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## REVIEW ARTICLE

### Role of a Dentist in the Diagnosis of Child Abuse and Neglect: A Literature and Narrative Review

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#### Abstract:

##### Background:

Child Abuse (CA) is defined as any physical or psychological harm inflicted upon children. The most commonly affected anatomical region in these cases is the orofacial complex, thereby placing dentists in a dominant position for detecting CA. The statistical figures referred to CA are high, and many cases go unreported.

##### Objective:

To determine the level of knowledge, the aptitudes and capacity of dentists in reporting cases of CA; the barriers facing the reporting of cases; and the key clinical characteristics for the detection of CA.

##### Methodology:

A search was made of the PubMed (MEDLINE), ScienceDirect, LILACS and SciELO databases for articles published up until March 2019, involving analytical observational and descriptive studies relevant to the objectives of our study. All articles were independently reviewed by two authors.

##### Results:

Injuries caused by CA are largely located in the orofacial region – the most prevalent being caries, burns and fractures. The most frequently identified risk factor is behavioral alterations on the part of the parents or caregivers. The reviewed studies reflect a discrepancy between suspected and reported cases of CA.

##### Conclusion:

Although dentists are able to detect injuries, there is a great lack of knowledge about how to report cases of CA to the authorities. It is interesting to establish guidelines for the detection and reporting of suspicious cases. Improved training in forensic and legal dentistry is needed, together with the establishment of detection and reporting protocols. The clinical signs detected in the case of CA and neglect include untreated caries, poor oral hygiene, traumatism, burns, lacerations and biting. The recognition of such signs and correct case history compilation are essential for the detection of CA.

**Keywords:** Dental neglect, Dentists, Maltreatment, Diagnosis, Child abuse, Child neglect, Child protection.

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## 1. INTRODUCTION

Child Abuse (CA) is complicated to define. In effect, the definition changes in different studies according to the context

involved, since there is a lack of agreement in the scientific community that prevents homogenization of the different definitions. The definition of Child Neglect (CN) was done by

Greenbaum *et al.* as the failure of the primary caregivers to meet the child's basic intellectual, physical, or emotional needs [1], though no precise indication is given as to what the parents or caregivers have to do (or not do), or for how long, to cause immediate or potential harm [2]. The Expanded Hierarchical Classification System (EHCS) is the most widely used tool and classifies child abuse into four broad categories: sexual abuse, physical abuse, neglect and emotional abuse [3]. There are high comorbidity levels among these four categories [4].

It has been found that approximately 50-80% of all documented cases of CA involve the head and neck region (traumatism of the mouth, head and face), thereby placing dental professionals in a dominant position for detecting and diagnosing the physical and emotional manifestations of CA and reporting it to the competent authorities [5 - 12]. Unfortunately, according to Kaur *et al.* [5], 55% of the surveyed dentists did not have the capacity to interpret suspect cases and identify signs of abuse, due to a lack of training in the field and of knowledge about how to report such cases to the authorities. Child abuse thus constitutes a largely unknown and little reported social problem that affects all countries and social spheres [13].

The literature shows a discrepancy between suspected cases of CA and actually reported cases [14 - 15], thus indicating that although dentists are capable of recognizing and suspecting cases of CA, there is a lack of knowledge about how to proceed in such cases. This contradiction between suspicion and reporting shows the adequate management of children suffering CA to remain deficient. In order to address this problem, it is necessary to establish whether the theoretical knowledge of dentists is correct and sufficient to diagnose and report CA. Thus, the purpose of this study was to review the current literature in order to assess current perceptions, knowledge and attitudes among dental professionals in relation to CA; the barriers facing the reporting of cases; and the key clinical characteristics for the detection of CA.

## 2. METHODOLOGY

The PubMed (MEDLINE) database of the United States National Library of Medicine, ScienceDirect, LILACS and Scielo were used to conduct a literature search of articles published up until March 2019. The search terms "dental neglect", "dentistry", "maltreatment", "diagnosis", "child abuse" and "child neglect" were used in different combinations. No restrictions were placed on the year or language of publication. The search was completed with a review of the references of the selected articles to identify additional studies not found in the initial literature search. All articles selected from the electronic and manual searches were independently assessed by the first and second authors of the present study, based on the established inclusion criteria.

Chosen full-text articles were required to meet the follo-

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wing criteria: descriptive (cross-sectional) or analytical observational (retrospective and prospective) studies pertinent to the objectives of the present study, and with a clear definition of CA or CN. All studies involving health or non-health professionals other than dentists were excluded (Table 1).

