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Investigating the Relationship between Parental Knowledge and Children's Anxiety in Tooth Extraction

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ABSTRACT Anxiety is a psychological reaction to something unwanted. Dental anxiety is the thought that something scary will happen before someone has a dental visit or treatment. The results of the initial data collection related to anxiety about tooth extraction at SD Islam Maryam Surabaya, it is known that 86% of children experience severe anxiety. The study aims to determine the relationship between parental knowledge and children's anxiety levels in the act of removing teeth in class IV SD Islam Maryam Surabaya. The type of research used was analytic research with a cross-sectional design, with 65 class IV children as research subjects. Data collection method by means of a questionnaire. The data analysis technique uses the Chi Square test. The results showed that parents' knowledge was less and children's anxiety was severe about tooth extraction. The test results from the study obtained an Asymp.sig.(2-tailed) value of 0.000, which means that the p value (signification) is smaller than α (0.05) so that parental knowledge is related to the level of anxiety in the act of removing teeth in class IV SD Islam Maryam Surabaya.

INDEX TERMS Knowledge, Anxiety, Tooth extraction

I. INTRODUCTION

Dental and oral health services aim to improve the degree of dental health [1]. The 2018 basic health research data (Riskesdas) mostly shows that children aged 6-14 years experience caries, residual roots, supernumerary teeth, and persistence. The results of Fenanlampir's research in Langowan found that indications for tooth extraction in children aged 11-13 years were persistence of 14%, dental caries of 57.9%, residual roots of 25.2%, and supernumerary teeth of 2.7% so that dental treatment is necessary before more severe damage occurs [2]. Dental treatment can cause dental anxiety in children thereby increasing pain perception, non-cooperative behavior, and avoidance of treatment [3].

Anxiety is a psychological reaction to something unwanted. Responses obtained from individual experiences and other people [4]. Dental anxiety is the thought that something bad will happen to dental care [5].

Dental anxiety is influenced by internal and external factors. Internal factors such as gender, age, and mental status. External factors such as health workers, community,

family, and traumatic experiences. Especially the gender factor significantly influences the level of anxiety. Female patients are more anxious than males. Men are more rational while women are more sensitive [6]. The results of research on the level of anxiety of children about tooth extraction reported that 57.2% of children showed anxiety before the tooth extraction procedure began and 46.2% of children felt anxious during the procedure [7].

The results of research from Masula (2022) showed that the education of parents with basic education had a 9.31 times greater tendency to have a higher level of dental anxiety compared to the education of parents with secondary and higher education. It can be interpreted that parental education has a significant effect on the level of dental anxiety in action. Parents' education affects their knowledge, higher education has more parents' knowledge and vice versa. Anxiety in tooth extraction is also caused by sharp objects such as needles, bein, and forceps. Anxiety for dental medical personnel can also reduce oral health [8].

Parents are the main decision makers, the first role models, attitudes, knowledge, and dental and oral health

practices and behavior influence children. Parental behavior directly affects their children [9]. The attitude of parents towards children's dental and oral health depends on their knowledge. Parents who have good knowledge tend to be more concerned about the dental and oral health of their children. Lack of parental knowledge as the main factor causing children's dental and oral health problems. Economic conditions, attitudes, and parental behavior in maintaining dental and oral health can have an affect the dental and oral health of their children so that children are free from dental health problems such as caries and persistence which can affect the growth of children's permanent teeth. Knowledge, motivation, and attitudes of parents who are less concerned about the condition of their child's primary teeth can be carried out by providing intensive health promotion regarding children's dental health from an early age by health workers [10]. Parental knowledge can lead to the formation of behaviors that support or do not support children's dental and oral health. Parents with less knowledge about dental and oral health are behavioral factors that do not support children's dental and oral health [11].

