

# Child abuse and neglect: oral and dental signs and the role of the dentist

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Federica Mele<sup>1</sup>, Francesco Introna<sup>1</sup>, Valeria Santoro<sup>1</sup>

<sup>1</sup> Section of Legal Medicine, Interdisciplinary Department of Medicine (DIM), University of Bari, Italy

**Corresponding author:**  
fedemele1987@gmail.com

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## KEYWORDS

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## ABSTRACT

Historically, the law, dental and forensic literature has included numerous articles concerning abused children. The orofacial structures are injured frequently in the maltreated child. Injuries of the neck, head, face, and oral cavity represent the most affected areas of the victim's body that routinely sustain physical trauma in child maltreatment cases. This literature review aimed to report the state of art of child abuse from the point of view of the dentist with focus on studies in dental aspects of child abuse and neglect of the last ten years. Considering the time slot, 20 papers were included with the following inclusion criteria: papers published in English, all keywords included in the title, articles available on PubMed. Many of the injuries are within the scope of dentistry or easily observed by the dental professional during routine dental treatment, and it is essential that the dentist recognizes them. Concerning neglect, it is appropriate to make a distinction between deliberate parental behavior that has the consequence of unavoidable and voluntary neglect towards their children and those conditions of involuntary carelessness determined by socio-economic and cultural factors such as family isolation, lack of finances, parental ignorance, or lack of perceived value of oral health. Therefore, it is relevant that the dentist pays attention to the cases to report and those that only need help

## INTRODUCTION

The Center for Disease Control and Prevention (CDC) define child maltreatment as any act or series of acts of commission or omission by a caregiver that threatens or impairs a child [1]. It is a relevant theme in all social, ethnic, religious, and professional settings.<sup>2</sup>

The full extent of the problem is unknown because of the lack of notification of many cases.<sup>3</sup> Some reports stated that 3-30% of children experienced abuse, and the prevalence of this phenomenon is increasing.<sup>4-6</sup> Most maltreatments occur in the family setting, and a smaller amount occurs in schools and other communities attended by children.<sup>7</sup>

Child Maltreatment could be distinguished into many categories that could exist separately or in association: physical abuse (including bruises, burns, fractures, head trauma, and abdominal injuries), sexual abuse (involving children in sexual acts for which they cannot give consent), emotional abuse (acts that negatively affect patient's self-confidence), physical neglect (failure to provide food, clothing, etc.), emotional neglect

(dysfunctional parent-child relationship), medical care neglect (failure to provide adequate care to children), and Munchausen syndrome by proxy (simulation or creation of symptoms in a child).<sup>7</sup>

To summarize, child abuse comprehends physical abuse, sexual abuse, psychological abuse, and neglect.<sup>8</sup> Therefore, children could experience many different types of maltreatment that could impair their emotional, physical, and sexual health and development.<sup>9</sup>

Concerning physical abuse, several studies reported that 50%-70% of traumas occur in the craniofacial district<sup>10-16</sup>, while untreated dental caries lesions are the most prevalent.<sup>17-19</sup> A large survey reported that besides caries, other oral lesions reported in cases of suspected child abuse are tooth fractures (32%), oral bruises (24%), oral lacerations (14%), fractures of the mandible or the maxilla (11%), and oral burns (5%).<sup>11</sup>

In addition, while it is true that abusers avoid returning to the same physician, this does not apply to dental professionals: abusers don't seem to avoid the same dental service probably because it is perceived more as a technical service than a healthcare service.<sup>20</sup> For these reasons, dental professionals are in a central position to identify possible cases of abuse. Furthermore, it is an ethical duty and a legal obligation to report child maltreatment in Italy and many other States.<sup>21-26</sup> For example, in most US States, it is mandatory by law to report child abuse for professionals that work with children, such as social workers, teachers, physicians, medical examiners or coroners, and law enforcement officers.<sup>21</sup> In other States, not all the types of abuse are reported by law. For instance, in some parts of Australia, only reporting physical and sexual abuse is required, but reporting child abuse and neglect is not required in Western Australia.<sup>26</sup>

Therefore, recognizing oral and dental signs related to child abuse is of great importance to correctly report of maltreatment to law enforcement and the early identification of violence cases for social purposes. Furthermore, the failure to report cases of abuse or suspected abuse can result in criminal and civil consequences for the healthcare professionals, including the disbarment or suspension.<sup>27</sup>

The role of the dentist in preventing child abuse is well explained by the so-called "four R's of responsibility": recognize (recognition of risk

factors and manifestations), record (collection of information), report (possible report to Judicial Authority), and refer (reference and support for patients).<sup>10</sup> These guidelines aim to protect patients from violence and its consequences.

