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## Child Abuse &amp; Neglect



## Research article

## Knowledge, attitudes, and behaviors of dentists regarding child physical abuse in Jeddah, Saudi Arabia

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## ABSTRACT

A large proportion of child physical abuse cases go undocumented and unreported. Dentists can play an important role in identifying and reporting these cases, but little has been reported about this issue in Saudi Arabia. The aims of the study were to (1) assess dentists' knowledge of child physical abuse, (2) assess dentists' attitudes towards child physical abuse, and (3) assess the behaviors of dentists in identifying and reporting child physical abuse. A cross-sectional survey of pediatric dentists, pediatric dentistry residents, and dental interns practicing at all of the dental schools in Jeddah, Saudi Arabia was conducted using an anonymous, self-administered questionnaire. The participants in current study demonstrated insufficient knowledge of the signs and symptoms of child physical abuse, actions that should be taken in suspected cases, circumstances in which to report such cases, and the legal authorities to which they should be reported. The attitudes of participants towards detecting and reporting cases were generally positive. Only 11% of the participants had suspected a case of child abuse, and only 3% of them reported it. Lack of knowledge about referral procedures and fear of anger from family members were the main causes of underreporting. In conclusion, this study showed that dentists have insufficient knowledge about child physical abuse but positive attitudes towards their role in detecting and reporting it. This topic should be covered and emphasized in dental schools' curricula, and healthcare and academic institutes must have a clear protocol to be followed if a case of abuse is suspected.

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## 1. Introduction

The Centers for Disease Control and Prevention (CDC) define physical abuse against children as “the intentional use of physical force against a child that results in, or has the potential to result in, physical injury” (Leeb, Paulozzi, Melanson, Simon, & Arias, 2008). Child physical abuse has many physical, psychological, social, and economic consequences for children, societies, and countries (World Health Organization, 2002; World Health Organization, 2014; UNICEF). The World Health Organization (WHO) estimated that 23% of children worldwide were physically abused in 2014 (World Health Organization, 2014). In the USA, the Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) concluded that 58% of American children are exposed to physical abuse at some point in their lives (Sedlak, Mettenburg, & Basena, 2010). In Saudi Arabia, the

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2010 and 2012 annual reports of the Hospital-Based Child Maltreatment Registry indicated that 60% and 35.8%, respectively, of reported maltreatment cases involved physical abuse (National Family Safety Registry, 2010, 2012).

Unfortunately, a large proportion of child physical abuse cases go undocumented and unreported (Butchart & Harvey, 2006; Sonbol et al., 2012; UNICEF, 2009). This, in addition to the high prevalence of physical abuse against children and the incompleteness of official statistics that rely on complaints reported by social services, the police, and hospitals, has led countries to increasingly rely on reports from the education and health care sectors (UNICEF, 2009). In the USA, all workers who are in direct contact with children such as teachers, social workers, and health care providers are obligated to report any suspected abuse cases to the responsible child protection authority in their states, such as child protective services or a state's child abuse reporting hotline (Children's Bureau: Child Welfare Information Gateway, 2013). The European Union also mandated that workers who are in close contact with children must report suspected abuse cases to the responsible legal authorities in their countries (child protection agencies or police). In addition, more than half of these countries allow civilians to report such cases to the authorities, but without any legal obligation (European Union Agency for Fundamental Rights – report 1, 2015; European Union Agency for Fundamental Rights – report 2, 2015). In Jordan, only healthcare workers are obligated to report suspected abuse cases to the police or national child abuse hotline (Owais, Qudeimat, & Qodceih, 2009). In Saudi Arabia, in 2009, the Ministry of Social Affairs mandated that the education and healthcare sectors must report suspected child abuse cases to the police, which is the certified agency to receive and manage these reports. The police refer suspected abuse cases to a specialized committee that consists of multispecialty experts, including a pediatrician, a pediatric surgeon, a pediatric dentist, a psychiatrist, and a social worker, who will collectively investigate the case (Almuneef et al., 2012; Ministry of Social Affairs, 2013).

Dentists can play an important role in identifying and reporting child physical abuse cases. In fact, they may be the first personnel to notice physical abuse cases, as the most common symptoms are located within the regions that they routinely examine (UNICEF, 2009). Several studies have concluded that the most common regions of physical abuse are the face, head, neck, and mouth area (Cairns, Mok, & Welbury, 2005; Cléa, Ana Paula, Tânia, & Artênio, 2012; Da Fonseca, Feigal, & ten Bensele, 1992; Hibbard & Sanders, 2011; Newton, 2008). In Saudi Arabia, the few published reports on child abuse have corroborated global findings. For example, the Saudi Hospital-Based Child Maltreatment Registry found that the most common type of injury caused by physical child abuse is head trauma (National Family Safety Registry, 2012).