The results of the initial data collection related to anxiety and tooth extraction at SD Islam Maryam Surabaya revealed that children experienced low anxiety as much as 6%, moderate anxiety as much as 6%, and severe anxiety as much as 86%. Indications for tooth extraction in children are persistence of 20%, dental caries of 46.6%, residual roots of 26.6%, and supernumerary teeth of 6.66%.

This study aims to determine the relationship between parental knowledge and the level of anxiety of children in the act of tooth extraction in class IV SD Islam Maryam Surabaya. This study aims to facilitate dental medical personnel to be able to provide dental and oral health promotion, especially tooth extraction procedures for parents and children in order to reduce children's anxiety during dental treatment and improve the degree of dental health.

II. METHOD

The research was located at SD Islam Maryam, Jl. Manyar Sambongan No. 119, Kertajaya, Kec. Gubeng, City of Surabaya, East Java 60282 which was carried out in October 2022-February 2023. The type of research used was analytic research with a cross sectional design. The population is grade IV at SD Islam Maryam Surabaya with a total of 147 children. The population of this study fit the inclusion criteria with a total of 78 children. The size of the research sample was determined using the Slovin formula, so the number of samples was 65 respondents with a purposive sampling technique, namely a sampling technique based on inclusion criteria. The inclusion criteria were having had a tooth extracted at a health service and having dental conditions indicating extraction. The exclusion criteria were that they had never had a tooth extracted at a health service and had no dental conditions indicating extraction.

The data collection method in this study was a questionnaire method with data collection instruments in the form of questionnaire sheets. The technique for collecting data on parental knowledge in this study was to collect parents of fourth grade children at SD Islam Maryam Surabaya who met the inclusion criteria after that filling out a questionnaire. The category of parental knowledge assessment according to Nursalam (2020) is good with a score of $> 76\%$ -100%, sufficient with a score of $56\% - 75\%$, and poor with a score of $<56\%$ [12]. The technique of collecting data on children's anxiety in this study was to collect fourth grade children at SD Islam Maryam Surabaya who fit the inclusion criteria after that filling out the Modified Dental Anxiety Scale Faces (MCDAS-f) questionnaire. Questions in the questionnaire sheet amounted to 10 questions. Each question is given a score of 1-5. Score 1 for the answer "not worried", score 2 for the answer "very little worried", score 3 for the answer "quite worried", score 4 for the answer "worried", 5 for the answer "very worried" [13]. The categories for assessing children's anxiety according to Arslan (2021) are mild anxiety with a score of < 19 , moderate anxiety with a score of $19-25$, and severe anxiety with > 25 [14].

The data analysis technique of this study was that data on parental knowledge and child's anxiety about tooth extraction was analyzed using the Chi Square test to determine the relationship between parental knowledge and children's anxiety level about tooth extraction.

III. RESULT

The research was conducted in January 2023 at SD Islam Maryam Surabaya, Jl. Manyar Sambongan No. 119, Kertajaya, Kec. Gubeng, Surabaya City, East Java 60282. The sample size of the study was 65 students, namely 15 students in class 4A, 11 students in 4B, 12 students in 4C, 12 students in 4D, and 15 students in 4E by providing questionnaires to students and their parents. . The research was conducted aiming to determine the relationship between parental knowledge and the child's anxiety level in the act of tooth extraction.

TABLE 1
Characteristics of Respondent Parents of Grade IV Children at SD Islam Maryam Surabaya

Age Characteristics	Frequency	Percentage (%)
20-31 years old	25	38,5
32-40 years old	35	53,8
41-50 years old	5	7,7
Amount	65	100

Based on the data in TABLE 1, the results show that most of the respondents are aged between 32-40 years old.

TABLE 2

Characteristics of Respondents for Class IV SD Islam Maryam Surabaya

Gender	Frequency	Percentage (%)
Male	33	50,8
Female	32	49,2
Amount	65	100

Based on the data in TABLE 2 shows the results show that most of the respondents are mostly male.