Considering the relevance of this issue, although many studies have been published for many years, this remains a relevant problem that is still much debated in the literature especially because child abuse identification remains underreported by healthcare professionals.<sup>3,27</sup>

This brief review aims to report the state of the art in the child abuse field over the last ten years with focus on the most treated topics in the literature, concentrating on oral and dental signs more evocative of abuse and neglect, and noting whether there have been any shortcomings in one or more relevant topics. The aim is also to contribute to help dentists and any other physician and dental professionals in diagnosis and reporting suspected child abuse situations.

## DATA COLLECTION

The searches were carried out until 18 January 2022 using the PubMed database. The search criteria were keywords for child abuse and dental (child abuse AND dental). The search criteria keyword retrieved 705 records from 1968 to 2022. Because of the large number of sources and the purpose of evaluating what the scientific community is focusing on today, we selected articles published in the last ten years and articles published before 2012 were excluded. Considering this time slot, a total of 705 records were found. Among these records, 367 studies were selected according to the following criteria: only English articles with all keywords in the title were included as well as articles available via PubMed; review, commentary, and letters were excluded. Following this inclusion and exclusion criteria, a total of 20 studies were analyzed. The papers were grouped according to the topic covered (Table 1): dental signs (which included physical abuse and bitemarks, sexual abuse, and dental neglect), and knowledge of dental professionals. In the first category, we collected a total of 11 papers, in the second one a total of 13 articles.

**Table 1.** Data collection and types of articles

Topic covered in the articles	Total number of articles	References
1. Dental signs	11	
1.1. Physical abuse and bite marks	5	(10,15,28-30)
1.2. Sexual abuse	4	(28,30-32)
1.3. Dental neglect	5	(33-37)
2. Knowledge of dental professionals	13	(15,29,30,36,38-46)

## DISCUSSION

Child abuse is a dramatic social problem involving dental professionals in detecting oral signs of abuse and reporting these cases to child protection services or law enforcement. This literature review focused on the last ten years of studies in this field, pointing out any significant

gap in one of the relevant topics and bringing out that most of the recent articles focused on the knowledge of dental professionals on child abuse issues rather than on the dental signs of abuse and neglect. The details of each paper are reported in Table 2.

**Table 2.** Articles' details

First author	Year of pub	Country	Type of article	Type of topic
S. Karthika Nagarajan <sup>10</sup>	2018	India	Review article	Craniofacial injuries of physical abuse Role of the dental professionals
A. S. Hussein <sup>15</sup>	2016	Malaysia	Original article with a questionnaire submission	Craniofacial injuries of physical abuse Issues on knowledge of dental professionals
S. A. Fisher-Owens <sup>28</sup>	2017	USA	Clinical report	Craniofacial injuries of physical abuse Sexual abuse
A. Al-Ani <sup>29</sup>	2021	Germany	Original article with a questionnaire submission	Craniofacial injuries of physical abuse Issues on knowledge of dental students
C. Duman <sup>30</sup>	2021	Turkey, Turkish Republic of Northern Cyprus, Jordan, Pakistan, Cambodia, Poland, Nigeria, USA, Republic of South Africa, Australia	Multicenter study with a questionnaire submission	Craniofacial injuries of physical abuse Sexual abuse Issues on knowledge of dental students
T. V. Fredriksen <sup>31</sup>	2020	Norway	Original article with a questionnaire submission	Sexual abuse

