

# Factors Influencing Awareness of the Emergency Management of Dental Trauma in Children-A Comparison of Fathers and Mothers across Saudi Arabia

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Received: 29 Mar, 2018 | Accepted: 12 Apr, 2018 | Published: 19 Apr, 2018

**Citation:** Al Saffan AD (2018) Factors Influencing Awareness of the Emergency Management of Dental Trauma in Children-A Comparison of Fathers and Mothers across Saudi Arabia. *Int J Dent Oral Health* 4(2): [dx.doi.org/10.16966/2378-7090.253](http://dx.doi.org/10.16966/2378-7090.253)

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## Abstract

**Background and Aim:** The study aimed to assess differences between fathers and mothers on the knowledge of emergency management of dental trauma in four cities in the Kingdom of Saudi Arabia.

**Methodology:** A previously validated Arabic questionnaire for the assessment of dental trauma was administered to 396 sets of parents across four cities in Saudi Arabia. The total knowledge score was computed and the scores between fathers and mothers were compared using the paired t test. One-way ANOVA was used to compare differences in scores among cities. Separate linear regression models were plotted to determine factors that influenced the knowledge of fathers and mothers.

**Results:** Mothers had significantly greater knowledge about the management of traumatic dental injuries than fathers ( $p < 0.001$ ). Education level ( $p = 0.043$ ) and location ( $0.002$ ) were significantly associated with maternal knowledge. Size of the family was inversely associated ( $p = 0.022$ ) with paternal knowledge.

**Conclusion:** Mothers across Saudi Arabia are significantly better suited to manage traumatic dental injuries than fathers.

**Keywords:** Dental first aid; Emergency care; Traumatic dental injury

## Introduction

Traumatic Dental Injuries (TDI) is one of the most common causes of oral morbidity in children with reports that dental trauma is one of the greatest concerns for parents [1]. The prevalence of Traumatic Dental Injuries in Children is documented as being between 3-8% in Saudi Arabia [2,3].

The longer the treatment of a TDI is delayed the greater is the risk of de-vitalization of the tooth or bone resorption, especially given that tooth survival depends directly on the time of treatment [4]. First aid measures provided after severe dental trauma can greatly improve the chance of survival of the tooth and this has resulted in several studies documenting the awareness of teachers and parents towards the knowledge and awareness of the emergency management of traumatic dental injuries in children [3,5-7]. TDI also impact the oral health related quality of life (ORQoL) of families and data shows that sociodemographic factors such as gender of the parent and income of the family directly influence parental perception of OHRQoL [8,9]. There is however little data about the impact of the above mentioned factors in Saudi Arabia.

Boys have been reported to be four to six times more likely to suffer from traumatic dental injuries than girls [2]. This is particularly significant in a country like Saudi Arabia where boys are likely to spend more time outdoors with their fathers than their mothers [2,3]. While traditionally studies in other countries have focused on the mothers' knowledge, attitude and perception towards dental trauma [10,11], there is a need for a study in Saudi Arabia that takes into account the knowledge of the fathers as well.

A previous study was conducted in Saudi Arabia to compare between fathers and mothers perception of TDIs [12]. While the study found significant differences between fathers and mothers perception of TDIs 12. While the study found significant differences between fathers and mothers in their

knowledge of emergency management of TDI, the study was restricted to Riyadh city and called for data to be collected from across the country. The aim of the current study was to explore the factors influencing the knowledge and awareness of parents towards the emergency management of traumatic dental injuries.

## Methodology

### Ethical Approval

Ethical Approval for the study was obtained from the Institutional Review Board (IRB) of the Riyadh Elm University (RC/IRB/2018/919).

### Tool Used

A composite questionnaire based on combining two previously developed questionnaires [10,13] was developed and validated for use in a Saudi Population [12]. The questionnaire was digitalized and uploaded onto an online questionnaire platform (www.surveymonkey.com).

### Distribution of the questionnaire

Parents of students studying in schools in Riyadh, Dammam, Jeddah and AlAhsa were contacted via a letter sent home through the students. Students whose parents agreed to participate in the study were contacted through the school and asked to fill in the questionnaire online at a computer in the selected school. At total of 396 pairs of parents completed the study.