## 3. RESULTS

The main physical injuries and psychological signs found were the presence of caries [16 - 25] and increased dental plaque and gingival inflammation scores [20], reflecting the close relationship between abuse and/or neglect and poor oral hygiene and health [18, 19, 21]. Burns [7, 25 - 27] and bone and dental fractures [19, 23, 25, 28, 29], as well as bacterial and viral infections [30, 23], fractures, lacerations, malocclusions [16] due to traumatism [31], biting or contusions were also reported [7, 27, 29, 32]. Children suffering CA also presented psychological disorders such as anxiety, depression or stress [33 - 35]. The most frequent risk factor for abuse was behavioral alterations in the form of depression, personality alterations, anxiety, stress or social isolation [36, 37]. A low socioeconomic level and alcohol and drug abuse were also associated with an increased risk of abuse [38], in the same way as monoparental families or criminality [6, 39, 40].

The suspicion and reporting of cases were seen to vary among the different studies [9, 13, 14, 41 - 55]. The main barrier faced during the reporting of abuse was an uncertain diagnosis [41, 45, 50, 54], followed by concern about the consequences which reporting may have for the child [41, 48, 51, 54], and a lack of knowledge of how to proceed in reporting CA [13, 45, 54] (Table 2). While no international standards or protocols are available, reporting to the authorities or the police was the most commonly used option among the surveyed dental professionals [25, 43, 45].

**Table 1. Strategy inclusion and exclusion criteria.**

Key words	Dental neglect, Dentistry, Maltreatment, Diagnosis, Child abuse, Child neglect
Inclusion criteria	- Pertinent to the objectives - Cross-sectional studies - Retrospective and prospective studies - Questionnaire, interview, survey studies - Clear definition of CA or CN
Exclusion criteria	- Expert opinions - Clinical cases - Professionals other than dentists

CA: Child Abuse CN: Child Neglect

## 4. DISCUSSION

The present study was carried out to determine whether dentists are able to detect cases of CA based on a series of clinical data and proceed as required in confirmed cases of abuse. The percentage of reported cases was low in comparison with the number of suspected cases. Child abuse is difficult to address, for although the prevalence and incidence of CA are high, the exact number of cases is not known and there are no established diagnostic and reporting protocols for such situations. Despite the great relevance of the problem, CA has been seen to involve much uncertainty in the different studies published in the dental care setting [14, 42, 46].

**Table 2. Main findings of the studies included in the literature review.**

Author,year/Type of Study	Main Results and Country	Why did they not report?
Ramos-Gómez <i>et al.</i> , 1998 [55] I	16% suspected at least one case of abuse/neglect in the 5 years before the study. USA	Of the surveyed professionals that did not report a suspected case of CA, 71% had never seen a case of child abuse or neglect; 14% did not report due to lack of an adequate history; 6% due to a lack of knowledge about the problem of child abuse and neglect and of the role of the healthcare professional in reporting it; 3% out of concern that reporting may have more negative than positive consequences; 1% because of the impact it could have on their clinical practice; 1% due to a lack of time; and 1% because they did not believe the case would be investigated.
John <i>et al.</i> , 1999 [41] I	28% of those surveyed suspected cases of CA. Australia	86% did not report due to an uncertain diagnosis; 81% because of concern about the consequences for the child; 26% due to patient confidentiality reasons; and 18% out of fear of litigation.
Kilpatrick <i>et al.</i> , 1999 [51] II	58% of the pediatric dentists suspected some case of abuse, versus 24% of the general dentists. Australia	75-80% did not report due to patient confidentiality reasons; 43-38% did not do so because of concern about the consequences for the child.
Love <i>et al.</i> , 2001 [42] II	81% of those surveyed suspected some CA. USA	NA
Cairns <i>et al.</i> , 2005 [53] I	29% of the dentists suspected some CA in the course of their professional life. Scotland	Only 8% of the suspicions were reported; 11% were concerned about a negative impact on their practice; 34% feared family violence towards the child; 31% feared violence directed against them; and 48% feared litigation.
Thomas <i>et al.</i> , 2006 [44] I	21% of those surveyed suspected some CA. USA	NA
Manea <i>et al.</i> , 2007 [49] I	16% suspected cases of CA. Italy	NA
Harris <i>et al.</i> , 2009 [9] II	Two out of every three of those surveyed suspected some case of CA. United Kingdom	NA
Al-Habsi <i>et al.</i> , 2009 [45] I	15% of those surveyed suspected some CA in the last 6 months. United Kingdom	86% did not report due to an uncertain diagnosis; 68% due to a lack of procedures; 66% out of fear of violence to the child; 28% out of fear of litigation; 26% out of fear of family violence against them; and 10% out of fear of the impact on their practice.
Uldum <i>et al.</i> , 2010 [54] II	13.9% of the dentists suspected some case of child abuse/neglect in the last 6 months. Denmark	80% did not report due to an uncertain diagnosis. Other reasons were fear of violence to the child; a lack of knowledge of the procedures for reporting; and concern about the consequences for the child in the event of intervention by the authorities.
Tornavoi <i>et al.</i> , 2011 [46] I	62% of those surveyed did not consider themselves qualified to diagnose cases of CA. Brazil	NA
Azevedo <i>et al.</i> , 2012 [47] II	14.3% of those surveyed suspected cases of CA. Brazil	NA
Sonbol <i>et al.</i> , 2012 [48] II	49.6% suspected cases of CA. Jordan	43% failed to report because of concern about the consequences for the child; 41% did not have a clear diagnosis and did not know where to report.
Harris <i>et al.</i> , 2013 [50] I	37% of those surveyed suspected abuse/neglect of their pediatric patients. Scotland	Only 11% referred a case. Of the unreported cases, 74% were due to a lack of diagnostic certainty.
Al-Dabaan <i>et al.</i> , 2014 [14] II	59% of those surveyed suspected cases of CA. Saudi Arabia	19.7% did not wish to get involved.
Van Dam <i>et al.</i> , 2015 [52] I	24% of the general dentists suspected CA in the last year. The Netherlands	NA
Al-Hajeri <i>et al.</i> , 2018 [13] II	39% of those surveyed suspected cases of CA. Males showed greater suspicion than females. United Arab Emirates	54.9% did not report due to a lack of diagnostic certainty; 59.6% because of possible family violence; and 60.2% out of a lack of knowledge of how or where to report.