E. Wolf <sup>32</sup>	2021	Sweden	Original article with participants' interview	Sexual abuse
A. Sorca <sup>33</sup>	2013	Italy	Original article with questionnaire submission	Childhood caries and dental neglect
S. A. Fisher-Owens <sup>34</sup>	2017	USA	Review article	Dental neglect
H. Sillevs Smith <sup>35</sup>	2017	Netherlands	Original article with evidences' acquisition	Childhood caries and dental neglect
C. M. Harris <sup>36</sup>	2013	UK	Original article with questionnaire submission	Dental neglect, knowledge of dental professionals
I. V. Brattabø <sup>37</sup>	2018	Norway	Original article with questionnaire submission	Dental neglect
S. Kuganathan <sup>38</sup>	2021	Australia	Original article with questionnaire submission	Knowledge of dental professionals
H. M. A. Khan <sup>39</sup>	2021	Pakistan	Original article with questionnaire submission	Knowledge of dental professionals
L. S. Nunes <sup>40</sup>	2021	Brazil	Original article with questionnaire submission	Knowledge of dental professionals
A. Rønneberg <sup>41</sup>	2019	Norway	Original article with questionnaire submission	Knowledge of dental professionals
U. Jakobsen <sup>42</sup>	2019	Faroe Islands	Original article with questionnaire submission	Knowledge of dental professionals
R. Bjørknes <sup>43</sup>	2018	Norway	Original article with questionnaire submission	Knowledge of dental professionals
I. V. Brattabø <sup>44</sup>	2019	Norway	Original article with questionnaire submission	Knowledge of dental professionals
E. H. Bodrumlu <sup>45</sup>	2016	Turkey	Original article with questionnaire submission	Knowledge of dental professionals

### Dental signs

This review focused on the craniofacial district and dental signs suspected of child abuse,

although dentists could perform a thorough physical examination, especially when abuse is suspected.

Dental symptoms and signs in children are more frequent in victims of abuse than in those who are not, with no influence of socio-demographic characteristics. De Silva-Júnior et al. found no relevant association between child abuse and sex, age, type of school, skin color, and family income [47]. No other variables like weight, hairstyle, clothing, etc. were studied. Hence, the correct recognition of signs of abuse is a fundamental step in child protection programs. Dental professionals must be careful in treating young patients, with particular attention to sexual abuse: a high prevalence of up to 20% is reported in some studies.<sup>48,49</sup>

#### *Physical abuse and bitemarks.*

Physical abuse signs occur in the craniofacial district in more than half of child abuse cases. So, a careful oral examination is necessary, especially in suspected cases.<sup>10</sup> It is reported that lips are the most common site of traumatic injuries related to physical abuse: almost half of the injuries are found on lips. Therefore, scars on the lips should alert healthcare professionals. Other areas frequently traumatized are oral mucosa, teeth, gingiva, tongue, and oral frena frequently as a consequence of blunt force trauma.<sup>28,30</sup> Duman et al. hypothesize that because of its importance in nutrition and communication, the oral cavity is the primary target of physical abuse; hence, injuries may develop from hand or force-feeding assault. In these cases, traumas are contusions, burns, lacerations of soft tissues as well as broken, displaced, or avulsed teeth and fractures of the facial bone and jaw.<sup>30</sup> Other injuries involved pulp necrosis; bruises, lichenification, and scarring of the corners; pharyngeal and retropharyngeal injuries.<sup>28</sup> It is also reported that it is crucial to distinguish between child abuse and unintended or accidental injuries: as a general indication, suspected signs of abuse are multiple injuries, injuries in different stages, or a discrepant history. Therefore, dentists should pay more attention in case they approach patients reporting these types of lesions.

Furthermore, dental professionals consider bruises on children's cheeks the most suspected facial sign of physical abuse, followed by burns and bitemarks.<sup>15,29</sup> Although the last ones could indicate child abuse, some authors suggest paying particular attention to differentiating from bites produced by animals: authors suggest that an

intercanine distance of more than 3.0 cm is suspicious for an adult human bite.<sup>28</sup> In addition, bites produced by animals tend to tear flesh, whereas human bitemarks more frequently cause abrasions and contusions. Fischer-Owens et al. also suggest that the evaluation of bitemark patterns should be performed by a forensic odontologist or a forensic pathologist and that to examine the lesions using photographic documentation should be gathered. Finally, they suggest collecting dental casts of a suspect abuser to match with the photographs of the bite.<sup>28</sup> So, an interdisciplinary approach in suspected cases should be applied whenever possible.

Other pathological conditions of the oral cavity, such as caries, could be associated with child neglect rather than with physical abuse, usually related to traumatic injuries.