### Statistical Analyses

Descriptive statistics were tabulated and the Shapiro-Wilk test used to determine the normality of the knowledge score. The differences in knowledge between fathers and mothers

were compared using the paired t test. The one-way anova was used to compare the knowledge scores between regions. A regression model was developed using the knowledge score as a dependent variable and gender of parent, age, education monthly income and the number of children and location of the family as regressors. All statistical analyses were performed using the SPSS ver. 25 Data processing software (IBM corp. Armonk, NY).

## Results

A total of 396 pairs of parents (396 fathers and 396 mothers) completed the questionnaire. Of the 396 parents who responded most of the parents were from Jeddah (n=140) followed by Riyadh (n=120), Dammam (n=91) and AlAhsa (n=45). The age of the fathers ranged from 22 to 70 years (mean age 39.8 years SD ±9.67) whereas the age of the mothers ranged from 19-45 years (mean age (35.6 years SD ±10.39).

When the educational profile and family income of the families were assessed across the cities it was observed that we were able to obtain a similar demographic profile from each of the four cities (Table 1).

When the mean knowledge scores were compared between fathers and mothers it was observed that fathers' had significantly lower knowledge than mothers in all the regions studied. This difference was the lowest in Jeddah and the highest in AlAhsa (Table 2). It was however interesting that mothers in AlAhsa had the greatest mean knowledge score (3.57) while fathers in AlAhsa had the lowest knowledge score (1.66) among all the regions studied. When the knowledge scores were compared across the different region it was observed that significant differences in knowledge existed from region to region (Table 3). The differences were significant for both fathers and mothers.

**Table 1:** Demographic factors across the four cities studied.

		Location							
		Riyadh		Jeddah		Dammam		AlAhsa	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Education Father	Did not complete school	1	0.80%	3	2.10%	1	1.10%	1	2.20%
	Completed School	16	13.30%	33	23.60%	23	25.30%	14	31.10%
	Graduated College	88	73.30%	86	61.40%	63	69.20%	27	60.00%
	Post- graduate/ Professional Degree	15	12.50%	18	12.90%	4	4.40%	3	6.70%
Education Mother	Did not complete school	1	0.80%	1	0.70%	1	1.10%	1	2.20%
	Completed School	65	54.20%	46	32.90%	23	25.30%	14	31.10%
	Graduated College	47	39.20%	75	53.60%	63	69.20%	27	60.00%
	Post- graduate/ Profession al Degree	7	5.80%	18	12.90%	4	4.40%	3	6.70%
Monthly Income	Less than 4000SR	1	0.80%	10	7.10%	7	7.70%	4	8.90%
	4000-7000SR	8	6.70%	8	5.70%	7	7.70%	5	11.10%
	7000-15000 SR	48	40.00%	47	33.60%	31	34.10%	15	33.30%
	15000-25000 SR	40	33.30%	38	27.10%	16	17.60%	10	22.20%
	> 25000 SR	23	19.20%	37	26.40%	30	33.00%	11	24.40%

**Table 2:** Comparison of Knowledge Score between Fathers and Mothers.

Location		Mean	Std. Deviation	T*	Sig
Riyadh	Total Knowledge Score - Mothers	2.7917	1.35904	6.857	<0.001**
	Total Knowledge Score - Fathers	2.0083	1.24006		
Jeddah	Total Knowledge Score - Mothers	3.1571	1.60158	4.807	<0.001**
	Total Knowledge Score - Fathers	2.6643	1.64737		
Dammam	Total Knowledge Score - Mothers	3.3407	1.62084	5.557	<0.001**
	Total Knowledge Score - Fathers	2.4725	1.66227		
AlAhsa	Total Knowledge Score - Mothers	3.5778	1.58815	7.256	<0.001**
	Total Knowledge Score - Fathers	1.6667	1.2792		

