

## Aspects of Mother Knowledge Regarding Permanent Dental Trauma in Children

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**ABSTRACT:** Tooth trauma is an injury that involves a tooth and/or involves its supporting structures leading to fractures, tooth transusions or damage to periodontal tissue. Causes of permanent tooth trauma in children are falls, sports activities, and traffic accidents. The mother is the closest person to the child and has an important role in treating the child's permanent tooth trauma. The aim of this study is to find out how the mother knows about the permanent tooth trauma of her 8-9 years old children. The design of this study uses observational analysis with a population of mothers of children aged 8-9 years of age of 120 and samples of 50 respondents taken using Quota sampling technique. The statistical test results are that the mother's knowledge of permanent dental trauma has no significant relationship with the age of the mother ( $p$  value = 0,151 ( $> 0,05$ ), past education ( $p$ -value = 0,258 ( $>0,05$ ), work status ( $p$ -value = 0,113 ( $>0,05$ ) and source of health information ( $p$ -value=0,307 ( $>0,05$ ). Governments and dental professional organizations must act quickly to implement dental trauma management education and campaigns in the general public.

**KEYWORDS:** Dental Trauma, Mother's Knowledge, Permanent Tooth

### INTRODUCTION

Dental trauma is defined as damage to tooth hard tissue and/or periodontal tissue due to mechanical action, unexpected occurrences, or as a result of heavy contact with an object <sup>1</sup>. When children are 2 - 5 years old, when they learn to walk and run, they are most susceptible to fractures. According to an international systematic analysis conducted by Petti <sup>2</sup>, there are about 900 million people worldwide between the ages of 7 and 65 who suffer permanent dental damage. It is estimated that 180 million children worldwide have at least one primary Traumatic Dental Injury (TDI) related to their teeth and almost 80% of dental injuries occur under the age of 20. There are two peak prevalence trends for boys between the ages of 1 to 3 and 10 to 12 and for girls at the age of 13. It suggests that childhood and adolescence are highly susceptible to dental trauma. Untreated anterior tooth fractures and unpleasant conditions can affect the behavior and development of children at school and in their daily lives <sup>3</sup>

Dental trauma is found in about 17.5% of the population, with a higher prevalence among boys. This figure varies depending on the geographical location. Falling is the main cause of dental trauma, and the most frequent location is at home with the most common type of trauma being enamel fractures <sup>4</sup>. Another study in India showed that out of 2,325 schoolchildren aged 7-13, the prevalence of trauma was 12.1%, and there was no difference between private or government schools and in the city or the countryside. Elementary school children are more susceptible to Traumatic Dental Injury (TDI) than high school students. Houses are the most frequently occurring places, and the most common cause is unknown. The enamel fracture is the most common and the most frequently affected is the central incisive of the maxilla, but only 4.1% of the trauma subjects seek treatment <sup>5</sup>. While a literature study by Lam R <sup>6</sup> found that the prevalence of primary and permanent Traumatic Dental Injury (TDI) is highest in Sweden, which is 37%.

The knowledge of parents, especially mothers, is an important factor inining dental and oral health for the long-term success and future of the child. Mother's knowledge is influenced by age factors, educational background, employment status and sources of health information received. For children, first aid after dental trauma is important, but parents, teachers, and sports coaches rarely know how to act in the case of tooth trauma. Motivating parents to take preventive dental trauma measures can produce positive changes, which will improve the health of both parents and children in the long term. This goal can be achieved through the implementation of community health policies aimed primarily at preventing the occurrence of Traumatic Dental Injury (TDI) <sup>7</sup>.

### MATERIALS AND METHODS

In this study, the mothers who met the inclusion criterion were to have children between the ages of 8-9 years old. The entire sample in this study has signed an Informed Consent as an agreement to be the sample of this study. The study involved a population of



150 people and 50 samples were selected using the Quota sampling method. The research was designed using observational analysis and cross-sectional approaches. The data was analyzed using Chi-square statistical tests to find out the correlation of age, past education, mother's working status, and sources of health information to mother's knowledge of child's permanent tooth trauma.