#### *Sexual abuse.*

As oral abuse is the most frequent, carefulness is needed by dentists in children's dental examinations [31]. Oral injuries in sexual abuse are rare, so a relationship between sexual abuse and trauma is difficult to assess.<sup>28</sup> In case of reported history of oro-genital contact, universal testing for sexually transmitted infections could be performed, even though it is a rare finding.<sup>28</sup> It is reported that oral and perioral gonorrhoea is a pathognomonic sign of sexual abuse but is extremely rare: authors reported a prevalence of 12% of gonorrhoea and 14% of chlamydia in sexually abused adolescents.<sup>28</sup> In addition, some cases of pharyngeal gonorrhoea are not reported as asymptomatic. In these cases, even if the culture is the gold standard and preferred method to detect an infection, the nucleic acid amplification test is less invasive for the patient and could be preferred in some circumstances such as vaginal swab specimens or urine.<sup>28</sup> On the contrary, as the transmission of HPV is uncertain, oral HPV could not be considered a pathognomonic sign: vertical and non-sexual transmission is also described.<sup>28</sup>

Considering the difficulty in the association between the evidence of oral injuries and sexual abuse, attention is needed in case of unexplained palate injuries or petechiae because these lesions may result from forced oral abuse.<sup>28,30</sup>

For these reasons, Frederiksen et al. suggests dentists should pay much attention to those patients who previously had been abused because dental treatments could be experienced as a

reminder of previous unpleasant experiences.<sup>31</sup> These situations might result in relevant dental fear, so particular care for these patients is needed.<sup>31,32</sup> For example, Frederiksen et al. report the need for specific communication and behavior skills to reduce the anxiety and fear in these patients <sup>31</sup>, and Wolf et al. underline the importance of an individually tailored approach to recognizing the signs of discomfort.<sup>32</sup> They also emphasize the need for the dental nurse to observe each patient's expression and emotional status. Therefore, even in this eventuality, a multidisciplinary approach should be applied.

#### *Dental neglect.*

Although caries is a common dental problem in many children, when a high number of teeth is damaged child neglect should be suspected. Severe early childhood caries (s-ECC) and consequent multiple teeth extraction should be considered a sign of child neglect.<sup>17,28,35,36</sup> This is supported by Sillevs Smith et al. that report a strong association between severe caries and child neglect and found that 23% of children with multiple tooth extractions for caries are victims of neglect.<sup>35</sup> Caries also represents the sign that mostly instills suspicion in dental professionals, followed by the lack of hygiene.<sup>37</sup> Besides caries and lack of hygiene, some authors considered continuously missed dental appointments as an indicator of child neglect that could be used as a tool for the early identification of abuse.<sup>37</sup> For this reason, Brattabø et al. suggest that dental practitioners are in a unique position in identifying suspected cases of abuse and neglect: patients with oral health deficiencies are suspected to be neglected.<sup>37</sup> For these reasons, dentists should pay close attention to these different aspects of dental clinical practice that could lead to a concrete suspicion of child neglect.

Furthermore, other conditions different from neglect are associated with s-ECC. A strong correlation between the frequent use of pacifiers and s-ECC is reported, and between low socioeconomic status and ECC.<sup>17</sup>

Even for these reasons, some authors suggest caution when considering a parent as negligent. It is reported that some factors are useful in the diagnosis of neglect: the child could be harmed by lack of dental care; dental treatments could have a significant benefit for the child; considering the benefits of treatment, parents

should choose rather than avoid it; the access to care is not used even if it is available for the family; the parents comprehend the importance of dental treatment.<sup>28</sup> Some families are unable to receive dental care because of a lack of funds or transportation issues. So, first, health care providers should evaluate if dental services are accessible to this kind of family. If the parent fails to obtain therapy, despite the correct information, some authors suggest that the case should be reported to social services or other child protective services.<sup>28</sup>

#### **Knowledge of dental professionals**

Approximately half of the dentists are exposed to children with dental neglect and special needs, so dentists, oral hygienists, and other dental professionals should be able to detect suspected cases and report them to local authorities.<sup>38</sup> For this reason, many studies in the last years addressed the issue of recognizing and reporting child abuse situations.