Because dentists are in a position that allows them to identify and report abuse cases, their knowledge and attitudes are essential factors in fulfilling their obligations (Hibbard & Sanders, 2011). Several studies have investigated the knowledge of and attitudes towards child physical abuse among dentists worldwide using self-administered questionnaires with narrative questions (Al-Dabaan, Newton, & Asimakopoulou, 2014; Azevedo et al., 2012; Harris, Welbury, & Cairns, 2013; Hashim & Al-Ani, 2013; Jordan, Welbury, Tilijak, & Cukovic-Bagic, 2012; Laud, Gizani, Maragkou, Welbury, & Papagiannoulis, 2013; Manea et al., 2007; Owais et al., 2009; Sonbol et al., 2012; Thomas, Straffon, & Inglehart, 2002; Thomas, Straffon, Inglehart, & Habil, 2006). Thomas et al. (2006) reported that dentists practicing at the University of Michigan (USA) had good knowledge about the circumstances in which abuse cases should be reported, but they had insufficient knowledge of the legal authorities to which such cases should be reported. Azevedo et al. (2012) reported that most dentists in southern Brazil were able to detect physical abuse cases; however, 76% of the cases were never reported. Furthermore, they concluded that dentists practicing in the academic domain were more likely to suspect and diagnose cases of abuse than those practicing in the private domain (Azevedo et al., 2012). A study of dentists in Jordan reported that, although 97% of the participants were able to identify child physical abuse, the majority stated that it was challenging to diagnose such cases and that their knowledge regarding the legal authority to which to report them was insufficient (Owais et al., 2009). When the participants' attitudes regarding their ability to detect the abuse cases were assessed, the majority of the participants claimed that they were able to diagnose cases of physical abuse, but 17% declared that they would not report abuse cases (Owais et al., 2009). A study in the United Arab Emirates (UAE) found that dental students' knowledge regarding child abuse was insufficient, although the majority of the students believed that it was their duty to report such cases (Hashim & Al-Ani, 2013). Al-Dabaan et al. (2014) used a web-based questionnaire distributed to all Saudi Dental Society (SDS) members to explore dentists' knowledge, attitudes, and behaviors regarding child abuse and neglect. The study observed good knowledge of the identification of different types of abuse and insufficient knowledge of the signs and symptoms of abuse (Al-Dabaan et al., 2014). Moreover, approximately 48% of the dentists stated that they were capable of diagnosing abuse cases, and 21% stated that they were capable of reporting such cases (Al-Dabaan et al., 2014).

To the best of our knowledge, few studies have been conducted in Saudi Arabia to investigate the recognition and reporting of child abuse by dentists. In 2014, Al Dabaan et al. performed research using a web-based questionnaire, but the low response rate (1.67%), limits the generalizability of the study's results. The aims of this study were to (1) assess dentists' knowledge of child physical abuse, (2) assess the attitudes of dentists towards child physical abuse, and (3) assess the behaviors of dentists in terms of identifying and reporting child physical abuse.

## 2. Materials and methods

### 2.1. Study design and participants

This descriptive cross sectional study was conducted in Jeddah, Saudi Arabia between September 2014 and May 2015. Jeddah is the second largest city in Saudi Arabia, housing over three millions people reside (Jeddah Municipality, 2016). The

target populations for the current study were pediatric dentists, pediatric dentistry residents (masters, PhD, and Saudi Board students), and dental interns practicing in all of the dental schools in Jeddah (King Abdulaziz University (KAUFD), Ibn Seena, Albatarji, and Alfarabi). Ethical approval was obtained from the Faculty of Dentistry at King Abdulaziz University. In addition, permission to conduct the survey was obtained from three private dental schools (Ibn Seena, Albatarji, and Alfarabi).

## 2.2. Data collection tool (questionnaire)

The data were collected using structured, self-administered questionnaires written in English (Appendix A). The questionnaire was based on three questionnaires used in previously published studies (Al-Dabaan et al., 2014; Owais et al., 2009; Sonbol et al., 2012), and more questions were added in order to collect additional information. Pediatric dentists with knowledge in the field reviewed the questionnaire.

The questionnaire was composed of four sections. The first section asked about the demographic and baseline characteristics of the participants. The second section contained 9 multiple-choice questions about child physical abuse. The third section assessed the attitudes of the participants towards child physical abuse using a five-point Likert scale and also asked for their opinions regarding the main causes of the underreporting of child physical abuse cases among dentists. The fourth section asked about the reporting behaviors of the participants and the actions they would take if they suspected that a child was facing physical abuse. The questionnaire evaluated institutional behaviors and asked if clear procedures to follow in cases of child physical abuse were available to dentists. A pilot study of the questionnaire was conducted by enrolling 20 fifth year dental students at KAUFD.

## 2.3. Statistical analysis

Median and interquartile ranges were reported for the continuous demographic and baseline characteristics of the participants. Frequencies and percentages were reported for the categorical demographic and baseline characteristics as well as the knowledge, attitudes, and behaviors of the participants.