I: Questionnaire, Interview, Survey II: Cross-sectional CA: Child Abuse NA: Not Available

The injuries associated with abuse are largely located in the orofacial region [28, 56]. As a result, dentists play a very important role in diagnosing CA [16, 44, 45]. The capacity of dental professionals to suspect and diagnose CA is a crucial issue [13, 56]. The results of the different studies reflect an important discrepancy between professionals that suspect CA and those that effectively report cases of abuse to the competent authorities.

Few dentists have received pre or postgraduate training or have learned about the subject in the course of their professional life [5, 14, 15, 44], even though knowledge of forensic dentistry is also essential in other settings [57, 58]. Three studies [9, 42, 44] have respectively found that 43%, 73% and 85% of all dentists had received training in CA during their graduate years. In contrast, other authors have reported that most dentists (91%) have never received training in CA [49]. This discrepancy may be attributable to the different training or educational plans found in different countries. In this regard, the United Kingdom and the United States provide more training in this field than Brazil or Greece, according to Rodrigues *et al.* [59]. There is an important discrepancy between studies that consider dentists to have sufficient knowledge and capacity to detect cases of CA [9, 14, 44, 47, 55] and those that consider knowledge and preparation to be insufficient [6, 43, 46]. According to different authors [43, 60], approximately 50% of those surveyed considered themselves to be in a key position for detecting CA, but almost 78% were not prepared to report the detected cases. Despite this difference, and regardless of whether the professionals considered themselves capable of detecting abuse or not, the great majority agreed on the importance of their role as dentists in clinical practice were aware of the legal importance of reporting and acknowledged the crucial relevance of training in this field [25, 41, 43, 45]. Increased knowledge has been observed in professionals specialized in pediatric dentistry [51] versus general dentists. The former are more informed about when and where to report CA, but are unaware of their legal responsibility if they fail to report cases of abuse [44].

Important discrepancies have been found in the reviewed literature. Dentists have different attitudes and positions with respect to the handling and reporting of cases of abuse: some prefer to inform the police or call telephone help services for cases of abuse, while others prefer to talk with the parents or caregivers or contact the authorities. In turn, others prefer to consult cases of this kind with colleagues or other specialists before deciding any measures or to contact social services, lawyers, or the reference hospital of the child. Lastly, some dentists decide not to report cases of abuse. The most common practice is reporting to the police or pertinent authorities, followed by consultation with other specialists [25, 41 - 43, 45]. A minority prefer to talk with parents or caregivers [14, 52]. However, according to Manea *et al.* [49] and Sfikas *et al.* [61], among other investigators, a large proportion of those surveyed claimed that they would report cases of abuse to the authorities, but had no clear idea of what authorities should be contacted. Uncertainty regarding which authorities to inform about cases of abuse is conditioned to the country involved, since mandatory reporting to the social services is in force in some countries, while others require reporting to childhood

protection services or have no specific protocol for such situations [62]. In a study carried out in Australia, only 24% of the responders knew that they are not legally required to report child abuse in Victoria. However, 74% of them knew that they could be called to testify in juvenile court [41]. No common standards or protocols apply to all, and here again, a multi-disciplinary setting could play a key role, together with adequate training in how to proceed in such situations.