The reporting rate is one of the most relevant problems in child abuse. Many studies reported that the major barrier to reporting cases is the uncertainty of diagnosis.<sup>30,36,38-44</sup> A significant association between specific programs in childcare and a high rate of reported child abuse cases is reported.<sup>40</sup> In addition, the length of work experience is significantly associated with a great rate of reported cases.

Furthermore, it is reported that other causes of underreporting are the fear of consequences for children and the inadequate training to report cases.<sup>30,36,38,39,42,44</sup>

Some studies underlined that dental students did not receive enough formal training about child abuse, although students' knowledge about child abuse, ethical and legal responsibility. In addition, the rate of reported cases increases along with the increasing length of time being trained and after graduation.<sup>29,30,36,40,41,45,46</sup>

It is reported that most dentists need further training on the identification of child neglect and abuse and on the mechanisms of reporting suspected cases <sup>15,30,36,40</sup>; Duman et al. report a better level of knowledge in the field among students from Australia, Jordan, and the United States whereas a poorer level was found in Turkey students.<sup>30</sup> They also reported that this could be due to the national action plans: Australia, Jordan, Nigeria, and the Republic of South Africa plans include the specific training of health

personnel.<sup>30</sup> Therefore, it follows that healthcare workers have a greater awareness of child abuse and better skills in detecting cases and managing the issue.

In many cases, the internet is the major source of information even for healthcare professionals.<sup>15,30</sup> Hussein et al. reported that almost 50% of dental professionals collect information on child abuse and neglect on the internet, followed by education programs, dental meetings and conferences, journals, and books or brochures.<sup>15</sup> The uncertainty in recognizing child abuse situations might be a sign that dental professionals need further education on this subject. A high rate of students with specific training is related to a high rate of reporting suspected cases.<sup>41,43</sup> For this reason, Bjørknes et al. reported a significantly higher rate of barriers to not reporting suspected cases in dental personnel who did not receive specific training.<sup>43</sup> On the other hand, Rønneberg et al. state that the rate of reported cases could be higher in professionals with the lowest rate of undergraduate specific training: authors postulated that this could be due to the fear to not comply with the law.<sup>41</sup>

## CONCLUSIONS

Child abuse and neglect are relevant issues, not only in the social context but also for healthcare professionals who could face children victim of abuse. As more than half of lesions occur in the head and neck, dental professionals could provide valuable information in case of child abuse and have a relevant role in detecting oral signs suggestive of abuse and neglect.

There is a bulk of literature on this field, so this review focused on the last ten years of research in order to evaluate the most in-depth issues. In the study period, most of the published studies have focused on the approach of dental professionals to child abuse, but few studies on the suggestive signs of abuse are available so with this review we tried to synthesize the most relevant findings in dental clinical practice in order to help dentist in the correct recognition of cases of abuse. In further studies, one of the topics to focus attention on should be the ability

of the dentist to evaluate whether the injury is accidental or non-accidental. Based on the child's age and the pattern of the bruises, non-accidental bruises can be distinguished from accidental bruises.

This review has also shown that the knowledge of dental students and dental professionals about child abuse and neglect is not sufficient. Research has shown that many dentists feel unprepared for this role, and it could be related to the need for practical training rather than theoretical lessons, both to recognize situations at risk of abuse and to know the protocols to be followed in these cases.

Recognizing child abuse is not an easy task and requires a multidisciplinary approach among healthcare professionals as well as it could be necessary for the connection between professionals working with children and children welfare services.

When doubts arise or consultation is needed, a pediatric dentist or a dentist with formal training in forensic odontology can ensure appropriate testing, diagnosis, and treatment. In other cases, the implication of a forensic odontologist could help to detect peculiar child abuse cases where the uncertainty of the diagnosis could be a barrier to reporting the case.

Therefore, on the one hand, better undergraduate training is essential, and on the other hand, a major use of the forensic odontologist in clinical practice could be appropriate.

In conclusion, with this review, we would encourage the scientific community to focus more on the different lesions suggestive of child abuse rather than on the knowledge of dental professionals on this topic as it is too clear that they are not well prepared in recognizing dental signs. For this reason, if the scientific community will focus more on the type of lesions, we trust that we will create a future community of dentists more prepared in this field.

