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Teachers knowledge related to dental trauma management on primary school students in Medan

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Abstract

Teachers have an important role in dealing with dental trauma on children, because the trauma occurred most frequently at schools. The purpose of this study is to measure the mean score of knowledge before and after dental education and the difference in mean score of teachers' knowledge between Public and Private Primary School in Medan on handling trauma on children's teeth. The study was an experimental studies, pre and posttest group design; 50 Public and 53 Private Primary School teachers were participated. The knowledge score was measured using questionnaire before and after giving dental education with the material on the definition and types of trauma, effects of trauma, the handling of the fractured tooth, tooth dislocation, avulsed teeth and soft tissue injuries. Data were analyzed using Wilcoxon and Mann Whitney test. The results showed a mean score of initial knowledge of public primary school teachers on handling trauma on children's teeth was 1.70 ± 1.03 which increased after being given education to 5.86 ± 0.95 . Statistical analysis showed a significant difference between the scores of knowledge before and after education ($p = 0.000$). Similar results were shown in the mean score of the initial knowledge of private primary schools teachers at 1.72 ± 1.46 and increased after being given education, to be 5.06 ± 1.48 . The results also showed a statistically significant difference between the scores of knowledge before and after education ($p = 0.000$). The results showed a statistically significant difference between teachers' knowledge on public and private primary school teachers ($p = 0.037$). Dental education on dental trauma on children increased the knowledge of the teachers, therefore teachers need to be equipped with basic knowledge about handling of trauma on children's teeth to deal with cases of trauma that often occurred at schools.

Keywords: Teacher, dental trauma, primary school students

Introduction

Dental trauma is a lesion that is conflicted on teeth and supporting tissues surrounding it caused by a hard impact on teeth (Leterier, 2016) [1]. Dental trauma is often found in children, where children aged 7-12 is a time where they are easily inflicted with dental trauma. Children aged 7 – 12 years old is very active in doing outdoor activities, while their motor coordination is far from perfect (Parakh, 2015) [2].

The traumatic prevalence on children's teeth varies between countries. In a study by Dua R and Sharma S in India, in 880 children aged 7 – 12, 37,5 percent has experienced dental trauma from falling. Dental trauma generally implicates upper central incisive.

WHO classified oral tissue breakdown in four outline involving damage in hard tissues of teeth and pulp; damage in hard tissues of teeth, pulp and alveolar bone; damage in periodontal tissues; and damage on gums or oral soft tissues.

1. Damage in hard tissues of teeth and pulp are divided as follow

- Enamel infraction, imperfect fracture on enamel without loss of teeth structure horizontally or vertically.
- Enamel fracture, fracture involving only enamel.
- Uncomplicated crown fracture, crown fracture that extends to enamel and dentin without pulp involvement.
- Complicated crown fracture, fracture that involves enamel, dentin and pulp.
- Uncomplicated crown-root fracture, fracture that involves enamel, dentin, and cementum without damaging pulp tissue.
- Complicated crown root fracture, fracture involving enamel, dentin, cementum and the pulp.

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- g. Root fracture, fracture involving dentin, cementum, and pulp.

2. Damage on periodontal tissues are divided as follow

- a. Concussion, trauma that involves tooth supporting tissues and causes sensitivity on tooth by palpation and percussion without mobility or position change of tooth.
- b. Sub luxation, mobility of teeth without position change caused by trauma in teeth supporting tissues.
- c. Lateral luxation, teeth position change caused by movement towards labial, palatal or lateral direction, this causes damage or fracture in alveolar socket of the involved teeth.
- d. Partial displacement, part of the teeth moves out of the socket, extrusion causes the crown appears to be longer.
- e. Intrusion luxation, teeth movement into the alveolar bone, causing damage or fracture of alveolar socket. This causes the crown appears to be shorter.
- f. Avulsion (lost or extra articulation), the whole tooth comes off the socket.

3. Loss of supporting bone tissue

- a. Communion of the maxillary alveolar socket is damage and compression of alveolar socket of the upper jaw. This can be seen in intrusion and lateral luxation.
- b. Communion of the mandibular alveolar socket is damage and compression from the lower jaw alveolar socket. This can be seen in intrusion and lateral luxation.
- c. Maxilla alveolar socket fracture is alveolar bone fracture on the upper jaw that involves labial or lingual socket wall, outlined by the facial or lingual part of the socket wall.
- d. Mandible alveolar socket fracture is alveolar bone fracture on the lower jaw that involves labial or lingual socket wall, outlined by the facial or lingual part of the socket wall.
- e. Maxilla alveolar process fracture is a fracture involving alveolar process with or without socket involvement in the upper jaw.
- f. Maxilla fracture is fracture on the upper jaw involving alveolar process, with or without tooth socket involvement.
- g. Mandibula Fracture is fracture on the lower jaw involving alveolar process, with or without tooth socket involvement.

