

Knowledge and Perceived Practices on Traumatic Dental Injury (TDI) Management among Primary Caregivers in a Selected Elementary School in Silang, Cavite

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Abstract

Traumatic Dental Injuries (TDI) are unpredictable occurrences and are considered a health problem in a child's life because of their negative impact. Most TDI incidences happen when a child is at home or school; thus, it is essential that those who are in close contact with them know how to properly manage it. A selected College of Dentistry Clinic at a private sectarian university in Cavite conducted a study to assess primary caregivers' knowledge and perceived practices of primary caregivers on TDI management. The research study included 120 primary caregivers of pupils enrolled in Grades 1-6 in a private Elementary School in Cavite. This quantitative descriptive research design, correlational, and comparative design. A dichotomous scale was used to determine the level of knowledge, and a 4-point Likert scale for the extent of perceived practices. The statistical treatments used included the mean and standard deviation, Mann-Whitney Test U Test, Dwass-Steel-Critchlow-Fligner test, and one-way non-parametric ANOVA (Kruskal-Wallis). Results led researchers to come up with the following conclusions: (1) the level of knowledge of the primary caregivers are high; (2) the extent of the perceived practices of the primary caregivers are good; (3) knowledge and perceived practices on TDI management are significantly correlated, which means that the practices of the primary caregivers are dependent on the prior knowledge they acquired on TDI management; (4) a significant difference was found in the knowledge of primary caregivers considering their sex; (5) a significant difference was found in the knowledge of primary caregivers that have a Masters or Doctoral Degree.

Keywords: Traumatic dental injury, TDI management, primary caregivers, avulsion, reimplantation

INTRODUCTION

According to the Australian Dental Journal, Traumatic Dental Injury (TDI) is defined as “an impact injury to the teeth and/or other hard and soft tissues within and around the vicinity of the mouth and oral cavity.” (Lam, 2016). One of the major health problems that a child can encounter is TDI. Because of its frequency, it can affect economic productivity and quality of life. TDI is a significant public health issue (Lam, 2016). This has a negative impact on their well-being.

Avulsion of teeth is reported to be experienced by a child at an early age which affects them physically, psychologically, and emotionally. Moreover, their academic performance and their family's financial aspects are affected as well. (Ain et al., 2016). TDI is not a disease but is an injury caused by different factors in life that is unavoidable and can happen without prior notice. Studies have shown that the negative effects of TDI on the well-being of young people may be higher than the cases of caries and periodontal disease. (Lam, 2016). According to epidemiologic reports, more than half of TDI occurs in or near the house, with a quarter occurring at school (Juneja et al., 2018). Hence, giving high importance to emergency management and the need for parents or teachers to be educated is necessary.

METHODOLOGY

This study will include primary caregivers of pupil's grades 1 to 6, ages 6-12, in an Elementary School in Cavite. The emphasis of this study will be on assessing knowledge and perceived practices, excluding primary caregivers' attitudes toward TDI management. The respondents are composed of parents, guardians, and teachers in an Elementary School in Cavite. The elementary school is a private co-educational Christian university located in Puting Kahoy, Silang Cavite, Philippines. This study aims to assess the level of knowledge and perceived practices of primary caregivers on TDI management. Also, it aims to determine the correlation of their knowledge and perceived practices on TDI management.

This study utilized the quantitative research method. This method uses the information gathered from surveys, polls, and questionnaires to highlight the mathematical, numerical, or statistical analysis of data. It also tries to explain a specific phenomenon by utilizing the numerical data that was collected and generalizing it across clusters of people (Babbins and Brians, 2020). In this study, the data was gathered through the online surveys prepared by the researchers.

A descriptive design was utilized, which studies in nature the individuals, events, or conditions that it purposes to describe. This design has specific goals and research questions and uses observation of behaviors or data from surveys as methods for data collection (Siedlecki, 2020). This design was chosen to meet the objectives of the study, which is to determine and assess the knowledge and perceived practices of the primary caregivers of children who experienced a TDI. A correlational design was also used, in which the relationship between two variables was examined without the variables being changed (McCombes, 2019). This design was chosen to determine if there is a positive correlation between the knowledge and perceived practices of primary caregivers in managing an emergency TDI. Furthermore, a comparative study design was used to emphasize the explanation of differences and similarities between two or more phenomena (Adiyia and Ashton, 2017). This design aims to determine if there is a significant difference in the knowledge and perceived practices of primary caregivers on TDI management considering their age, sex, educational attainment, and socioeconomic status.