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## REFERENCES

1. Leeb RT. Child maltreatment surveillance: uniform definitions for public health and recommended data elements. Version 1.0. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2008.
2. Naidoo S. A profile of the oro-facial injuries in child physical abuse at a children's hospital. *Child Abuse Negl* 2000;24:521-34. [https://doi.org/10.1016/S0145-2134\(00\)00114-9](https://doi.org/10.1016/S0145-2134(00)00114-9).
3. Gubbels J, Assink M, Prinzie P, van der Put CE van der. Why Healthcare and Education Professionals Underreport Suspicions of Child Abuse: A Qualitative Study. *Soc Sci* 2021;10:98. <https://doi.org/10.3390/socsci10030098>.
4. Christoffersen MN, Armour C, Lasgaard M, Andersen TE, Elklit A. The Prevalence of Four Types of Childhood Maltreatment in Denmark. *Clinical Practice & Epidemiology in Mental Health* 2013;9:149-56. <https://doi.org/10.2174/1745017901309010149>.
5. Kloppen K, Haugland S, Svedin CG, Mæhle M, Breivik K. Prevalence of Child Sexual Abuse in the Nordic Countries: A Literature Review. *J Child Sex Abuse* 2016;25:37-55. <https://doi.org/10.1080/10538712.2015.1108944>.
6. ben Yehuda Y, Attar-Schwartz S, Ziv A, Jedwab M, Benbenishty R. Child abuse and neglect: reporting by health professionals and their need for training. *Isr Med Assoc J* 2010;12:598-602.
7. Somani R, Kushwaha V, Kumar D, Khaira J. Child Abuse and Its Detection in the Dental Office. *Journal of Indian Academy of Forensic Medicine* 2011;33:361-5.
8. Johnson CF. Inflicted Injury Versus Accidental Injury. *Pediatr Clin North Am* 1990;37:791-814. [https://doi.org/10.1016/S0031-3955\(16\)36937-1](https://doi.org/10.1016/S0031-3955(16)36937-1).
9. Costacurta M. Oral and dental signs of child abuse and neglect. *Oral Implantol (Rome)* 2015. <https://doi.org/10.11138/orl/2015.8.2.068>.
10. Nagarajan Sk. Craniofacial and oral manifestation of child abuse: A dental surgeon's guide. *J Forensic Dent Sci* 2018;10:5. [https://doi.org/10.4103/jfo.jfds\\_84\\_16](https://doi.org/10.4103/jfo.jfds_84_16).
11. Becker DB, Needleman HL, Kotelchuck M. Child abuse and dentistry: orofacial trauma and its recognition by dentists. *The Journal of the American Dental Association* 1978;97:24-8. <https://doi.org/10.14219/jada.archive.1978.0447>.
12. Sheets LK, Leach ME, Koszewski IJ, Lessmeier AM, Nugent M, Simpson P. Sentinel Injuries in Infants Evaluated for Child Physical Abuse. *Pediatrics* 2013;131:701-7. <https://doi.org/10.1542/peds.2012-2780>.
13. Welbury RR, MacAskill SG, Murphy JM, Evans DJ, Weightman KE, Jackson MC, et al. General dental practitioners' perception of their role within child protection: a qualitative study. *Eur J Paediatr Dent* 2003;4:89-95.
14. Cairns AM, Mok JYQ, Welbury RR. The dental practitioner and child protection in Scotland. *Br Dent J* 2005;199:517-20. <https://doi.org/10.1038/sj.bdj.4812809>.
15. Hussein AS, Ahmad R, Ibrahim N, Yusoff A, Ahmad D. Dental health care providers' views on child physical abuse in Malaysia. *European Archives of Paediatric Dentistry* 2016;17:387-95. <https://doi.org/10.1007/s40368-016-0242-z>.