Three knowledge questions and one behavior question were selected as the main outcomes for further testing. The knowledge questions examined knowledge of the signs and symptoms of child physical abuse, knowledge of the actions to be taken if child physical abuse is suspected, and knowledge of the circumstances in which dentists should report cases of child physical abuse. The behavior question asked if the participants had ever suspected a case of child physical abuse. The outcome variables were transformed into dichotomous variables. For each of the four questions, a score of 1 was assigned if the participant gave a correct answer, and a score of 0 was assigned if the participant gave an incorrect answer. Based on a previous study, 80% was used as the cut-off point between good and poor knowledge among the participants for each selected knowledge question (Al-Dabaan et al., 2014). The associations between knowledge, attitude, and behavior answers and the genders and levels of dental training of the participants were tested using the Chi-squared test and Fisher's exact test.

Four different stepwise logistic regression models (probability of removal = 0.1, probability of entrance = 0.05) were used to examine the associations between the different predictors and knowledge and behavior dichotomous outcome variables, adjusting for age, gender (reference group: male), level of dental training (reference group: general dental practitioners), practice type (reference group: governmental institute), and formal training received about child abuse (reference group: no previous training). The significance level was set at  $P < 0.05$  (two-tailed test). All of the statistical analyses were conducted using STATA Version 13.0 (StataCorp, College Station, TX, USA).

## 3. Results

### 3.1. Respondents' demographic and baseline characteristics

A total of 208 of 270 questionnaires were completed and returned, yielding a response rate of 77%. The demographic and baseline characteristics of the participants are presented in Table 1.

### 3.2. Knowledge of dentists about child physical abuse

The participants were asked different questions to assess their knowledge of child physical abuse. The first question asked about signs and symptoms of child physical abuse. Approximately 94%, 67%, 84%, and 74% of the participants agreed that bruises, broken teeth without reasonable causes, burn marks, and head trauma, respectively, were signs of child abuse. Moreover, half of the participants correctly identified all of the signs and symptoms of child physical abuse. A significantly higher proportion of female and postgraduate students and consultants were able to correctly identify all of the signs and symptoms ( $P = 0.03$  and  $< 0.001$ , respectively).

When the dentists were asked about what their first actions would be if they suspected that a child was being physically abused, only 40% of the participants responded correctly to all of the questions. Approximately 76% said that they would document the signs and symptoms and their suspicions in the child's file, 72% stated that they would ask the child and the child's parents about the signs and symptoms they noticed, 54% stated that they would monitor the case during the

**Table 1**  
Demographic and background characteristic of the dentists (n = 208).

Variable	Total (n = 208)	
	Median	Interquartile range
Age	24	24–27
Years of experience	1	1–3.5
Variable	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	58	28
Female	150	72
<b>Type of practice</b>		
Governmental	142	68
Private	66	32
<b>Level of dental training</b>		
Bachelor's degree	152	73
Higher degree	56	27
<b>Formal child abuse training</b>		
Yes	29	14
No	179	86

following visits, 53% mentioned that they would check the consistency of the parents and/or child's explanations with the clinical findings, and 50% stated that they would report their suspicions to a legal authority. A significantly higher proportion of females, postgraduate students and consultants were able to correctly identify the actions to be taken if a child abuse case was suspected ( $P=0.03$  and  $<0.001$ , respectively).

The circumstances in which the dentists thought that they should report a case of child physical abuse to authorities were as follows: if the abuse was repetitive (48%), in all circumstances even if the abuse was only suspected (45%), and in severe cases of abuse only (43%). Approximately 66% of the participants were able to correctly identify all of the answers. A larger proportion of postgraduate students and consultants knew the circumstances in which they should report cases of abuse ( $P=0.003$ ). In response to the question regarding the legal authority to which the physical abuse cases should be reported, 37% of the participants answered, "I don't know". Undergraduate and postgraduate studies were reported as the main sources of the participants' knowledge of child physical abuse, followed by continuous education/special courses and online sources. Table 2 summarizes the participants' knowledge about child physical abuse and the associations of knowledge with the participants' genders and levels of dental training. The awareness of dentists about the social indicators of child physical abuse is summarized in Fig. 1.

### 3.3. Attitudes of dentists towards child physical abuse

The attitudes of the participants are illustrated in Table 3. Most dentists agreed with the general importance as well as the importance of their own roles in detecting and reporting cases of child physical abuse. Seventy-seven percent of the participants believed that they would be able to detect cases of child physical abuse if they encountered them. Moreover, 91% stated that providing child physical abuse training in the workplace is important. Finally, 52% disagreed with the statement "The amount of material presented on the topic of physical child abuse at your dental school is sufficient". Insufficient knowledge regarding referral procedures was the main cause of the underreporting of abuse cases (60%), followed by fear of anger from family members and parents (27%) (Fig. 2).

