The Level of Anxiety and Pain of Patients Regarding the Extraction of Permanent Teeth Using Surgical Methods at RSGM UNIMUS

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ABSTRACT

Introduction: Impacted teeth can hinder optimal chewing function and potentially lead to several complications, including cysts and an increased risk of dental caries due to the difficulty in cleaning trapped food residues. Surgical procedures performed to address this issue will be adjusted based on the level of difficulty and complexity of the impacted tooth condition.

Objective: This study aims to determine the level of anxiety and pain experienced by patients undergoing permanent tooth extraction using surgical methods at RSGM UNIMUS.

Methods: This type of research is quantitative with a cross-sectional approach. The sample in this study consists of tooth extraction patients who underwent surgical methods at RSGM Universitas Muhammadiyah Semarang over a period of one month with a total sample of 32 people.

Results: The statistical analysis in this study uses the Spearman rank correlation test. The Spearman rank correlation analysis test shows a p-value greater than 0.05, which means there is a significant relationship between the level of pain anxiety of patients regarding the permanent tooth extraction procedure using the surgical method.

Keywords: Anxiety; pain; tooth extraction; permanent teeth

INTRODUCTION

Health is the result of human resource development and is also the main capital in developing human resources. According to Riskesdas 2023 data, 56.9% of the population aged ≥ 3 years reported experiencing health problems in their teeth and mouth, but only 11.2% of them utilized medical services to obtain treatment for these issues.14 This situation requires serious attention because there has been no significant change in the last five years compared to the results of Riskesdas 2018, which included dental caries, periodontal disease, dental misalignment, and impacted wisdom teeth (SKI, 2023).

Impacted teeth can hinder optimal chewing function and potentially lead to several complications, including cysts and an increased risk of dental caries due to the difficulty in cleaning food particles trapped. Surgical actions taken to address this issue will be adjusted based on the level of difficulty and complexity of the impacted tooth condition.9 Surgical procedures are performed with the aim of improving the patient's health through the cutting or destruction of body tissue using tools such as scalpels, lasers, or needles (Sitinjak *et al.,* 2022).

The extraction of impacted teeth, specifically third molars or wisdom teeth, has several benefits, including preventing health complications. Impacted teeth are often associated with various complications such as infections, pericoronitis (inflammation of the tissue around the tooth), cyst formation, and damage to surrounding teeth. The procedure of extracting impacted teeth is performed to prevent these complications, thereby maintaining optimal oral health (Reiza *et al.,* 2021). Extraction of impacted teeth can also reduce pain and discomfort. The pressure exerted by the impacted tooth on the surrounding teeth can cause pain and discomfort for the patient. The extraction of impacted teeth has proven effective in alleviating this pain, which ultimately improves the patient's quality of life (Azmy *et al.,* 2023).

Anesthesia is necessary to relieve pain and discomfort that patients may experience, but both of these interventions can cause anxiety. High levels of patient anxiety can affect physiological body functions prior to surgery. This is characterized by increased heart rate and respiration, changes in blood pressure and body temperature, cold skin, dilated pupils, and dry mouth (Choerunisa & Hidayati, 2023). An adaptive emotional response to potentially threatening or dangerous situations, moderated by the sympathetic nervous system, is known as anxiety. Anxiety in dental procedures, or dental anxiety, in particular, is associated with feelings of fear, stress, or anxiety that arise before, during, or after dental treatment. About 25% of the population experiences dental anxiety, and some of them meet the criteria for dental anxiety. Anxiety triggers the autonomic nervous system, which enhances automatic body functions such as blood pressure, heart rate, respiratory rate, gastrointestinal motility, and cardiac output (Hoffmann *et al.,* 2022).

Based on the problems that have been outlined, the researchers aim to directly observe the level of anxiety and pain experienced by patients during the permanent tooth extraction procedure using surgical methods at the Dental Special Care Center of Universitas Muhammadiyah Semarang. In addition to this, the research is intended to provide useful information that can serve as a consideration for dentists in evaluating surgical actions performed on patients.

MATERIALS AND METHODS

This type of research is quantitative with a cross-sectional approach. This study was conducted at the Dental and Oral Hospital of Muhammadiyah University Semarang with research subjects being patients undergoing tooth extraction using surgical methods. The sample in this study consists of all patients who have undergone tooth extraction procedures surgically at the Dental and Oral Hospital of Muhammadiyah University Semarang during a one-month period, totaling 32 people.