16. Cavalcanti AL. Prevalence and characteristics of injuries to the head and orofacial region in physically abused children and adolescents - a retrospective study in a city of the Northeast of Brazil. *Dental Traumatology* 2010;26:149-53. <https://doi.org/10.1111/j.1600-9657.2009.00859.x>.
17. Scorca A, Santoro V, de Donno A, Grattagliano I, Tafuri S, Introna F. Early childhood caries (ECC) and neglect in child care: analysis of an Italian sample. *Clin Ter* 2013;164:e365-71. <https://doi.org/10.7417/CT.2013.1614>.
18. Valencia-Rojas N, Lawrence HP, Goodman D. Prevalence of Early Childhood Caries in a Population of Children with History of Maltreatment. *J Public Health Dent* 2008;68:94-101. <https://doi.org/10.1111/j.1752-7325.2007.00077.x>.
19. Keene EJ, Skelton R, Day PF, Munyombwe T, Balmer RC. The dental health of children subject to a child protection plan. *Int J Paediatr Dent* 2015;25:428-35. <https://doi.org/10.1111/ipd.12149>.
20. Kassebaum DK, Dove SB, Cottone JA. Recognition and reporting of child abuse: a survey of dentists. *Gen Dent* n.d.;39:159-62.
21. Children's Bureau/ACYF/ACF/HHS. Mandatory Reporters of Child Abuse and Neglect. <https://www.childwelfare.gov/pubpdfs/MandaPdf2019>.
22. Katner DR, Brown CE. Mandatory reporting of oral injuries indicating possible child abuse. *The Journal of the American Dental Association* 2012;143:1087-92. <https://doi.org/10.14219/jada.archive.2012.0038>.
23. Mathur S, Chopra R. Combating child abuse: the role of a dentist. *Oral Health Prev Dent* 2013;11:243-50. <https://doi.org/10.3290/j.ohpd.a29357>.
24. Svevo-Cianci KA, Hart SN, Rubinson C. Protecting children from violence and maltreatment: A qualitative comparative analysis assessing the implementation of U.N. CRC Article 19. *Child Abuse Negl* 2010;34:45-56. <https://doi.org/10.1016/j.chiabu.2009.09.010>.
25. Rayman S, Dincer E, Almas K. Child abuse: concerns for oral health practitioners. *N Y State Dent J* n.d.;79:30-4.
26. Mathews B, Kenny MC. Mandatory Reporting Legislation in the United States, Canada, and Australia: A Cross-Jurisdictional Review of Key Features, Differences, and Issues. *Child Maltreat* 2008;13:50-63. <https://doi.org/10.1177/1077559507310613>.
27. Nagelberg RH. Child abuse awareness in the dental profession. *Dental Economics* 2015;105:n.p.-n.p.
28. Fisher-Owens SA, Lukefahr JL, Tate AR, Krol D, Braun P, Gereige R, et al. Oral and Dental Aspects of Child Abuse and Neglect. *Pediatrics* 2017;140. <https://doi.org/10.1542/peds.2017-1487>.
29. Al-Ani A, Hashim R, Schiffner U, Splieth ChH. Child physical abuse: knowledge of dental students in Hamburg, Germany. *European Archives of Paediatric Dentistry* 2021;22:1057-65. <https://doi.org/10.1007/s40368-021-00651-0>.
30. Duman C, Al-Batayneh OB, Ahmad S, Durward CS, Kobylińska A, Vieira AR, et al. Self-reported knowledge, attitudes, and practice of final-year dental students in relation to child abuse: A multi-centre study. *Int J Paediatr Dent* 2021;31:801-9. <https://doi.org/https://doi.org/10.1111/ipd.12781>.
31. Fredriksen TV, Sjøfstad S, Kranstad V, Willumsen T. Preparing for attack and recovering from battle: Understanding child sexual abuse survivors' experiences