**Table 2**  
Dentists' knowledge about child physical abuse.

	Total (n = 208) n (%)	Male (n = 58) n (%)	Female (n = 150) n (%)	P-value	General dental practitioners (n = 152) n (%)	Postgraduate students and consultants (n = 56) n (%)	P-value
Signs and symptoms of child physical abuse	104 (50%)	22 (38%)	82 (55%)	0.03	64 (42%)	40 (71%)	<0.001
First step if an abuse case is suspected	82 (39%)	16 (28%)	66 (44%)	0.03	48 (32%)	34 (61%)	<0.001
Circumstances in which abuse cases should be reported	137 (66%)	36 (62%)	101 (67%)	0.473	91 (60%)	46 (82%)	0.003

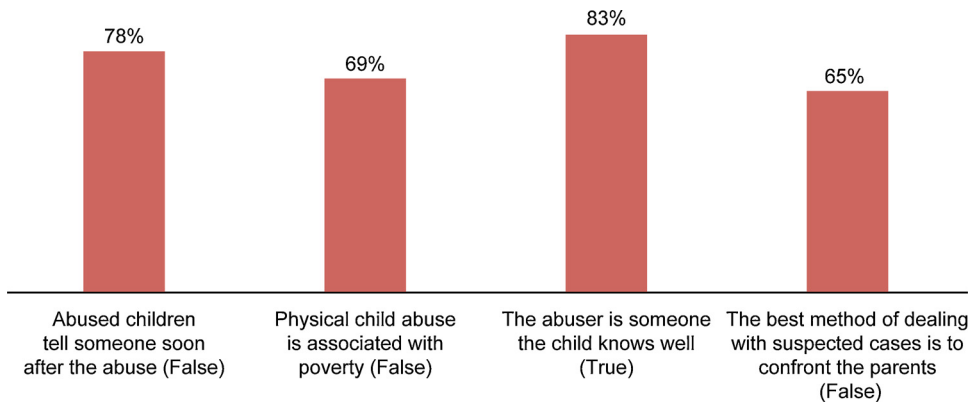


Fig. 1. Dentists' knowledge about the social indicators of child physical abuse.

Table 3

Distribution of dentists' attitudes towards child physical abuse.

	Agree n (%)	Neutral n (%)	Disagree n (%)
Detecting and reporting child physical abuse is important (n = 207)	203 (98%)	4 (2%)	0 (0%)
Dentists have an important role in detecting and reporting cases of child physical abuse (n = 207)	194 (94%)	13 (6%)	0 (0%)
As a dentist, you are able to detect cases of child physical abuse (n = 206)	160 (78%)	42 (20%)	4 (2%)
Documenting the signs and symptoms of abuse in the patient's file is important (n = 205)	195 (95%)	10 (5%)	0 (0%)
Asking the child about injuries he/she had is important (n = 207)	194 (94%)	12 (5%)	1 (0.48%)
Reporting physical abuse cases to a legal authority is important (n = 205)	185 (90%)	19 (9%)	1 (0.49%)
The amount of material presented about the topic of physical child abuse at your dental school was sufficient (n = 207)	47 (23%)	51 (24%)	109 (53%)
Providing child physical abuse training in the workplace is important (n = 206)	189 (92%)	16 (7%)	1 (0.48%)

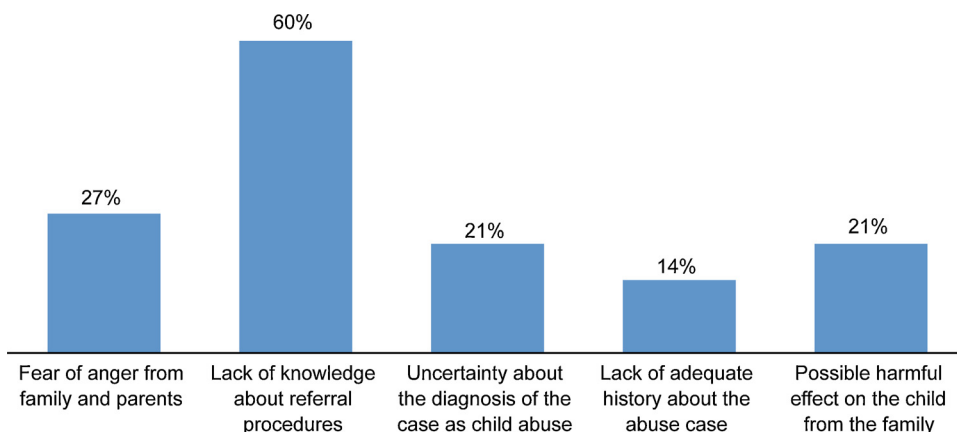


Fig. 2. Distribution of the dentists' opinions of the main causes of underreporting of child physical abuse cases.