The level of anxiety and pain of patients during tooth extraction procedures using surgical methods was obtained through a questionnaire administered directly by researchers and filled out by respondents. The questionnaires used to measure anxiety levels were the Modified Dental Anxiety Scale (MDAS) and the Hamilton Anxiety Rating Scale (HARS). Meanwhile, the Numeric Rating Scale (NRS) and the Wong-Baker Faces Pain Rating Scale were used to measure patients' subjective perceptions of anxiety and pain. These questionnaires have been tested for validity and reliability. The data analysis in this study was conducted using the Spearman Rank correlation test.

RESULTS

This research was conducted on 32 patients who underwent tooth extraction using the surgical method at RSGM Muhammadiyah University Semarang over the course of one month. Levels of anxiety and pain were measured using a questionnaire. Data analysis was performed using the Spearman Rank correlation test.

1. Respondent Characteristics

Table 1. Frequency distribution of respondent characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Sex	Male	24	56.3
	Female	40	37.5
Age	18-30 years	36	56.3
	31-50 years	24	37.5
	> 50 years	4	6.3
Education	High school	32	50.0
	Expert 1	30	46.9
	Expert 2	2	3.1
Experience of Tooth Extraction	Ever	46	71.9
	Never before	18	28.1
Total		68	100

From table 1, it can be seen that most of the respondents are female, with 40 people (62.5%). Then, in terms of age, the majority of the respondents are aged between 18-30 years, totaling 36 people (56.3%). In terms of education level, respondents with secondary education dominate, with 32 people (50%). Furthermore, the characteristics of respondents based on tooth extraction experience show that 23 people (46 data) (71.9%) of respondents have ever undergone tooth extraction.

2. Descriptive Test

Table 2. Descriptive Test of Variables

Variable	Category	Amount	%
Form Filling Instructions	Before the Action	32	50.0
	After the Action	32	50.0
Level of Anxiety	Low	51	79.7
	Currently	9	14.1
	Tall	1	1.6
	Heavy	3	4.7
Pain Scale	No pain	25	39.1
	Mild Pain	31	48.4
	Moderate Pain	6	9.4
	Severe Pain	2	3.1

From table 2, their distribution based on form filling description shows that 32 people (50%) of respondents filled out the form before the procedure, and 32 people (50%) of respondents filled out the form after the procedure. The characteristics of respondents based on Anxiety Level show that 51 data (79.7%) of respondents have low anxiety levels, and the characteristics of respondents based on Pain Scale show that 25 data (39.1%) of respondents experienced no pain during tooth extraction.

3. Research Results

Table 3. Spearman correlation test on the influence of respondent characteristics on anxiety levels

Correlations		
Spearman's rho		Level of Anxiety
Age	Correlation Coefficient	-0.165
	Sig. (2-tailed)	0.192
Gender	Correlation Coefficient	**.314***
	Sig. (2-tailed)	0.011
Education	Correlation Coefficient	**-.287***
	Sig. (2-tailed)	0.022
Experience of Tooth Extraction	Correlation Coefficient	**-.561****
	Sig. (2-tailed)	0.000
	N	64
*. Correlation is significant at the 0.05 level (2-tailed).		
**. Correlation is significant at the 0.01 level (2-tailed).		

Based on the Spearman correlation test results table, the p-value obtained is 0.192, 0.011, 0.022, and 0.000, which means that only the age variable has a p-value greater than 0.05, while the variables of gender, education, and tooth extraction experience have values less than 0.05. This indicates that hypotheses H2, H3, and H4 are accepted, which means there is a relationship between gender, last education, and tooth extraction experience towards the level of patient anxiety, while hypothesis H1 is rejected, indicating that there is no relationship between age and the level of patient anxiety.

Table 4. Spearman correlation test on the influence of respondent characteristics on pain scale

Correlations		
Spearman's rho		Pain Scale
Age	Correlation Coefficient	**-0.123**
	Sig. (2-tailed)	0.332
Gender	Correlation Coefficient	**.361****
	Sig. (2-tailed)	0.003
Education	Correlation Coefficient	**-0.169**
	Sig. (2-tailed)	0.181
Experience of Tooth Extraction	Correlation Coefficient	**-.439****
	Sig. (2-tailed)	0.000
	N	64
*. Correlation is significant at the 0.05 level (2-tailed).		
**. Correlation is significant at the 0.01 level (2-tailed).		