TABLE 3

Distribution of Parental Knowledge Questionnaire Results on Tooth Extraction Actions

Statement	Answer				n
	False		True		
	f	%	f	%	
The condition of the decidui teeth that are overturned must be extracted	16	24,6	49	75,4	65
Rocking decidui teeth must be removed because it's time to change teeth	31	47,7	34	52,3	
Teeth with large holes and rocking are extracted	16	24,6	49	75,4	
Actions after tooth child's extraction	34	52,3	31	47,7	
Decidui teeth that have fallen should be removed	9	13,8	56	86,2	
The age of the first permanent lower incisor teeth	52	80,0	13	20,0	
The first permanent teeth to erupt	44	67,6	21	32,4	
As a result of decidui teeth not removed on time	30	46,2	35	53,8	
Actions to avoid after tooth extraction	51	78,5	14	21,5	
Actions taken if there is a long bleeding that does not stop for 48 hours	18	27,7	47	72,3	
Amount	301	463	349	537	
Average	30,1	46,3	34,9	53,7	

Based on the data in TABLE 3 It is known that parental knowledge of tooth extraction procedures that answer questions correctly is included in the less category. This can be seen from the results of the questionnaire which stated that parents lack knowledge about post-extraction procedures, the age at which permanent teeth grow, and actions to avoid after extraction.

TABLE 4

Frequency Distribution of Parents' Knowledge Level Category on Respondents' Teeth Extraction Actions

Knowledge category	Frequency	Percentage (%)
Good Knowledge	18	27,7
Enough Knowledge	23	35,4
Less Knowledge	24	36,9
Amount	65	100

Based on the data in TABLE 4, It is known that parental knowledge of tooth extraction is included in the less category.

TABLE 5

Distribution of Child Anxiety Questionnaire Results in Dental Extraction at SD Islam Maryam Surabaya

Question	Answer										n
	Not Worr ied		Very Sligh tly Worr ied		Fairl y Worr ied		Worr ied a lot		Very Worr ied		
	f	%	f	%	f	%	f	%	f	%	
How did you feel when you had to go to the dental clinic to have your teeth extracted again?	15	23,1	19	29,2	41	61,7	21	31,1	25	38,5	65
How do you feel when your teeth shake and are disturbed while eating and then have to be extracted?	19	29,2	20	30,8	16	24,6	62	93,9	42	64,6	137

How do you feel when you see another dental health worker wearing a mask and gloves during another tooth extraction?	1	26	2	33	9	13	1	16	6	9,
	7	,2	2	,8		,8	1	,9		2
How did you feel when your teeth were examined again with a sharp, sharp tool?	2	3,	8	12	5	7,	3	4,	4	72
		1		,3		7		6	7	,3
How did you feel when your tooth was again anesthetized during another tooth extraction?	5	7,	1	20	7	10	5	7,	3	53
		7	3	,0		,8		7	5	,8
How do you feel when you feel anxious and one day you have to have another tooth extracted?	1	20	2	30	4	6,	3	4,	2	38
	3	,0	0	,8		1		6	5	,5
How did you feel when your parents forced you to go back to the dental clinic to have your teeth extracted	1	15	2	41	9	13	7	10	1	18
	0	,4	7	,5		,8		,8	2	,5
because your teeth have persistence (bumping)?	2	38	1	20	3	4,	3	4,	2	32
	5	,5	3	,0		6		6	1	,3
How do you feel after having a tooth extracted and then your friend who has had a tooth extracted tells you that tooth extraction is painful?	2	40	1	24	1	15	4	6,	9	13
	6	,0	6	,6	0	,4		1		,8
How do you feel when you sit back in the waiting room of the dental clinic?	1	26	2	33	1	26	4	6,	5	7,
	7	,2	2	,8	7	,2		1		7
How did you feel when you got back into the dental chair for the extraction?	1	22	1	27	8	12	4	73	1	29
	4	9,	8	6,	4	9,	8	,1	8	0,
	9	4	0	8		1			9	8
Amount	1	22	1	27	8	12	4	73	1	29
	4	9,	8	6,	4	9,	8	,1	8	0,
	9	4	0	8		1			9	8
Average	1	22	1	27	8	12	4	7,	1	29
	4	,9	8	,6	,	,9	,	3	8	,0
	,9		,0		4		8		,9	