- of dental treatment. *Community Dent Oral Epidemiol* 2020;48:317-27. <https://doi.org/https://doi.org/10.1111/cdoe.12536>.
32. Wolf E, Grinneby D, Nilsson P, Priebe G. Dental care of patients exposed to sexual abuse: Need for alliance between staff and patients. *Eur J Oral Sci* 2021;129. <https://doi.org/10.1111/eos.12782>.
  33. Scorca A, Santoro V, Donno A, Psy.D I, Tafuri S, Introna F. Early childhood caries (ECC) and neglect in child care: Analysis of an Italian sample. *Clin Ter* 2013;164:e365-71. <https://doi.org/10.7417/CT.2013.1614>.
  34. Fisher-Owens SA, Lukefahr JL, Tate AR. Oral and Dental Aspects of Child Abuse and Neglect. *Pediatr Dent* 2017;39:278-83.
  35. Sillevs Smitt H, de Leeuw J, de Vries T. Association Between Severe Dental Caries and Child Abuse and Neglect. *Journal of Oral and Maxillofacial Surgery* 2017;75:2304-6. <https://doi.org/10.1016/j.joms.2017.05.004>.
  36. Harris CM, Welbury R, Cairns AM. The Scottish dental practitioner's role in managing child abuse and neglect. *Br Dent J* 2013;214:E24-E24. <https://doi.org/10.1038/sj.bdj.2013.435>.
  37. Brattabø IV, Bjørknes R, Åstrøm AN. Reasons for reported suspicion of child maltreatment and responses from the child welfare - a cross-sectional study of Norwegian public dental health personnel. *BMC Oral Health* 2018;18:29. <https://doi.org/10.1186/s12903-018-0490-x>.
  38. Kuganathan S, Nguyen T, Patel J, Anthonappa R. Knowledge, experiences and attitudes of dental health professionals towards reporting child abuse in Western Australia. *Aust Dent J* 2021;66:194-200. <https://doi.org/10.1111/adj.12823>.
  39. Hafiz Muhammad Ali Khan, Naveed Mansoori, Muhammad Hamza Sohail, Muhammad Ajwad Humayun, Anam Liaquat, Syed Muhammad Mubeen, et al. Child physical abuse: awareness and practices of medical and dental doctors in Pakistan. *J Pak Med Assoc* 2021;1-13. <https://doi.org/10.47391/JPMA.1233>.
  40. Nunes LS, Silva-Oliveira F, Mattos FF, Maia FBF, Ferreira EF e, Zarzar PMP de A. Prevalence of recognition and reporting of child physical abuse by dental surgeons and associated factors. *Cien Saude Colet* 2021;26:5013-22. <https://doi.org/10.1590/1413-812320212611.3.02442020>.
  41. Rønneberg A, Nordgarden H, Skaare AB, Willumsen T. Barriers and factors influencing communication between dental professionals and Child Welfare Services in their everyday work. *Int J Paediatr Dent* 2019;29:684-91. <https://doi.org/10.1111/ipd.12507>.
  42. Jakobsen U, Fjallheim AS, Gislason H, Gudmundsen E, Poulsen S, Haubek D. Dental professionals' experience with and handling of suspicion of child maltreatment in a small-scale society, the Faroe Islands. *Clin Exp Dent Res* 2019;5:145-50. <https://doi.org/10.1002/cre2.164>.
  43. Bjørknes R, Iversen AC, Nordrehaug Åstrøm A, Vaksdal Brattabø I. Why are they reluctant to report? A study of the barriers to reporting to child welfare services among public dental healthcare personnel. *Health Soc Care Community* 2019;27:871-9. <https://doi.org/10.1111/hsc.12703>.
  44. Brattabø IV, Bjørknes R, Breivik K, Åstrøm AN. Explaining the intention of dental health personnel to report suspected child maltreatment using a reasoned action approach. *BMC Health Serv Res* 2019;19:507. <https://doi.org/10.1186/s12913-019-4330-8>.
  45. Hazar Bodrumlu E, Avşar A, Arslan S. Assessment of knowledge and attitudes of dental students in regard to child abuse in Turkey. *European Journal of Dental Education* 2018;22:40-6. <https://doi.org/10.1111/eje.12242>.
  46. Hashim R, Al-Ani A. Child physical abuse: assessment of dental students' attitudes and knowledge in United Arab Emirates. *European Archives of Paediatric Dentistry* 2013;14:301-5. <https://doi.org/10.1007/s40368-013-0063-2>.
  47. da Silva-Júnior IF, Hartwig AD, Stürmer VM, Demarco GT, Goettens ML, Azevedo MS. Oral health-related quality of life in Brazilian child abuse victims: A comparative study. *Child Abuse Negl* 2018;76:452-8. <https://doi.org/10.1016/j.chiabu.2017.11.022>.
  48. Barth J, Bermetz L, Heim E, Trelle S, Tonia T. The current prevalence of child sexual abuse worldwide: a systematic review and meta-analysis. *Int J Public Health* 2013;58:469-83. <https://doi.org/10.1007/s00038-012-0426-1>.
  49. Azzopardi C, Eirich R, Rash CL, MacDonald S, Madigan S. A meta-analysis of the prevalence of child sexual abuse disclosure in forensic settings. *Child Abuse Negl* 2019;93:291-304. <https://doi.org/10.1016/j.chiabu.2018.11.020>.