**RESULTS**

The univariate analysis in this study aims to determine the distribution of frequencies characteristic of age, last education, working status and source of health information of the subject of the study. The results of univariate analysis in this study can be seen in the following table.

**Table I - Characteristic Frequency Distribution**

Demography Characteristic	Frequency	Percentage (%)
<b>Age (year)</b>		
26-35	16	32%
36-45	34	68%
<b>Education</b>		
Junior High School	16	32%
Senior High School	19	38%
Bachelor	15	30%
<b>Working Status</b>		
Working	5	10%
No Working	45	90%
<b>Source of Health Information</b>		
Hospital	15	30%
Mass media	28	56%
Family/friend	7	14%
<b>Total</b>	<b>50</b>	<b>100</b>

Based on table 1 above, it can be seen that 68% of mothers are in late adulthood and the other 32% are in early adulthood. Besides, 38% of mothers are in senior high school, 32% are in junior high school and only 30% are in undergraduate education. In addition, the data was also obtained that the majority of mothers are non-working (90%) and more than 50% of the mothers get health information from the mass media. Table 2 shows that almost all respondents do not understand the importance of using dental protectors and dental avulsion emergency.

**Table II - Results of Mother's Knowledge Questionnaire on Permanent Tooth Trauma**

**Topic : Understanding Dental Trauma**

**What do you mean of dental trauma ?**

	F (%)	Mean
<b>Damage to a child's teeth due to a shock</b>	31 (62)	0,62
Damage to a kid's tooth due to sweetened food	7 (14)	
Teeth have changed colour (discolouration)	12 (24)	

**Topic: Dental Trauma Incidents**

**Which are classified as dental trauma incidents?**

	F (%)	Mean
A child is hit by a ball in his face while playing, causing the child to have a scratch in the face	12 (24)	0,70
<b>A kid hit a swivel pillar causing his front tooth to break partially</b>	35 (70)	



Tooth pain when drinking/eating something cold	3 (6)	
<b>Topic : Causes of dental trauma</b>		
<b>What is the cause of trauma to the child's teeth?</b>		
	<b>F (%)</b>	<b>Mean</b>
<b>Children fall while playing</b>	26 (52)	
Children often consume and drinks cold foods	10 (20)	0,52
Don't know	14 (28)	
<b>Topic : Forms of Dental Trauma</b>		
<b>Which are the forms of tooth trauma in children?</b>		
	<b>F (%)</b>	<b>Mean</b>
<b>Teeth broken partially</b>	27 (54)	
Dental caries	14 (28)	0,54
Dental plaque	9 (18)	
<b>Topic : Understanding Deciduous and Permanent Teeth</b>		
<b>A 13th-years-old child has suffered an impact on his front tooth while playing. According to you, which tooth was traumatized?</b>		
	<b>F (%)</b>	<b>Mean</b>
<b>Permanent teeth</b>	30 (60)	
Deciduous teeth	0 (0)	0,60
Don't know	20 (40)	
<b>Topic : Predisposition Occurrence Factors of Trauma</b>		
<b>What factors can increase the risk of dental trauma in a child?</b>		
	<b>F (%)</b>	<b>Mean</b>
<b>Children with advanced front teeth (protrusi)</b>	39 (78)	
Children with short body	4 (8)	
Children with underweight/malnutrition	7 (14)	0,78
<b>Topic : The right time to seek first aid</b>		
<b>When is the right time to seek first aid when a child has a tooth trauma?</b>		
	<b>F (%)</b>	<b>Mean</b>
A few days later	13 (26)	
Tomorrow	10 (20)	0,54
<b>Immediately after the trauma</b>	27 (54)	
<b>Topic : Emergency intervention Intrusion</b>		
<b>What actions can be taken if a child's tooth appears to have entered the gums?</b>		
	<b>F (%)</b>	<b>Mean</b>
Tooth must be extracted	17 (34)	
<b>Tooth must be moved back to its position</b>	20 (40)	0,40
Leave it if it doesn't hurt	13 (26)	
<b>Topic : Emergency Action of Avulsion</b>		
<b>What can you do if your teeth fall to the ground?</b>		
	<b>F (%)</b>	<b>Mean</b>
<b>Washed with running water</b>	4 (8)	
Washed then cleaned with a brush	27 (54)	0,08
Leave it because the teeth are considered already dirty	19 (38)	
<b>Topic : Mouth Guard/ Face Fuard</b>		
<b>When a child's hobby is doing sports with a high risk of trauma, what can be used to prevent dental trauma in a child?</b>		