Population and Sampling Technique

The respondents of this study were primary caregivers of pupils from Grades 1 to 6 in an Elementary Private School located at Cavite Province. A total of 120 primary caregivers who had

pupils enrolled in the year 2019-2020 participated in the study. A simple Random sampling technique was utilized in the selection of the respondents. This technique was used to extract a research sample from a larger population. Respondents were selected using chance or random numbers, and each subject had an equal chance of being selected (Thomas, 2020).

Table 1: The Demographic Profiles of the Respondents

	Group	Frequency	%
AGE	20-29	14	11.7
	30-39	38	31.7
	40-49	55	45.8
	50-59	13	10.8
SEX	Female	74	61.7
	Male	46	38.3
EDUCATIONAL ATTAINMENT	Less than HS and HS Diploma	8	6.7
	Bachelor's Degree	70	58.3
	Master's Degree and Doctoral Degree	42	35
HOUSEHOLD INCOME	Less than PhP 10,957 and between PhP 10,957 to PhP 21,914	22	18.3
	Between PhP 21,914 to PhP 43,828	46	38.3
	Between PhP 43,828 and PhP PhP 76,699	29	24.2
	Between PhP 76,699 to PhP 131,484 and above	23	19.2

Instrumentation

This study used online survey questionnaires to gather data. The set of questions was adapted from a journal published by (Quaranta, De Giglio, & Trerotoli, 2016b) and (Danko Bakarčić, Sandra Hrvatin, Mia Maroević, and Nataša Ivančić Jokić, 2017). Some questions from the journal were revised by the researchers, and several questions were also added to make them more appropriate for the respondents.

The questionnaire had two parts: Part I included the demographics and asked for their name (this is optional), age, sex, educational level, and household income. Part II asked more specific questions about what the respondents would do if they encountered TDI. It asked what actions they would do immediately following the accident; if they would consider seeking dental help immediately after the accident, what they would do to clean a dirty, avulsed tooth, what solution to use to wash the tooth with, what medium to store the tooth in when transporting it to the dentist, and how urgent they think is an incident wherein a permanent tooth gets avulsed. This part of the questionnaire provided options where the respondents could choose from.

Knowledge of Traumatic Dental Injury Scale

A two-point scale or dichotomous scale was used (Yes or No) to assess their level of knowledge on TDI management, and a four-point Likert scale was used (Strongly Agree, Agree, Disagree, Strongly Disagree) to assess their perceived practices on TDI management.

The researchers did the pilot study twice since the statistical reliability of the first study did not reach the certain level of reliability required. Thus, the questionnaire on the second pilot study was revised by incorporating illustrations, graphic designs, reducing the set of questions, and removing one of the variables, mainly the attitude on TDI management.

The instrument was prepared in the English language by the researchers, and the Filipino translation was done twice by a professor who is considered an expert, having a degree in Education, majoring in Filipino. For the sake of primary caregivers who only speak Filipino, the instrument was crafted in English with a Filipino translation.

Table 2: Reliability Statistics for Item Questionnaire

Variable	Cronbach's Alpha	N of items
Knowledge of Primary Caregivers on TDI Management	0.627	6
Perceived Practices of Primary Caregivers on TDI Management	0.621	7

Based on the results of the pilot study, the questions assessing the knowledge and perceived practices of primary caregivers on TDI management had a Cronbach's Alpha score of 0.627 and 0.621, respectively. These values are greater than 0.6, which shows that there is a certain level of reliability acquired from the items of the questionnaire that was prepared.

