability to broader populations. Larger sample sizes are necessary to confirm these results and ensure their applicability across diverse demographic and clinical settings.

2. **Potential self-selection bias:** Participants in Group A were those who voluntarily chose to view surgical content. This self-selection could indicate inherent differences, such as lower baseline anxiety or higher motivation to engage with educational materials, potentially skewing the results.

3. **Reliance on self-reported measures:** The study depended on self-reported MDAS scores, which are subject to social desirability bias and inaccuracies in personal introspection. Objective physiological measures of anxiety, such as heart rate or cortisol levels, could have strengthened the findings.

4. **Limited scope of intervention:** The study only evaluated the impact of visual exposure to surgical images, without exploring other preparatory interventions like counselling, animated content, or virtual reality tools, which may also reduce anxiety.

5. **Cross-sectional design:** The study measured anxiety levels only at a single preoperative point. A longitudinal design assessing anxiety at multiple

stages—before, during, and after the procedure—could provide a more comprehensive understanding of the intervention's impact.

Future directions
Larger and More diverse populations: Future research should involve larger sample sizes that include participants from diverse age groups, educational levels, and cultural backgrounds. This would help validate the findings across a broader demographic and identify any population-specific trends or responses to visual aids.

Long-term impact studies: Research should investigate the long-term effects of reduced preoperative anxiety on clinical outcomes, including recovery times, postoperative pain levels, adherence to postoperative care instructions, and overall patient satisfaction. This would provide a comprehensive understanding of the benefits of anxiety reduction.

Integration into routine clinical practice: Studies focusing on how to implement visual aids efficiently within clinical workflows, including the use of technology platforms, staff training, and patient accessibility, would be valuable. This research could address the scalability and cost-effectiveness of incorporating visual aids into preoperative preparation.

CONCLUSION
Our findings suggest that exposure to visual information regarding surgical procedures may help in reducing dental anxiety, highlighting the potential benefits of incorporating visual aids into patient education and pre-operative preparation strategies. A prior understanding of a patient's predisposition to dental anxiety can be beneficial, allowing for the implementation of suitable strategies that facilitate anxiety-free treatment and promote improved postoperative recovery.

REFERENCES
1. Assessment of Dental Anxiety in Patients Undergoing Surgical Extraction of Teeth: Study from Western Maharashtra Sneha Shitole1, Mounesh kumar C D2, Suresh K V*3, M I Parkar2, Pankaj Bajirao Patil2 and Ashwinirani S.R.3.
2. Strategies to manage patients with dental anxiety and dental phobia: literature review Deva Priya Appukuttan Department of Periodontics, Sri Ramakrishna Mission Dental College and Hospital, Chennai, India.