	F (%)	Mean
Don't need anything	5 (10)	0,06
<b>Mouth Guard/Face Guard</b>	3 (6)	
Dental braces	42 (84)	
<b>Topic : Consequences when dental trauma is not treated</b>		
<b>What happens to a child's teeth if they don't receive trauma treatment?</b>		
	F (%)	Mean
<b>Nekrosis teeth</b>	5 (10)	0,10
Shrinkage teeth	18 (36)	
Caries teeth	27 (54)	

Questionnaire answers with the lowest average were about the use of tooth or face protectors, suggesting that almost all mothers do not know the tooth-face protector. The use of dental beels is more popular among mothers and considers that are dental trauma treatments.

**Table III – Correlation of Age to Mother's Knowledge, Education to Mother's Knowledge, Working Status to Mother's Knowledge and Source of Health Information to Mother's Knowledge**

Variable	Mother's Knowledge						P value
	Good		Medium		Poor		
	n	%	n	%	n	%	
<b>Age (years)</b>							0,151
25 - 35	1	2	7	14	8	16	
36 - 45	1	2	13	26	20	40	
<b>Education</b>							0,258
Junior High School	0	0	6	12	10	20	
Senior High School	0	0	9	18	10	20	
Bachelor	2	4	5	10	8	16	
<b>Working Status</b>							0,113
Working	0	0	0	0	5	10	
Not working	2	4	20	40	23	46	
<b>Source of Health Information</b>							0,307
Hospital	0	0	7	14	10	20	
Mass Media	1	2	12	24	14	28	
Family/friend	1	2	1	2	4	8	
Total	2	4	20	40	28	56	

The above table III shows that more than half of the respondents (56%) have less knowledge about permanent tooth trauma in their children, mostly between 36 to 45 years old (40%), with a p value of 0.151 > 0.05 meaning that age has no significant correlation to the mother's knowledge of permanent dental trauma.

There is no significant influence between mother's knowledge of permanent tooth trauma and education with Chi-square statistical test results with p value 0.258 (>0.05) which means education has no significant relationship to knowledge. The results of the above study, in line with Hashim's study<sup>8</sup>, namely the mother's knowledge of dental trauma emergency management with 20 undergraduate-educated respondents, resulted that none of the mothers had sufficient knowledge of tooth trauma urgency management (especially dental avulsion) and campaigns were needed to raise knowledge about how to deal with emergency tooth injury. It was further stated that it was important to educate the public about the availability of dental emergency services after working hours to prevent any



delay in obtaining professional assistance in the case of dental trauma. Mahanna's study<sup>9</sup> also stated that there was no significant relationship between the variable of the parent's education level and the Traumatic Dental Injury (TDI) knowledge variable in the child. In order to help maintain the child's dental health, parents, as the person closest to the child, should know the appropriate first aid measures for the Traumatic Dental injury (TDI).

The working status of a mother does not indicate a significant influence on the mother's knowledge of permanent tooth trauma according to the table above. According to Putri's study<sup>10</sup>, the status of working or not working of a mother is related to the knowledge of the child's dental trauma. Some working mothers have better knowledge and communication than non-working mothers. Mothers with a higher education are usually working, while mothers with a low education are generally housewives or merchants.