Table 3: Scoring System for Knowledge and Perceived Practices

Response Scale	Mean Interval	Interpretation
1	4.00-6.00	High
0	1.00-3.00	Low

Data Analysis

The research instrument was submitted for approval and was validated by a group of experts. An application form was passed to the AUP Ethics Review Board (ERB) for ethical considerations. Upon approval for the survey to be conducted, a pilot study was conducted on a group of 30 respondents to ensure the validity and reliability of the questionnaires. After the pilot study, the online survey questionnaire was finalized. The simple random sampling technique was used in choosing the respondents by creating a sample population from all the primary caregivers in the given elementary school in Cavite. A total of 120 respondents answered the online survey questionnaire. The researchers made certain that the respondents were able to give their consent before answering, which stated the purpose of the study, the benefits of the respondents from the study, their right to withdraw their participation, and assurance that the information they have given to the researchers will be confidential. The information was encoded, analyzed, and validated by a statistician.

Statistical Analysis of Data

The collected data were statistically analyzed using various tests. Mean, and standard deviation, Mann-Whitney Test U test, Dwass-Steel-Critchlow-Fligner test, and one-way non-parametric ANOVA (Kruskal-Wallis) were among the statistical treatments used. The level of knowledge and perceived practices of primary caregivers on TDI management were determined by calculating the mean and standard deviation.

Mann-Whitney U test showed whether a significant difference exists in the level of knowledge and perceived practices of primary caregivers considering their sex. One-way non-parametric ANOVA (Kruskal-Wallis) showed whether a significant difference exists in the level of knowledge and perceived practices of primary caregivers considering their age, educational attainment, and socioeconomic status. Moreover, Dwass-Steel-Critchlow-Fligner test was used to determine the comparison on educational attainment whether a significant difference exists among the different groups. Spearman's rho test showed if there is a significant relationship exists between knowledge of TDI management and perceived practices of TDI management.

Ethical Considerations

The researchers complied with all the requirements given by the AUP Ethics Review Board (ERB). The names of the respondents were given an equivalent number which was assigned by the researchers. The survey questionnaire form only included their assigned numbers. The statistician and co-author of the research were blinded to the respondents' names. The online forms taken from the survey were kept in a Google form where only the researchers had access.

RESULTS AND DISCUSSION

The statistical analysis and interpretation of the data collected to analyze primary caregivers' knowledge and perceived practices on TDI at a private elementary school in the Philippines are discussed in this chapter.

Knowledge of Primary Caregivers on Traumatic Dental Injury Management

Table 4 shows the frequency and percentage in response per question, which translates to the extent of knowledge of primary caregivers on TDI management. The level of knowledge of the primary caregivers showed a grand mean score of 4.03 (SD: 1.10). The results were interpreted as *high*. The majority of primary caregivers can identify a TDI, showing a percentage of 86.7%, which is close to Quaranta et al. (2016), who found that more than half of the respondents reported knowing what a TDI is. A nearly identical study in Kolkota found that half of the school teachers correctly identified a TDI, specifically a damaged front tooth, on a 9-year-old child (Kaul et al., 2017).

Table 4: Knowledge of Primary Care Givers on Traumatic Dental Injury Management

Descriptive Statistics

	N	Mean	Std. Deviation
Knowledge	120	4.03	1.10

Question 1: A cracked tooth without bleeding is still considered a TDI

	Frequency	Percent
0	16	13.3 %
1	104	86.7 %
Total	120	100.0

Question 2: The dentist is the first person to consult after a TDI.

	Frequency	Percent
0	24	20.0 %
1	96	80.0 %
Total	120	100.0

Question 3: The best time to intervene in case of TDI is within the first hour following the incident.

	Frequency	Percent
0	20	16.7 %
1	100	83.3 %
Total	120	100.0

Question 4: An avulsed tooth can be put back and repositioned

	Frequency	Percent
0	57	47.5 %
1	63	52.5 %
Total	120	100.0

Question 5: Washing the tooth with a disinfectant kills the cells of a tooth.

	Frequency	Percent
0	63	52.5 %
1	57	47.5 %
Total	120	100.0

Question 6: There is no ideal medium of storage for an avulsed tooth.