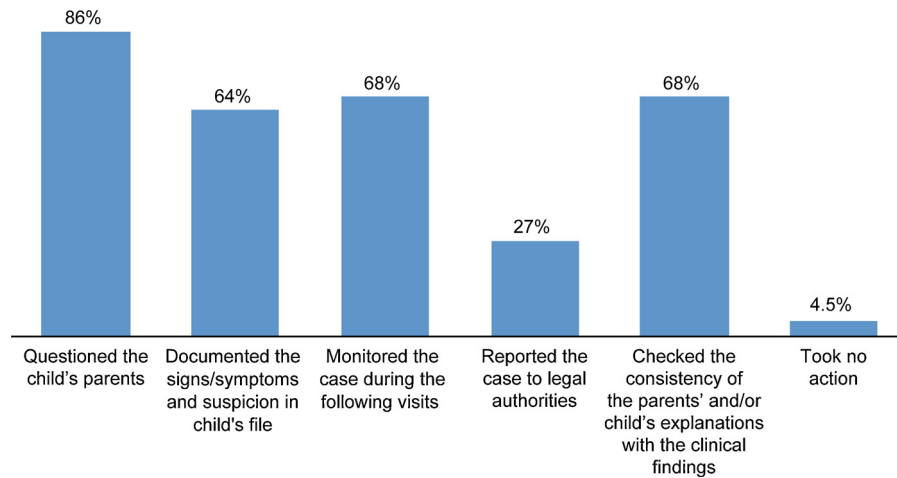


Fig. 3. Distribution of the actions taken by the participants when they suspected a case of child abuse.

### 3.4. Dentists' experiences with and behavior towards child physical abuse

Twenty-two participants (11%) had suspected a case of child abuse in their clinics (a total of 50 cases), and only 6 (3%) of them reported the cases. Among the 50 suspected cases, 12 were determined to be child physical abuse (24%), and 9 were reported (18%). A higher percentage of postgraduate dental practitioners suspected a case of child physical abuse in their practice ( $P=0.01$ ). Fig. 3 presents the actions taken by dentists who suspected a case of abuse.

In terms of institutional behavior, the majority of the participants (65%) said that their workplaces did not provide them with procedures to be followed in cases of suspected child abuse, and 29% reported that they did not know if their workplaces provided procedures.

### 3.5. Predictors of dentists' knowledge and behaviors

A stepwise logistic regression analysis was conducted to test the effects of the predictors on the 4 outcome variables. The variable 'years of experience' was excluded from the analysis because of its collinearity with 'age' ( $r=0.987$ ,  $P<0.001$ ). The outcome variables were 3 knowledge questions and one behavior question. The knowledge questions assessed knowledge of signs and symptoms of child physical abuse, knowledge of the actions that must be taken if a case of child physical abuse is suspected, and knowledge of the circumstances in which dentists should report cases of child physical abuse. The behavior question asked if the participants had ever suspected a case of child physical abuse.

Age, gender and practice type were significantly associated with knowledge of the signs and symptoms of physical abuse. Being older, being female and practicing in a governmental institute increased the odds of having better knowledge of abuse signs and symptoms. Gender, dental training level, and practice type were significantly associated with knowing the actions that should be taken by dentists who suspect a case of child physical abuse. Being female, having a higher level of dental training, and practicing in a governmental institute increased the odds of having better knowledge of the actions that should be taken if a case of abuse is suspected. Age was the only predictor that was associated with dentists' knowledge of reporting criteria in cases of suspected child physical abuse. Age and having attended a training program were significant predictors of the participant having suspected a case of child physical abuse (Table 4).

## 4. Discussion

This survey sought to assess the knowledge, attitudes, and experiences of dentists in identifying and reporting cases of child physical abuse as part of an effort to inform future programs and policies in Saudi Arabia.

Regarding knowledge about child physical abuse, half of the participants in the present study correctly identified all of the signs and symptoms of it. Similarly, studies conducted by Al-Dabaan et al. in Saudi Arabia and Thomas et al. in the USA revealed that dentists' knowledge of the signs and symptoms of child physical abuse is insufficient (73% and 56%, respectively; Al-Dabaan et al., 2014; Thomas et al., 2006). In suspected cases of abuse, the main actions undertaken by the participants in this study were to ask the child and parents about the observed signs, document the signs and symptoms in the child's file, and check the consistency of the parents' and/or child's explanations with the clinical findings. A study conducted in Saudi Arabia in 2014 found that discussing the case with the child's parents, discussing the case with a colleague, and documenting the signs and symptoms of abuse in the child's file were the most common actions taken by dentists when they suspected



**Table 4**  
Stepwise logistic regression models for 3 knowledge questions and 1 behavior question about child physical abuse.

	OR (95% CI)	SE	P-value
<b>Knowledge about the signs and symptoms of child physical abuse</b>			
Age	1.16 (1.06–1.25)	0.048	<0.001
Gender (Ref= Male)	3.12 (1.54–6.32)	1.12	0.002
Practice type (Ref= Governmental)	0.32 (0.16–0.63)	0.11	0.001
<b>Knowledge about the steps that should be taken if child physical abuse is suspected</b>			
Gender (Ref= Male)	2.44 (1.21–4.93)	0.87	0.012
Level of dental training (Ref= General practitioners)	2.92 (1.5–5.66)	0.986	0.002
Practice type (Ref= Governmental)	0.388 (0.19–0.77)	0.136	0.007
<b>Knowledge about situations in which child physical abuse should be reported</b>			
Age	1.12 (1.02–1.22)	0.049	0.008
<b>Behavior related to having suspected child physical abuse</b>			
Age	1.06 (1–1.13)	0.03	0.039
Formal child abuse training (Ref= No)	5.57 (2.02–15.32)	2.87	0.001