\*Difference tested using Paired t test

\*\* Differences significant at p<0.05

**Table 3:** Comparison of Knowledge Score among the different region.

		Mean	Std. Deviation	F*	Sig
Total Knowledge Score - Mothers	Riyadh	2.7917	1.35904	3.803	0.010**
	Jeddah	3.1571	1.60158		
	Dammam	3.3407	1.62084		
	AlAhsa	3.5778	1.58815		
Total Knowledge Score - Fathers	Riyadh	2.0083	1.24006	7.345	<0.001**
	Jeddah	2.6643	1.64737		
	Dammam	2.4725	1.66227		
	AlAhsa	1.6667	1.2792		

\*Difference tested using One-Way ANOVA

\*\*Differences significant at p<0.05

**Table 4:** Regression model showing factors associated with the knowledge of mothers.

Model	Coefficients <sup>a</sup>				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.918	0.362		5.3	0
Education Mother	0.259	0.128	0.105	2.026	0.043
Location	0.243	0.079	0.154	3.079	0.002
Monthly Income	0.093	0.072	0.066	1.279	0.202
Number of Children	-0.019	0.035	-0.027	-0.545	0.586

a-Dependent Variable: Total Knowledge Score - Mothers

**Table 5:** Regression model showing the factors associated with the knowledge scores of fathers.

Model	Coefficients <sup>a</sup>				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	2.071	0.393		5.271	0
Location	-0.001	0.079	-0.001	-0.011	0.992
Monthly Income	0.04	0.077	0.029	0.524	0.6
Number of Children	-0.082	0.036	-0.119	-2.302	0.022
Education Father	0.221	0.144	0.086	1.534	0.126

a-Dependent Variable: Total Knowledge Score - Fathers

The linear regression model developed for the mothers showed that the mothers knowledge score was significantly influenced by the education level of the mother (p=0.043) and the location (p=0.002). For the fathers the regression model showed that these factors had no significant association for the above mentioned factors, instead the only significant factor was the number of children in the family, with fathers from families with fewer children having greater knowledge (Table 4,5).

## Discussion

The knowledge of the emergency management of dental trauma is an essential first aid tool [13,14]. There have been articles that have stressed the need to train emergency room personnel and even ambulance drivers and emergency medical technicians in dental first aid [9]. However, data shows that the time elapsed between the occurrence of the trauma and the

presentation at the emergency room was often more than one hour [9,15]. The first hour is considered as the “golden period” for the management of serious dental trauma, especially avulsion. It is therefore critical to ensure that parents are aware of the methods to render emergency dental care to the child [14,15].

The overall knowledge score in the study was poor, suggesting a poor knowledge of dental trauma among parents regardless of whether they were fathers or mothers. This is in keeping with other studies in the region that have shown poor knowledge about dental first aid [3]. This highlights the need for parental education in the region which has been stressed by previous studies.

Studies across the world have shown that geographic factors and urban-rural divides make a difference in the knowledge of parents towards dental care [16]. Saudi Arabia is a large country and previous studies have mainly focused on the capital city Riyadh, while little data is available from other regions [12]. The results of this study showed that while there were significant differences in the overall knowledge scores between regions. Furthermore the results showed that in a smaller city such as AlAhsa the difference in knowledge between fathers and mothers was likely to be greater than in a big city such as Riyadh.

There is evidence that in smaller families men tend to be more involved with the raising of children [1]. This could perhaps explain the fact that while family size was not a significant predictor of mothers’ knowledge it was significantly associated with the knowledge of the fathers.

Similarly there is evidence that education of the mother is more important than the education of the father when it comes to benefits to the children [16,17]. The fact that level of education was a significant predictor of the mothers’ knowledge but not that of the fathers’ bears evidence to this fact. The fact that location played an important role as a predictor of the mothers’ knowledge is interesting. The fact that mothers in semi-urban regions had a greater knowledge than those in urban regions suggests that when the mother is solely responsible for the care of the child there is a higher knowledge. Furthermore in mothers there was a positive association with family size which meant that unlike with fathers, mothers from large families had a greater knowledge than mothers with fewer children.

## Conclusion

The overall knowledge about the emergency management of dental trauma remains low across the different cities studied in this paper. Mothers had significantly greater knowledge than fathers in all the regions studied. However, there were different factors that influenced the knowledge scores of the fathers and the mothers.

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