Based on TABLE 5 it is known that the results of the child's anxiety questionnaire on tooth extraction are included in the severe category. This can be seen from the results of the questionnaire which stated that the respondent's feelings were very anxious when he had to go to the dental clinic to extract his teeth again, the respondent's feelings were very anxious when his teeth were examined again with a tool that was sharp and sharp, the respondent's feelings were

very anxious when his teeth returned given an anesthetic when performing another tooth extraction.

TABLE 6

Frequency Distribution of Children's Anxiety Levels in Respondents' Teeth Extraction Actions

Anxiety Category	Frequency	Percentage (%)
Mild Anxiety	19	29,2
Moderate Anxiety	19	29,2
Severe Anxiety	27	41,5
Amount	65	100

Based on TABLE 6 It is known that most children's anxiety about tooth extraction is included in the severe category.

TABLE 7

Relationship between Parental Knowledge and Children's Anxiety Level in Tooth Extraction

		Children's Anxiety				p value
		Mild	Moderate	Severe	Amount	
Parental Knowledge	Good	9	7	2	18	0,000
	Enough	9	11	3	23	
	Less	1	1	22	24	
	Amount	19	19	27	65	

Based on TABLE 7 It is known that parental knowledge is good with mild child anxiety. Parental knowledge is sufficient with moderate child anxiety. Parents' knowledge is lacking with severe child anxiety. The results of the p value show a value of 0.000, then the p value < 0.05 , it can be concluded that there is a relationship between parental knowledge and the child's anxiety level in the act of tooth extraction.

IV. DISCUSSION

Based on the results of research on parental knowledge of tooth extraction in grade IV children at SD Islam Maryam Surabaya, it shows that parental knowledge is in the less category. This can be seen by the lack of parental knowledge about post-extraction procedures, the age at which permanent teeth grow, and actions to avoid after extraction.

This research is in line with Al-Batayneh's research (2019) regarding parental knowledge and acceptance of dental care for low decidui teeth. Most parents decide that the best treatment for these decidui teeth is extraction for pain relief without knowing the age of the child's teeth [15].

The same results from Otayto's study (2022) state that most parents have insufficient knowledge of the act of removing children's teeth because these parents pull out their child's decidui teeth when they are toddlers without paying attention to the age of teeth growth [16].

This research is inversely proportional to Nepal's research (2020) which states that overall parents have good knowledge about dental and oral health. Good parental knowledge regarding the age of tooth growth in children, namely 81.9% answered correctly and 18.1% answered incorrectly [17].

This research is also inversely proportional to Aliakbari's research (2021) most of the knowledge of parents is good about caring for children's decidui teeth, namely 97% [18].

Parents' knowledge about children's teeth growth is very important because parents are the closest people to their children. Good parental knowledge about children's dental growth will not cause dental health problems in children such as crowding teeth. Good parental knowledge has an impact on children's dental and oral health, parents will maintain the health of children's teeth so that caries does not occur and early extraction before the age of eruption of children's teeth so that decidui teeth will make way for permanent teeth to grow at the right age.

Teeth growth is a physiological stage process characterized by the appearance of decidui teeth, then permanent teeth in children. Depending on the present tooth eruption mechanism, impaction and eruption are classified. Tooth germs are formed in the fetus at about 6 weeks of intrauterine life. For 1.5 months, the process of mineralization of bone tissue takes place. During this period, the fetus takes calcium, phosphorus, protein and other substances necessary for its teeth. In this period, various diseases, malnutrition, the use of certain drugs by the mother lead to fetal anomalies in the number and shape of the dental crowns, impair the strength and color of their enamel. At birth, the crowns of 20 decidui teeth are located deep in the alveolar processes of the jaws in a fully formed state [19].