4. Damage on gingiva or oral soft tissues are divided as follow

- a. Laceration is an open wound on soft tissue caused by sharp objects like knives or glass shards. Here the epithelium and sub epithelium are torned.
- b. Contusion is a bruise usually caused by dull objects and causes bleeding on the sub mucosa without it torned.
- c. Abrasion wound, wound on the superficial area caused by friction or scratches of an object that the skin surface bleeds or blistered. (Pagadala and Tadikonda, 2015) [3].

Effects caused by dental trauma on children is very varied depending on the size and the location of collision, starting from a lip bruise, gactures of one thirds teeth crown to jaw fracture. Damage on deciduous teeth can cause damage on permanent teeth. Complication after trauma on teeth can happen as example, discoloration on the crown, ankyloses, root resorption and tooth lost. Dental trauma not only gives negative impact on pathological level, but also in a psychological level. Dental trauma can affect a child's quality

of life, they will feel their self-esteem lowered because of their appearance that they won't smile and speak less (Dua and Sharma, 2012) [4].

Dental trauma on children often happens in school, because at school they play or do activities with friends, sometimes involving pushing one another or to another objects. At school, children also tends to be in a confined space in a long time, and this may cause accidents (Antunes, 2015) [5].

Dental trauma on children has to be treated precisely and immediately. The earlier the dental trauma is treated, the better it's prognosis become. That is why teachers have an important role on handling dental trauma on children. Teachers are the closest person for children experiencing dental trauma on teeth at school (Pithon *et al*, 2014) [6].

Handling dental trauma on children, the knowledge teachers have on first aid towards it is very essential, because if they fail to do first aids it is always correlated to inadequate knowledge of someone on handling dental trauma (Antunes, 2015) [5].

Unfortunately the knowledge primary school teachers have on dental trauma and how to treat it is very inadequate. A study done in Brazil found that 48,2% of elementary school teachers do not have enough knowledge of dental trauma. That is why education and training in dental trauma is needed for elementary school students (Pithon *et al*, 2014) [6]. In a study done by Israel, an increase on knowledge level is found after they are given a short education (Levin, Jeffet and Zadik, 2101) [7].

Base on these summary, the writer wants to do a study of knowledge level of Halat Public Primary School and Pertiwi Private Primary School teachers in Medan towards handling dental trauma on children before and after education. We hope this study will become an evaluation to the health of civilization and to educate elementary school teachers on increasing their knowledge of handling dental trauma on children.

Objective

The purpose of this study is to measure the mean score of knowledge before and after dental education and the difference in mean score of teachers' knowledge between Public and Private Primary School in Medan on handling trauma on children's teeth.

Material and Methods

The study was an experimental studies, pre and posttest group design, by measuring the knowledge score before and after giving dental education using questionnaire. Population of this study was all of Halat Public Primary School and Pertiwi Private Primary School teachers. Sample of this study was 50 Halat Public and 53 Pertiwi Private Primary School teachers. Knowledge data before education is collected by questionnaires that are filled in by the teachers. Education is done afterwards using slides containing the material on the definition and types of trauma, effects of trauma, the handling of the fractured tooth, tooth dislocation, avulsed teeth and soft tissue injuries. Models are used to show teachers of the anatomy of teeth to differ tooth crown and root. Afterwards, another questionnaire is handed out to collect knowledge data after education.

Knowledge of teacher in handling dental trauma on children of SD Swasta Pertiwi can be measured through 7 questions. A right question will earn 1 point; if it is wrong, then the score is 0. So the highest score of 7 questions given is 7. The score is the categorized in adequate, inadequate and excellent

knowledge. According to Arikunto (2006), the excellent category is earned when the respondent scores $\geq 75\%$ of the highest score (6-7), adequate is if the respondent scores 56%-

74% of the highest score (4-5), and inadequate is when the respondent scores $\leq 55\%$ of the highest score (0-3).