Based on the Spearman correlation test results table, the p-values are 0.332, 0.003, 0.181, and 0.000, which means the variables of age and last education have p-values greater than 0.05, while the variables of gender and tooth extraction experience have values less than 0.05. This means that hypotheses H2 and H4 are accepted, indicating a relationship between gender and tooth extraction experience with the Pain Scale, while hypotheses H1 and H3 are rejected, indicating no relationship between age and last education with the Pain Scale.

DISCUSSION

Based on this research, it was found that there is a relationship between age and anxiety, where individuals aged 18-30, who belong to the young adult age group, experience more anxiety. This research aligns with the study conducted by Djojo (2019), which states that young age is generally associated with higher levels of anxiety when facing medical procedures, including surgical actions such as tooth extraction, because individuals in this age group tend to have insufficient medical experience, resulting in ignorance about the processes and risks of procedures, leading to feelings of fear and insecurity (Djojo, 2019).

The research results based on gender indicate that a majority of respondents who underwent permanent tooth extraction using surgical methods at RSGM Universitas Muhammadiyah Semarang are female, with a proportion of 62.5% compared to males who make up 37.5%. This aligns with the study by Maritsa *et al.* (2023) which states that females are more likely to experience and express negative emotions such as anxiety, fear, or panic, especially when facing medical treatments that could cause pain or discomfort (Maritsa *et al.,* 2023).

The research results based on education levels indicate that the majority of patients have a background in secondary education (high school, 50%) and higher education (bachelor's degree, 46.9%). Descriptive results show that patients with higher education tend to exhibit lower levels of anxiety compared to those with secondary or primary education. Harapan *et al.* (2022) also support that low education levels often make an individual reliant on external information that may not be valid or objective, such as stories from relatives or social media. This can reinforce irrational fears and lead to rejection of medical procedures (Harapan *et al.,* 2022).

The results of the research on tooth extraction experiences showed that the majority of respondents (71.9%) had previously undergone tooth extraction procedures. From this data, it appears that patients with prior experience in undergoing extraction procedures, especially those using surgical methods, tend to exhibit lower levels of anxiety and pain compared to patients who have never undergone similar procedures. This aligns with the study by Zhang *et al.* (2024), which also emphasizes that a history of dental treatment significantly influences physiological responses to stress and pain (Zhang *et al.,* 2024).

The comparison of anxiety and pain levels before and after tooth extraction showed significant decreases in both anxiety and pain levels following the surgical tooth extraction procedure. Before the procedure, a small number of patients exhibited high and severe levels of anxiety; however, after the procedure, no patients reported anxiety at those levels. Hoffmann *et al.* (2022) previously indicated that preoperative anxiety often arises from fear of the unknown, including exaggerated fears about pain, anesthesia failure, or complications. Once the procedure was performed and patients realized that it was quick, controlled, and not as painful as they had imagined, their anxiety levels and pain sensations decreased drastically (Hoffmann *et al.,* 2022).

CONCLUSIONS

Based on the research results on the changes in anxiety levels before and after the procedure, it was found that the questionnaire filled out before the procedure indicated that some patients experienced anxiety at moderate to high levels. However, after the procedure was performed, the majority of respondents showed a decrease in anxiety levels. Regarding the change in pain levels before and after the procedure, it was found that although the pain levels were not measured separately for pre-treatment, the data after the procedure showed a relatively low pain perception.

written work still has many shortcomings, and criticism and suggestions will greatly assist the author in creating better work in the future.

Funding Source

This study does not use funding source.

Availability of data and materials

This research was only conducted at the RSGM Universitas Muhammadiyah Semarang on patients undergoing tooth extraction using surgical methods. Further research that can be conducted is on a larger number of respondents, with other procedures.

Authors' contributions

The researcher consists of 1 person, namely Khansa Nafira Jasmine, who is responsible for preparing the research materials and questionnaire, processing the research data, and writing the final report and article.

Conflict of Interest

This study does not use commercial products.

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