	Frequency	Percent
0	57	47.5 %
1	63	52.5 %
Total	120	100.0

Table 5: Extent of Participants' Communication

Item No.	Items	Mean	SD	Scale	Verbal Interpretation
1	Family members are satisfied with how they communicate with each other.	3.61	1.16	Agree	High
2	Family members are very good listeners.	3.15	1.28	Undecided	Moderate
3	Family members express affection to each other.	3.63	1.33	Agree	High
4	Family members are involved in each other's lives.	3.65	1.11	Agree	High
5	Family members can calmly discuss problems with each other.	2.95	1.34	Undecided	Moderate
Grand Mean		3.398	1.244		Moderate

Furthermore, the findings revealed that 83.3% of the primary caregivers understand the importance of obtaining urgent medical attention within the first hour after an incident. This contrasted with the findings of Świątkowska et al. (2018), who found that the majority of respondents were unaware of the '60-minute golden time' required to intervene following a TDI incident.

On question #2, 80% of them wanted to visit the dentist as the first person following a TDI. This was consistent with Kaul et al. (2017) and Qauranta et al. (2016) results, which showed they would contact the dentist after TDI.

However, results showed that 47.5% are not aware that an avulsed tooth can be put back and repositioned after TDI. When it comes to washing the tooth after it has been avulsed, the majority of them, with a percentage of 52.5%, are also unaware that disinfectants will destroy the tooth's cells and that there should be an ideal medium for storing an avulsed tooth. These results are close to those of (Quaranta et al. (2016), wherein half of the respondents use water and the other half use antiseptic in washing an avulsed tooth. Also, the findings of Kaul et al. (2017) discovered that majority of the respondents were unaware of the correct method to store an avulsed tooth.

Perceived Practices of Primary Caregivers on Traumatic Dental Injury Management

Table 6 shows the perceived practices of primary caregivers on TDI management with a grand mean of 2.74 (SD: 0.437). The results were interpreted as *good*. This means that parents have good knowledge but not enough because it is not the highest verbal interpretation.

Results also showed that the majority of them would look for the avulsed tooth (mean: 2.98; SD: 0.907) and would not throw away an avulsed tooth (mean: 2.80; SD: 1.04) after TDI, which agrees with the findings of Junges et al., (2015); Kaul et al., (2017); Nikam et al., (2014)

With regards to correct handling of an avulsed tooth, most of them would hold the crown, not the root or the complete extruded tooth (mean:2.82; SD: 0.944; mean: 3.02; SD: 0.917). With this in mind, their perceived practices result in less damage to the periodontal ligament and a lower risk complication of tooth complications (Świątkowska et al., 2018).

In disinfecting the avulsed tooth, the majority of the primary caregivers (mean: 2.95; SD: 1.00) prefer to clean the tooth using water, which is consistent with the findings of Kaul et al. (2017) and Quaranta et al. (2016). However, many of them prefer to clean the avulsed tooth with a cloth (mean:2.50; SD:1.02), indicating that they are disinfecting the infected avulsed tooth incorrectly. When it came to moving the avulsed tooth from home to the dental clinic, many of them preferred to hold it in a cloth, handkerchief, or piece of paper (mean:2.12; SD: 0.963). It simply indicates that they are oblivious to the correct storage medium. This was in line with the findings of Kaul et al. (2017), who found that many of them didn't know how to handle an avulsed tooth properly. Furthermore, only a small percentage of them knew that milk was the best storage option.

Table 6: Perceived Practices of Primary Care Givers on Traumatic Dental Injury Management

	Mean	SD	VI
1. I will look for the avulsed tooth after traumatic dental injury.	2.98	0.907	Good
2. I will throw away an avulsed tooth after traumatic dental injury.	2.80	1.04	Good
3. I will clean the avulsed tooth by wiping it with cloth	2.50	1.02	Poor
4. I will clean the avulsed tooth with water	2.95	1.00	Good
5. I will keep the avulsed tooth in a cloth, handkerchief, or paper while transporting from home to dental clinic.	2.12	0.963	Poor
6. I will pick the avulsed tooth by the crown.	2.82	0.944	Good
7. I will pick the avulsed tooth by the root.	3.02	0.917	Good
OVERALL MEAN for the Perceived Practices of Primary Care Givers on TDI Management	2.74	0.437	Good