a case of abuse (Al-Dabaan et al., 2014). Willingness to refer the suspected cases to legal authorities was reported by 50% of the participants in our study; in contrast, 84% of the participants in the Al-Dabaan et al. study reported being willing to report cases (Al-Dabaan et al., 2014). Furthermore, 38% of the participants in a survey conducted in northeast Italy in 2007 stated that they would refer a case to social agencies or the police (Manea et al., 2007). Participants demonstrated insufficient knowledge about the circumstances in which they should report a suspected case of child physical abuse. On the other hand, Thomas et al. (2006) reported in 2006 that 85% of dentists and 86% of dental students in Michigan (USA) were aware of the circumstances in which they should report suspected cases of child abuse. In the USA, the topic of child abuse is better covered in dental schools. In addition, every state has a mandated reporting law. This may contribute to the frequency with which abuse is reported which might explain the dentists' high levels of knowledge about the circumstances in which they should report these suspected cases (Ministry of Social Affairs, 2013; Thomas et al., 2006). Many of the participants did not know to which legal authority child abuse should be reported (37%). A study conducted in dental schools in the UAE found that approximately 22% of dental students did not know where to report cases of abuse (Hashim & Al-Ani, 2013). Studies in Jordan and the USA found that approximately 50% and 82% of dental students, respectively, did not know the legal authority to which they should report suspected cases of abuse (Owais et al., 2009; Sonbol et al., 2012; Thomas et al., 2006). The lack of knowledge in this area in Saudi Arabia might be because the law of protection from abuse, which obligates healthcare providers to report suspected child abuse cases to police, is relatively new; it went into effect in 2013, and it is not well known by the population (Ministry of Social Affairs, 2013).

Most of the participants stated that their main source of knowledge about child physical abuse was their undergraduate studies. This finding is similar to findings from other studies conducted in the UAE, Jordan, and the USA (Hashim & Al-Ani, 2013; Owais et al., 2009; Sonbol et al., 2012; Thomas et al., 2006). Regarding dentists' knowledge about social indicators of abuse, a large proportion of the participants chose the correct answer for each statement. In 2011, a study in Jordan found approximately the same level of knowledge about the social indicators of child physical abuse, but a large percentage of the subjects wrongfully thought that an abused child usually tells someone soon after the abuse occurs (Sonbol et al., 2012). Interestingly, other studies have found that most dentists and dental students in Saudi Arabia, the UAE and Jordan wrongly thought that abuse was exclusively associated with poverty and low socioeconomic status (75%, 60% and 60%, respectively; Al-Dabaan et al., 2014; Hashim & Al-Ani, 2013; Owais et al., 2009). Understanding the social indicators of child physical abuse in addition to the signs and symptoms of physical abuse could help with the identification of abuse cases.

In terms of the participants' attitudes, the participants had positive attitudes towards dentists' roles in detecting and reporting cases of child physical abuse and the importance of undergoing training about child abuse. This result was similar to the results of other studies conducted in the Kingdom of Saudi Arabia (KSA), Scotland, Jordan, Brazil, and Greece (Al-Dabaan et al., 2014; Azevedo et al., 2012; Harris et al., 2013; Laud et al., 2013; Owais et al., 2009). Furthermore, approximately half of the participants believed that the child physical abuse information presented at their dental schools was insufficient. A large proportion of the participants in the other studies felt that the amount of material about child abuse provided in dental school was insufficient (Jordan et al., 2012; Thomas et al., 2002). Interestingly, 77% of the participants stated that they were able to detect a case of child abuse, which is similar to the levels reported by Al-Dabaan et al. (2014) and Owais et al. (2009).

Many studies worldwide have investigated the causes of underreporting of child abuse by dentists. In this study, lack of knowledge about referral procedures was the top reason for not reporting abuse cases (60%). A previous study conducted in Saudi Arabia found that 79% of dentists considered lack of knowledge about the referral system to be an obstacle to reporting abuse cases (Al-Dabaan et al., 2014). Two studies conducted in Jordan revealed that fewer than half of the participants reported insufficient knowledge about the referral system (Owais et al., 2009; Sonbol et al., 2012). In Scotland, 43% of

dentists chose this reason for not reporting abuse cases (Harris et al., 2013). The second reason mentioned by participants for not reporting suspected abuse cases was fear of anger from family members and parents (27%). A similar percentage of dentists selected fear of anger from family members and parents as a reason for not reporting abuse cases in many studies (Al-Dabaan et al., 2014; Harris et al., 2013; Owais et al., 2009; Sonbol et al., 2012).