Permanent teeth begin to form when the fetus is 6 months old in the womb and will erupt in the oral cavity at 6 years old. The eruption begins with the first molars which grow behind the second decidui molars. The next growth of teeth is the lower first incisors followed by the upper first incisors when the child is less than 7 years old. Mixed dentition will be followed by an increase in the width of the jaw arch. If there is a discrepancy between the size of the teeth and the width of the jaw arch, crowding of teeth can occur. Around the age of 14 years, all the decidui teeth have fallen out and all the permanent teeth have erupted [20].

Tooth extraction is a surgical procedure to remove teeth from the alveolar bone socket which is done with forceps, elevators, or a transalveolar approach, if the extraction is not done perfectly it will cause post-extraction complications [21].

Parental knowledge about post-extraction complications and their management can prevent unwanted residue after extraction. There are many studies that illustrate that pre-extraction education can help reduce anxiety, pain, and post-extraction complications. Therefore, parents and children must have good knowledge about post-extraction procedures so that complications do not occur. Post-extraction actions include biting the tampon for 30 minutes,

not rinsing the mouth frequently, not sucking the wound area after extraction, avoiding hot food and drinks, not touching the gums after extraction, and so on [22].

Anxiety is a factor in the refusal of tooth extraction. Anxious patients need more time for tooth extraction. Anxiety is a feeling of worry and fear that is not clear why. Dental anxiety is a thought that something bad will happen in connection with dental treatment [5].

In this study, the anxiety level of tooth extraction was measured using the modified Child Dental Anxiety Scale Faces (MCDAS-f) questionnaire, which was tested for validity and reliability [14].

The results of data analysis regarding anxiety in the act of tooth extraction in grade IV children at SD Islam Maryam Surabaya, show that anxiety is in the severe category. This can be seen from the results of the answers to the questionnaire stating that the respondent's feelings were very anxious when he had to go to the dental clinic to extract his teeth again, the respondent's feelings were very anxious when his teeth were examined again with a tool that was sharp and sharp, the respondent's feelings were very anxious when his teeth were given again anesthetic when performing other tooth extractions.

This research is in line with Slabsinskiene's research (2021). Higher levels of dental anxiety are significantly associated with dental treatment experience, delay in first visit to the dentist, low self-esteem, low oral health-related QoL, low overall life satisfaction and low family affluence [23].

This research is also in line with Bakri's research (2022) which stated that most students experience dental anxiety because they have had bad experiences with dental treatment [24].

This study is inversely proportional to research by Rania (2019) which states that children do not experience dental anxiety if they have a non-traumatic experience after relatively painless dental treatment. Children who reported that they visited the dentist more frequently were statistically significantly less anxious than those who reported infrequent visits [25].

Research is also inversely proportional to Mahajan's research (2022) which states that pediatric patients do not experience dental anxiety because they have a pleasant experience during dental treatment [26].

The results of this study are supported by Masula's research (2022) that anxiety about tooth extraction is often caused by the use of sharp objects such as needles, elevators (bein), and forceps which are carried out gradually into the oral cavity. Anxiety and fear of dental medical personnel can also be a major cause of declining dental and oral health [8].

According to Yilmaz's research results (2019) a child's anxiety level of 75% causes 82% of children's uncooperative behavior in tooth extraction procedures. Comparison of children's anxiety using the local anesthetic method, namely gel anesthesia by 42%, gel and injection by 62%, injection by 70%, this study is in line with the results of data analysis which stated that the respondents felt very

anxious when their teeth were again given anesthetic during tooth extraction others [27].

Based on the results of data analysis to determine the relationship between parental knowledge and the child's anxiety level in the act of extracting teeth in class IV children at SD Islam Maryam Surabaya, it was found that there was a relationship between parental knowledge and the level of child's anxiety in the act of tooth extraction.