Correlation of Knowledge and Perceived Practices of Primary Caregivers on Traumatic Dental Injury Management

Table 7 shows the correlation of the primary caregivers' knowledge and perceived practices on TDI management, which shows a p-value of 0.011. This reveals that there is a significant correlation between the two variables, their knowledge, which is the independent variable, and their perceived practices, the dependent variable. Based on these results, it can be concluded that the primary caregivers who have a certain level of knowledge on TDI management have better-perceived practices. Likewise, the primary caregivers who have little to no knowledge of TDI management will show poor practices as well.

A study was done by Gaffar et al. (2021) agrees with this, as their results showed that the respondents' ability to manage TDI was closely associated with their previous knowledge of TDI management.

Table 7: Correlation of Knowledge and Perceived Practices of Primary Caregivers on TDI Management

Variable		Knowledge	Practice
Knowledge of Primary Caregivers on TDI Management	Spearman's rho	-	-
	p-value		
Perceived Practices of Primary Caregivers on TDI Management	Spearman's rho	0.232	-
	p-value	0.011	

The moderator variables were analyzed using their p-values. The level of significance is a p-value of 0.05, and the variables that have a higher p-value than 0.05 are considered to be not significant.

Knowledge and Perceived Practices of Primary Caregivers Association with Age

Table 8 shows that there is no significant difference in the knowledge and management practices of the respondents towards TDI considering their age since the p-values (0.996, 0.302) are higher than the level of significance.

The findings are in line with previous research (Sadri et al., 2020; Ozer et al., 2012), which also indicates that there are no substantial differences in TDI knowledge and practices among different age groups. This may be because there is not enough evidence to conclude that age is a decisive factor that has a significant impact on TDI knowledge and practices.

Therefore, the researchers have failed to reject the hypotheses that stated, "There is no significant difference in the knowledge of the primary caregivers in TDI management considering their age" and "There is no significant difference in the perceived practices of the primary caregiver in TDI considering their age."

Table 8: Knowledge and Perceived Practices of Primary Caregivers Association with their Age

	Group	Mean	p-value	VI
Knowledge	2	4.07		
	3	4.03	0.996	NS
	4	4.04		
	5	3.92		
Practice	2	2.57		
	3	2.74		
	4	2.76		
	5	2.82		

Knowledge and Perceived Practices of Primary Caregivers Association with Sex

Table 9 shows that there is a significant difference in the knowledge of the respondents towards TDI considering their sex due to the fact the p-values (0.019) are apparently within the level of

significance. The findings are consistent with previous research (Cheng et al., 2017, Al Saffan AD, 2018) where the disparity between males and females is statistically significant, for the reason that both parents have low knowledge in managing a TDI, but mothers have a bit of an edge compare to the father. Also, there is a deficiency of dental awareness on TDI management among parents but more so among fathers than mothers. Therefore, the researchers conclude that the hypothesis that stated, “There is no significant difference in the knowledge of the primary caregivers in TDI management considering their sex” is rejected.

Table 9: Knowledge and Perceived Practices of Primary Caregivers Association with their Sex

	Group	N	Mean	p-value	VI
Knowledge	0	46	4.13	0.019	S
	1	74	3.96		
Practice	0	46	2.80	0.123	NS
	1	75	2.70		

Table 10: Independent Sample t-test for Difference of Thriving Quotient Between Male and Female

	Gender		t	P	VI
	Male M (SD)	Female M (SD)			
Engaged Learning Academic Determination Positive Perspective Diverse Citizenship Social Connectedness	3.1 (0.94)	2.9(0.86)	2.601	0.158	NS
	3.5 (0.92)	3.4 (0.84)	1.956	0.172	NS
	3.9 (0.84)	2.8 (0.91)	1.630	0.352	NS
	4.1 (0.65)	3.92 (0.64)	2.246	0.539	NS
	3.1 (0.87)	3.2 (0.85)	-2.076	0.711	NS

$P < .05$ M =Mean SD =Standard Deviation VI =Verbal Interpretation

NS = Not Significant S =Significant

Knowledge and Perceived Practices of Primary Caregivers Association with Educational Attainment

Table 11 depicts that there is a significant difference in the knowledge of the respondents towards TDI considering their educational attainment since the p-value (0.015) is lower than the level of significance between the respondents who have a Master's or Doctoral degree. This indicates that the primary caregivers who have a higher level of educational attainment have a higher level of knowledge on TDI management as compared to the primary caregivers who have a lower level of educational attainment.