In terms of the participants' experiences with and behaviors towards child physical abuse, twenty-two participants stated that they have suspected a case of child abuse in their practice (11%), and 6 of them submitted reports of the cases (3%). These proportions are lower than in the Al-Dabaan et al. study conducted in 2014 in Saudi Arabia, which reported that 59% of dentists had suspected and 10% had reported a case of child physical abuse (Al-Dabaan et al., 2014). Studies conducted in Brazil, Jordan, Scotland, Greece, and Italy reported that approximately 86%, 50%, 37%, 13% and 19% of dentists, respectively, had suspected a case of child abuse, while 10%, 12%, 11%, 1.7% and 3% of dentists, respectively, had referred suspected cases to authorities (Azevedo et al., 2012; Laud et al., 2013; Manea et al., 2007; Owais et al., 2009; Sonbol et al., 2012). In the present study, the lower proportion of dentists who had suspected a case of abuse could be explained by the high percentage of general dental practitioners who had on average one year of experience.

A significantly higher proportion of postgraduate students and pediatric dentistry consultants had suspected cases of child abuse. Moreover, there was no significant association between gender and suspicions of child abuse cases in the current study. Azevedo et al. (2012) and Sonbol et al. (2012) did not observe an association between levels of dental training or gender and suspicions of such cases among dentists practicing in Brazil and Jordan in 2011 and 2012, respectively. Regarding behaviors of the practices, only 5% of the participants reported that their workplaces provided them with procedures to follow in cases of suspected child abuse; in contrast, 21% of the participants in the Al-Dabaan et al. study reported having procedures at their workplaces (Al-Dabaan et al., 2014).

In our study, predictors that were significantly associated with dentists' knowledge about the signs and symptoms of physical abuse, the actions to be taken if abuse was suspected, the situations where such cases should be reported, and having suspected cases of child physical abuse were age, female gender, practicing in a governmental institute, and level of dental training. Similarly, Manea et al. (2007) have concluded that females with higher levels of dental training had significantly greater knowledge about child abuse.

Additionally, older age and formal training about child abuse were the only significant factors that affected suspicions of abuse cases in the current study. Similarly, Manea et al. (2007) reported that these factors were significant predictors of dentists having suspected cases of abuse. However, Sonbol et al. (2012) reported that among dentists, male gender, formal training about child abuse in dental school, and post-qualification training, instruction or courses in child abuse were factors that were significantly associated with suspecting and reporting such cases.

This study has several limitations. First, the study population only included dentists from academic institutes; therefore, the results might not be generalizable to all dentists practicing in Jeddah. In future studies, the inclusion of dental practitioners from other healthcare institutes in Saudi Arabia is highly recommended. Second, a small proportion of participants ( $n=22$ ) reported that they had ever suspected a case of child physical abuse. This small number of participants makes it difficult to detect an association between actions taken by dentists and genders and levels of dental training. Third, dentists' behaviors were assessed using a self-administered questionnaire, which is a subjective assessment method (detection bias). Communicating with the child protection team in each hospital to obtain information from databases might provide more reliable results.

## 5. Conclusions and recommendations

- This study showed that dental practitioners have insufficient knowledge about the manifestations of child physical abuse, the actions that should be taken if physical abuse against a child is suspected, and the circumstances in which they should report suspected cases. Moreover, only a small proportion of the participants knew the correct legal authority to which suspected abuse cases should be reported.
- The participants reported a positive attitude towards the dentist's role in detecting and reporting cases of child physical abuse.
- The low reporting rate was primarily due to a lack of knowledge about referral procedures and fear of anger from family members and parents.
- A small proportion of suspected cases were reported by participants.
- Age, gender, level of education, practice type, and formal training about child abuse were suggested to be associated with the knowledge and behaviors of dentists.

An important strategy for improving knowledge and behaviors among dental practitioners in cases of possible child abuse is to increase the coverage of this topic in dental school curricula, particularly given that the respondents reported that their main source of knowledge was their undergraduate studies. However, the issue of detecting and preventing further child abuse is complex and multifactorial and improving education is a single step in the process. Healthcare and academic institutes must have clear referral procedures to follow in suspected cases of abuse. Providing materials, seminars, and continuous education courses to dentists would increase their awareness about the referral procedures available at the institutes where they are practicing.



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## Conflicts of interest

The authors have no conflicts of interest to declare.

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**Appendix A.***Knowledge, Attitudes, and Behavior of Dentists regarding Child Physical Abuse*

We are studying the knowledge, attitudes, and behavior of dentists towards physical violence against children, a major problem in Saudi Arabia. Kindly answer the following questions to the best of your ability. If you have any queries or comments regarding this survey, you are welcome to contact the researcher (Dr. Meaad A. Mogaddam) at [dr.mogaddam@live.com](mailto:dr.mogaddam@live.com). Please be assured that your answers will be anonymous and confidential. Your participation is highly appreciated.