Health information sources did not have a significant influence on the respondent's knowledge of permanent dental trauma ( $p$ -value = 0.307 ( $>0.05$ )). The results of this study show that the majority of health information sources come from both electronic and social media, meaning that the mass media plays an important role in providing information to the public. The mass media is able to provide the latest information about health to the public, so it can enhance mother's knowledge. However, treating Traumatic Dental Injury (TDI) requires not only adequate knowledge, but also adequate skills.

## DISCUSSION

Traumatic Dental Injury (TDI) is a new dental health problem that occurs in children in primary school. Epidemiological data show a significant variation in the number of tooth injuries occurring in preschool children. Moreover, some studies show that, in recent decades, the number of traumatic injuries occurring in preschool children has increased. One can experience tooth displacement, bone fractures and even tooth loss due to dental trauma. Consequences of traumatic injury to primates include changes in physical appearance, speech defects, and emotional impact, thereby affecting the quality of life of the child. Dental malformations such as larger incisional overjets, open bite, protrusion and lip incompetence can occur as a result of Traumatic Dental Injury (TDI) on the primary tooth<sup>11</sup>. It was further stated that the prevalence of traumatic tooth injury in children aged 3-5 years of age most commonly suffered from trauma occurred in the primary central insisive of the maxilla (54.9%) and the least traumatized tooth was the canine tooth.

Traumatic dental injury (TDI) is common in children and young adults and accounts for as much as 5% of all injuries. 25% of schoolchildren suffer dental trauma and 33% of adults suffer permanent tooth trauma, and most injuries occur before the age of 19 years old. The most common occurrence in primary teeth is luxation and crown fractures are more frequently for permanent teeth<sup>12</sup>. Children who suffer from a tooth injury or Traumatic Dental Injury (TDI) feel significantly more concerned about their appearance and daily life than children who receive treatment. Early interceptive orthodontic care has proven effective as a preventive measure. In addition, mouth guards and face shields can affect the frequency and intensity of traumatic dental injury (TDI) during physical activity<sup>5</sup>

Tooth trauma is unpredictable when it occurs so it is difficult to establish precise preventive measures and prognosis of injury. Certain injuries require frequent visits and/or inspections. In addition, the success rate of treatment can vary depending on the characteristics and conditions that caused the trauma<sup>6</sup>. Asnaashari's study<sup>13</sup> showed that the central tooth of the upper jaw was 84% of the teeth that suffered trauma. Trauma is most often caused by quarrels (56.5 per cent), followed by sports and games (30.4 per cent). The most common type of trauma is enamel-dentin fractures with or without pulp. The pulp and periapical area are the focus of most of the chosen treatment procedures. Factors that determine the prognosis include delayed treatment, affected areas, type and degree of trauma, and treatment options. Proper prevention and care plans to reduce suffering, extra costs, and wasted time for parents, patients, and healthcare providers.

Tooth trauma in children and adolescents is usually associated with damage to perioral soft tissue that causes bleeding and edema. This makes parents more anxious and encourages early emergency treatment. Poor oral health can affect a child's self-confidence. Children who have had a history of tooth pain including dental trauma, showing a lower sense of mistrust. Teeth pain is a common experience, but can affect the quality of life by causing functional problems and disruption of social interaction. Children's dental health can affect their normal daily performance and self-confidence. But aesthetic issues don't affect children's



self-confidence<sup>14</sup>. Parents and educators should have adequate education on how to prevent and manage emergency traumatic tooth injury in children. Early intervention should also be done to prevent further complications<sup>14</sup>. Research' Namdev<sup>15</sup> states that the knowledge and awareness of parents is not affected by the place of residence and age. Parents don't understand the procedure to do in an emergency. Even experience doesn't seem to improve parents' understanding of proper emergency handling procedures. This is due to the fact that most of the parents never get enough first aid information about dental trauma.