This is in line with Jeffrey's research (2018) that the level of parental education is low and the anxiety of the majority increases when receiving tooth extraction. Parental education affects parental knowledge [28].

Based on the results of Riad's research (2022) the level of knowledge is good so that anxiety about dental treatment is mild and knowledge is lacking so anxiety about dental treatment is severe [29].

Parental knowledge affects children's anxiety about tooth extraction because the child's closest environment is the parents. Anxiety factors come from internal and external factors. Internal factors come from the individual children themselves while external factors come from family, friends and the surrounding environment. Parents have good knowledge about tooth extraction, so parents can educate their children about tooth extraction so that the baby understands the importance of tooth extraction to improve dental and oral health. If the child understands, then the child's anxiety or fear decreases in the tooth extraction procedure.

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According to L Green in Notoatmodjo (2018) factors that influence behavior are caused by 3 factors, namely predisposing factors, supporting factors, and reinforcing factors. Behavior can affect a person's health degree [30]. According to Stuart (2016) factors supporting anxiety reinforcing factors including parents, attitudes, and behavior of health workers influencing anxiety predisposing factors including psychoanalytic, interpersonal, knowledge, behavior, and experience [31].

Factors reinforcing child anxiety comes from parents. Parents are very influential for their children. Especially from parental knowledge, parents having good knowledge will affect the child's anxiety behavior to decrease but if parental knowledge is low it will affect the child's anxiety behavior to increase.

Parental knowledge is obtained through health promotion. According to Kaczmarczyk's research (2021)

health promotion will be more effective using dental and oral health facilities and infrastructure that are of good quality because they can influence parental knowledge such as animated videos or applications for dental and oral health that aim to change a person's behavior. Dental health promotion facilities and infrastructure can be developed through the innovation and creativity of the makers [32].

Health promotion for parents can change their child's behavior into healthy behavior in maintaining healthy teeth and mouth. This behavior will be able to improve the degree of dental and oral health of children. According to Octavian (2016) the importance of maintaining milk teeth, parents can play an active role in maintaining the health of their children's oral cavity. The effort that can be done is to make regular visits to the dental clinic. The ideal age to start visiting the dentist at an early age is to get early prevention of habits that can damage teeth and get health education so as to create awareness in children about the importance of maintaining oral health [33].

How to maintain the health of a child's oral cavity with a special approach takes quite a long time to treat properly, especially for children who are less cooperative. Communicating with children is a way to deal with child behavior. The way to approach children in tooth extraction, namely TSD (Tell, Show, Do) to treat children's teeth is very simple and effective enough to treat pediatric patients who are afraid of tooth extraction [30].

The implication of this study is to provide data regarding the relationship between parental knowledge and the level of anxiety of children in the act of tooth extraction, so that the data from this study can be used as input for health workers to carry out dental and oral health promotion, especially tooth extraction actions for parents and children so that they can reduce children's anxiety during dental treatment and improve the degree of dental health.

The limitations of this study were meeting the parents of the respondents to fill out the questionnaire and the respondents had to remember their feelings when a tooth was extracted at the health service to answer the questionnaire.

V. CONCLUSION

The purpose of this study was to determine the relationship between parental knowledge and the child's anxiety level in the act of removing teeth in class IV SD Islam Maryam Surabaya. Based on the results of research on parents' knowledge of children's anxiety in class IV about tooth extraction at SD Islam Maryam Surabaya, it can be concluded that 53.7% of parents' knowledge of child tooth extraction is included in the less category. Children's anxiety at tooth extraction is 29.0% included in the severe category. The test results from the study obtained an Asymp.sig.(2-tailed) value of 0.000 which means the p value (significance) is smaller than α (0.05) so that parental knowledge is related to children's anxiety in the act of tooth extraction in class IV SD Islam Maryam Surabaya. For future researchers, it is expected to examine other dental anxiety factors that have not been studied.

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