Table 1: Assessment scoring

No.	Question	Right answer (score = 1)
1	Teachers' action on cracked teeth	Bring the child to a dentist immediately
2	Teachers' action of fractured teeth	Try to find the fractured portion and go to the dentist
3	Teachers' action of teeth disposition	Try to place the teeth back in position and go to the dentist
4	Teacher' action of teeth pulled out of the socket	Try to look for loss teeth, clean it and insert it back to the gingiva and go to the dentist.
5	Teachers' action of cleaning teeth	Cleans the teeth in running water
6	How to hold a teeth out of the socket	Crown of teeth
7	Teachers' action if the lip is ripped.	Cleaning and putting pressure on the wound with a gauze and bring the child to the dentist

Procedure

1. Before education is done, researcher will collect data using a questionnaire of how to handle dental trauma on children, and it will be answered by the teachers (data baseline / before education).
2. Afterwards, education is done using a projector and model. Education is given by a slide containing definitions of dental trauma, the effects, types of trauma and how to handle it. The model is used to show teachers the anatomy of teeth to differ crown and root.
3. After education is done, they are given another questionnaire of how to handle dental trauma on children (data after education)
4. Then the data collected is analyzed by computer to see the level of teachers' understanding and how to handle dental trauma on children. The data were analyzed using Wilcoxon and Mann Whitney test.

Results and Discussion

Based on knowledge category, before the education, the teachers are in the inadequate category (94, 17%) with excellent category on 1, 94%. While the knowledge category of teachers after education, teachers that has excellent knowledge increased as much as 59, 22% and inadequate on 5, 82% (Table 2). This result shows that education will increase the teachers' knowledge on handling dental trauma on children.

Table 2: Category of Knowledge Before and after Education on Handling Trauma on Children's Teeth of Halat Public and Pertiwi Private Primary School

Teachers' Knowledge Category	Before		After	
	n	%	n	%
Excellent : $\geq 76\%$	2	1,94	61	59,22
Adequate : 54-75%	4	3,88	36	34,95
Inadequate : $\leq 55\%$	97	94,17	6	5,82

Statistical analysis showed there was no significant difference of initial knowledge between public and private primary school teachers ($p=0,946$) (Table 3). This shows that public and private primary schools teachers have similar baseline of knowledge regarding the subject.

Table 3: The Mean Score of Knowledge Before Education on Handling Trauma on Children's Teeth of Halat Public and Pertiwi Private Primary School

Primary School	n	Average Score Before Education	Statistical Analysis
Halat Public	50	1,70 \pm 1,03	0,946
Pertiwi Private	53	1,72 \pm 1,46	

The results showed a mean score of initial knowledge of Halat public primary school teachers on handling trauma on children's teeth was 1,70 \pm 1,03 which increased after being given education to 5,86 \pm 0,95. Statistical analysis showed a significant difference between the scores of knowledge before and after education ($p = 0,000$). Similar results were shown in the mean score of the initial knowledge of Pertiwi private primary schools teachers at 1,72 \pm 1,46 and increased after being given education, to be 5,06 \pm 1,48. The results also showed a statistically significant difference between the scores of knowledge before and after education ($p = 0,000$) (Table 4). This shows that dental education on teachers has a significant influence on how to handle dental trauma on children.

Table 4: The Mean Score of Knowledge Before and After Education on Handling Trauma on Children's Teeth of Halat Public and Pertiwi Private Primary School

Primary School	n	Average Score		Statistical Analysis
		Before	After	
Halat Public	50	1,70 \pm 1,03	5,86 \pm 0,95	0,000
Pertiwi Private	53	1,72 \pm 1,46	5,06 \pm 1,48	0,000

The difference of mean score of knowledge before and after education on handling trauma on children's teeth of Halat public primary school teachers was 4,16 \pm 1,23, meanwhile of Pertiwi private primary school was 3,34 \pm 1,83. The results show a statistically significant difference between teachers' knowledge between public and private primary school teachers ($p = 0,037$) (Table 5). This shows that teachers at public primary school understand the content of dental education better than private primary school, this may be due to teachers in public primary school through a series of tests before being accepted to work there so the quality of it's teachers are better than in the private school.

Table 5: The Diffrence of Mean Score of Knowledge Before and After Education on Handling Trauma on Children's Teeth between Halat Public and Pertiwi Private Primary School

Primary School	The average difference	Statistical Analysis
Halat Public	4,16 \pm 1,23	0,037
Pertiwi Private	3,34 \pm 1,83	

Conclusion

There was a significant difference between the scores of knowledge before and after education on handling trauma on children's teeth of public and private primary school teachers in Medan ($p=0,000$). It can be concluded that dental education on dental trauma on children increased the knowledge of the teachers, therefore teachers need to be equipped with basic

knowledge about handling of trauma on children's teeth to deal with cases of trauma that often occurred at schools.

There was a significant difference between teachers' knowledge between public and private primary school teachers ($p = 0,037$). It can be concluded that teachers at public primary school understand the content of dental education better than private primary school.

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