One is more susceptible to dental trauma due to inadequate knowledge and behavior. This may be because schools do not give priority to first aid training for dental trauma. Research finds that 95% of teachers have never received first-aid training for tooth trauma, and 35% have received information about tooth traumatism only through media and books. This is because dental first aid education is not a source of information for teachers so it does not become a priority in schools<sup>16</sup>. Fear and difficulty in working with the inner child are often an obstacle to examination and care. This situation is very worrying for children and parents. Tooth deformation can occur when there is severe damage to the primary tooth and/or alveolar bone. The child's ability to cope with an emergency is an important factor in the success of the treatment, in addition to the occultation of the child and the length of time the tooth is removed. The vitality of the periodontal ligament (PDL) and the maturity of the root determine the treatment options and the prognosis of the tooth. For that raising public awareness of first aid care for teeth is vital<sup>12</sup>.

Children spend a lot of time at school resulting in a high prevalence of dental trauma. This shows the important role of teachers in the treatment of child dental trauma in schools. For example, in the case of avulsion, performing a tooth transplant immediately or storing the teeth released in a proper storage medium can reduce the risk of bad complications such as ankylosis and root resorption accompanied by external inflammation. But most teachers don't choose to do a tooth transplant because they do not know how to handle it and prefer to be taken to the dentist<sup>17</sup>. It was also stated by Altamimi<sup>18</sup> that school teachers lacked knowledge about dental trauma management in Hail, Saudi Arabia and strongly recommended planning for tooth trauma education.

Evaluation of the trauma status on the pulp is crucial to establishing a starting point for further treatment. Young patient age factors or traumatic impacts can lead to inappropriate outcomes. Thermal or electrical stimulation is the basis of the most common sensitivity drops. CBCT (cone-beam computed tomography) can also provide useful information but must take into account the risks received. Tri-dimensional evaluation, periapical cases show different and more complex conditions. Children under the age of 10 years are three times more likely to be induced by radiation than people over 30 years old. Therefore, the use of CBCT is only for conditions where further imaging is necessary to obtain an accurate diagnosis, namely in cases of complex dentoalveolar trauma, such as a root fracture, in which communication of a fractured bone line with the oral cavity seems possible and for complications such as root resorption<sup>19</sup>.

The availability of health care should be enhanced through programmes involving parents in the treatment of the child's permanent dental trauma. Publicly accessible health services do not guarantee that the community around them has adequate knowledge of the management of dental trauma treatment in children because they are not included in health programmes. Governments and dental professional organizations should provide guidance on dental trauma management to the wider public, especially parents and teachers, because traumatic dental injury (TDI) can occur anywhere, even if the child is in the home. Information management treatment of permanent tooth trauma in a child should be done immediately, not just about tooth decay and tooth brushing techniques. Educational campaigns in the general public can be done with posters, brochures, and leaflets distributed and installed in schools, hospitals, and public places. Proper initial treatment of dental trauma will affect the prognosis of treatment.

Social media must provide positive information, which will encourage people to have positive attitudes, including mothers. On the contrary, if social media should provide negative information, then it can influence negative attitudes. Therefore, posting positive and accurate content on social media is crucial. Another source chosen by the mother is "googling". Googling means that you're looking for information using the Google search engine. Unfortunately, not all online information is accurate. Therefore, as individuals, especially stakeholders and healthcare providers, should provide accurate information through the Internet, especially about children's health. The use of social media as a major media influence is crucial to



providing health promotion and raising mother's level of knowledge <sup>20</sup>.

The use of print media educational material has become the most efficient method for the public because it is accessible and inexpensive. Unlike targeted communities based on higher education, the presence of educational or training participants is more effective and appropriate. Educational campaigns in mass media and mass media require no small amount of funding and often require support from abroad. But for participants who are already familiar with digital or online technology, it's not a problem. The use of campaigns that can cover a large area and relatively cost-free is through television media. The advantage of television media is that it can display visually so that it is more attractive to the audience. Further research is needed on the most efficient and effective management to obtain proper and prompt treatment of permanent dental trauma.

## CONCLUSION

This research suggests that strategic programmes are urgently needed to enhance parents's knowledge, especially of mothers, about Traumatic Dental Injury (TDI) and how to handle it. Besides, awareness will be the long-term consequences of untreated dental trauma. The strategic program must involve parents, school teachers, sports coaches, and the entire children's community.

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