**I. In the first questions, we are going to ask you information about your background and training:**

1. Age: \_\_\_\_\_ Years
1. Gender:
  - Male
  - Female
2. Year of graduation from dental school: \_\_\_\_\_
3. Dental school where you graduated from (bachelor degree):
  - National, please specify: \_\_\_\_\_
  - International, please specify: \_\_\_\_\_
4. Institute where you are working:
  - Governmental, please specify: \_\_\_\_\_
  - Private, please specify: \_\_\_\_\_
5. Please name your highest/ last scientific degree:
  - Bachelor degree
  - Master degree
  - PhD degree
  - Board certificate
6. If postgraduate degree was obtained, please name the university and city where it was obtained from:
  - National, please specify: \_\_\_\_\_
  - International, please specify: \_\_\_\_\_

7. Did you ever receive formal training about child physical abuse?

**Yes**  
 **If Yes:**

- i. In which program did you receive the training:
  - Undergraduate program
  - Postgraduate program
  - Special courses
- ii. Where did you receive the training course (Institute and city):
- iii. What type(s) of information on physical child physical abuse did you receive during the training?  
 (You may select more than one answer)
  - Theoretical information
  - Clinical information on signs and symptoms
  - Advanced clinical training in managing such cases
  - Information on how to report cases
  - Information on how to document cases

**No**

If No, please go to section (II)

**II. In the next section, we will be asking questions to assess your knowledge of childhood physical violence:**

8. Which of the following is a sign of child physical abuse?

(You may select more than one answer)

- Skin bruises
- Broken teeth, without reasonable cause
- Burn marks
- Dental caries
- Head trauma
- Stubborn child
- Careless parents
- Shy personality
- I don't know

9. What is the first action a dentist should take if he/she suspects a case of physical abuse in a child? (You may select more than one answer)

- Ask the child and parents about the signs/symptoms you noticed
- Document the signs/symptoms and your suspicion on the child's file
- Monitor the case during the following visits
- Report to legal authority
- Check the consistency of parents and/or child explanation with the clinical findings
- Do nothing
- I don't know

10. To which legal authority should physical abuse cases be reported?  
(Select only one answer)
- Ministry of Health
  - Social agency
  - National Family Safety Registry (NFSR)
  - Police
  - I don't know
12. What is your main source of knowledge about childhood physical abuse?  
(Select only one answer)
- Undergraduate study
  - Postgraduate study
  - Continuous education/special courses
  - Online sources
  - Other source, please specify:
  - None
13. In what circumstances should dentists report childhood physical abuse cases to an authority? (You may select more than one answer)
- All circumstances even if abuse is only suspected
  - In severe cases of physical abuse
  - In cases of where the physical violence to a child is repetitive
  - Never
  - I don't know
14. Children who have been physically abused will usually tell someone soon after the abuse.
- True
  - False
15. Physical child abuse is primarily associated with the stresses of poverty and rarely occurs amongst middle- or high-income earners.
- True
  - False
16. The abuser in most physical violence cases is someone the child knows well from his/her surrounding environment.
- True
  - False
17. The best way to deal with suspected cases of childhood physical abuse is to confront the parents and accuse them directly of the abuse.
- True
  - False

**III. In the next section, we will ask about your opinion about statements related to childhood physical abuse.**

<b><u>How strongly do you agree or disagree with the following statements</u></b>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
18. Detecting and reporting childhood physical abuse is important.					
19. Dentists have an important role in detecting and reporting child physical abuse cases against children.					
20. As a dentist, you are able to detect child physical abuse cases.					
21. Documenting the signs/symptoms of abuse in the patient file is important.					
22. Asking the child about injuries he/she had is important.					
23. Reporting physical abuse cases to a legal authority is important.					
24. The amount of materials presented about the topic of physical child abuse at your dental school is sufficient.					
25. Providing child physical abuse training in the work place is important.					

26. In your opinion, what is the main cause of under reporting of child physical abuse cases?  
(You may select more than one answer)

Fear of anger from family and parents

Lack of knowledge about referral procedures

Uncertainty about the diagnosis of the case as child abuse

Lack of adequate history about the abuse case

Possible harmful effect on the child from the family

**IV. Finally, we are going to ask you about your experiences as a dental practitioner with childhood physical abuse.**

27. Did you ever suspect that a child who came to you professionally has been physically abused?

Yes

No

If Yes:

- i. How many child physical abuse cases have you ever suspected in your clinic? \_\_\_\_\_
- ii. How many child physical abuse cases have you ever diagnosed (confirmed) in your clinic? \_\_\_\_\_
- iii. How many child abuse cases have you ever reported? \_\_\_\_\_

iv. What were your action(s) when you suspected any cases of physical abuse? (You may select more than one answer).

Asked the child and/or parents

Documented the sign/ symptoms and suspicion in child's file

Monitored the case during the following visits

Reported the cases to legal authorities

Checked the consistency of parents and/or child explanation with the clinical findings

Did not do anything

v. If you did not do anything, why was that?

II. (You may select more than one answer).

Fear of anger from family and parents

Lack of knowledge about referral procedures

Uncertainty about the diagnosis of the case as child abuse

Lack of an adequate history about the abuse case

Possible harmful effect on the child from the family

28. Does your work place provide you with procedures to be followed in case a child is suspected to be physically abused?

Yes

No

I don't know

If No,  
please  
go to  
question  
28

**Thank you for your participation**