The finding is consistent and supported by previous research that those with a high educational background think consciously that emergency or first aid measures should be taken when there is TDI in children (Parikh, 2017). Thus, the researchers conclude that the hypothesis that stated,

“There is no significant difference in the knowledge of primary caregivers on TDI management considering their educational attainment,” is rejected.

Table 11: Knowledge and Perceived Practices of Primary Caregivers Association with their Educational Attainment

	χ^2	df	p-value
Knowledge	2.82	3	0.420
Practice	2.29	3	0.515

	Group	N	Mean	p-value	VI
Knowledge	1	8	3.63	0.937	S
	2	70	3.84	0.386	
	3	42	4.40	0.015	
Practice	1	6	2.84	0.680	NS
	2	70	2.70	0.999	
	3	42	2.79	0.267	

Knowledge and Perceived Practices of Primary Caregivers Association with Socioeconomic Status

Table 12 reflects that there is no significant difference in the knowledge and perceived practices of the respondents towards TDI management considering their socioeconomic status since their p-values (0.471 0.515) are higher than the level of significance. Household income was used as a socioeconomic indicator but was not associated with the occurrence of the outcome. These findings are in disagreement with the data reported by Kumar et al. (2014), stating that children from families with high incomes have better oral health quality.

Therefore, the researchers have failed to reject the hypotheses stated that “There is no significant difference in the knowledge of primary caregivers in TDI management considering their socioeconomic status” and “There is no significant difference in the perceived practices of the primary caregivers in TDI management considering their socioeconomic status.”

Table 12: Knowledge and Perceived Practices of Primary Caregivers Association with their Socioeconomic Status

	Group	N	Mean	p-value	VI
Knowledge	1	22	3.73	0.471	NS
	2	46	4.09		
	3	29	4.14		
	4	23	4.04		
Practice	1	6	2.84	0.515	NS
	2	70	2.70		
	3	42	2.79		

CONCLUSION

The primary caregivers have shown to have high knowledge and good perceived practices towards TDI management. Based on the item on the questionnaire that scored very high, most of them are knowledgeable in identifying the teeth that are involved in this. However, their knowledge regarding the avulsion of teeth is relatively low. This is also true for their perceived practices, wherein their results showed that they do not know how to clean an avulsed tooth and where to store it during transportation to the dental clinic. These are very important for primary caregivers to know since these are important factors that contribute to the prognosis of an avulsed tooth. A significant difference was found between the knowledge of the primary caregivers and their sex

The researchers have also discovered that there is a significant difference between the primary caregiver's educational attainment and their knowledge towards TDI management, which indicates that the higher their educational background, the more they know about managing a TDI. However, this also conveys that primary caregivers with a low educational background will have less knowledge in dealing with TDI. All primary caregivers should have basic knowledge in TDI management since the prognosis of an avulsed tooth depends largely on the primary caregivers' initial treatment before going to the dentist.

The researchers would like to recommend to AUP-COD that the course curriculum of Community Dentistry III incorporate educating not just the children about their oral health but also educate the primary caregivers, specifically in TDI management. The dentists should be encouraged to take time in instructing primary caregivers regarding the nature of this and its management, even before it occurs. Researchers may conduct a new study regarding the primary caregivers' attitudes towards TDI management and consider the same factors (age, sex, educational attainment, socioeconomic status) to determine if there is a significant difference in its relationships. Another study may also be conducted to assess Knowledge, Attitude, and Perceived Practices of Primary Caregivers on TDI Management. A study conducted on a larger population of primary caregivers will yield greater statistical reliability and will form a more definite view from the results that will be gathered.

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