As has been mentioned, there is a discrepancy between the number of suspected cases of CA and the proportion of cases that are actually reported. A number of studies have found the reporting rates to be very low in comparison with the percentages of suspected cases: 18% versus 34% [15], 12% versus 59% [48] or 10% versus 59% [14]. This discrepancy may be due to a number of factors, including the existence of different barriers that complicate the task of dentists in this scenario [13], particularly diagnostic uncertainty or doubts; concern about the consequences of reporting for the child; fear of offending the parents or caregivers; a lack of clear and simple protocols; scant training in CA; and the possible consequences of reporting for their clinical practice [63]. The most frequently cited barriers are diagnostic uncertainty or doubts [42, 43, 46] and concern about the consequences of reporting for the child [6, 14, 48]. Improved training and preparation of the professionals are therefore needed in relation to the detection and reporting of abuse, as well as more legal information about this subject. Dentists must be aware of the legality of their actions and of the existence of legal support of the reporting of cases [9, 41, 42, 61, 64]. In the study published by Laud *et al.*, 21% of the participants were formally trained on the topic during undergraduate education and 12% during graduate education [43]. However, these percentages increased in the study carried out by Harris *et al.* [9], where 26% of the respondents reported that child protection had been included as a class during undergraduate education. In turn, in the study of Sonbol *et al.* [48], 34% of those surveyed reported having formal training to recognize and report child abuse, and 42% presented qualification on the topic. Al Habsi *et al.* found 80% of the respondents to consider this topic to be extremely important for their work, and 79% of the sample expressed a wish to learn more about the issue [45]. All dentists must report suspected child abuse or neglect. The procedure can include an immediate report to the police or pertinent authorities orally by telephone or through electronically. Within 48 hours, a written report form should be completed.

The main physical and psychological consequences of abuse were found to be the presence of caries, poor oral hygiene, bruises, burns, bacterial and viral infections, fractures, lacerations, malocclusions due to traumatism, biting and psychological alterations such as anxiety, depression or stress. With regard to oral health and the presence of caries, Duda *et al.* [16] found the number of treated caries and the number of primary teeth lost by victims of CA to be significantly greater than in the group of children without abuse. Children suffering neglect have poorer oral health and a higher prevalence of caries [16, 18, 21, 22, 43]. Dental traumatism and fractures are among the most common clinical findings (59.7%), with the upper incisors being the most frequently affected teeth [65]. Long-evolving caries and abscesses are indicative of neglect [22 - 24,

32], while infections and sexually transmitted diseases such as syphilis, condylomas and palatal petechiae are indicative of sexual abuse [66, 67]. With regard to burns, those caused by flame or fire are the most prevalent in CA, as evidenced by Andronicus *et al.* [26]. Maguire *et al.* [27] likewise studied burns in CA and found the most frequent presentation to consist of symmetrical lesions with regular margins and of the same depth. In the case of biting, the intercanine distance is typically greater than 3 mm, with an ovoid shape and central ecchymosis [68]. On the other hand, Chapman *et al.* [36] documented the prevalence of psychological and depressive disorders in children exposed to abuse. A number of studies [12, 32] coincide that the most important element in the detection of these clinical manifestations is to take into account the aforementioned characteristics, together with discrepancies between the clinical data and the story told; suspicious behavior on the part of the parents; the behavior of the child with emotional problems [34, 35]; and the presence of bilateral injuries in different stages of healing or with a specific pattern indicative of abuse [22]. Victims of CA are scantily cooperative in the dental clinic [20], and are at an increased risk of suffering emotional and psychological disorders [33, 35] in both childhood and adult life. With this data, it is interesting to develop universal guidelines for dentists where they can systematically review the signs that can be found. Thus, the presence of caries, dental trauma, bitemarks, perioral and intraoral injuries as abrasions, lacerations and burns, infections (gonorrhoea or syphilis) and diseases with an inconsistent history are indicators of child abuse or neglect.

Most of the reviewed studies coincide in the need for collaboration between physicians and dentists and underscore the important role of the professional in preserving the safety of the child. Improved preparation is required for the diagnosis of these signs, with greater training of dentists in forensic dentistry. The discrepant findings of the different studies reflect the lack of standardized and homogeneous protocols for the diagnosis of CA among dentists.

## CONCLUSION

It can be concluded that dentists effectively suspect cases of CA in their clinical practice, but few report such cases. This important discrepancy between the number of suspected cases and the cases actually reported is due to the existence of a series of barriers that complicate the task of the dental professional - thus underscoring the need to improve training in this setting, since cases of CA may persist over time if adequate measures are not taken. The clinical signs of CA or neglect identified in the present study include burns, untreated caries, lacerations, biting, traumatism, dental avulsions, bruises and psychological and behavioral disorders. Careful compilation of the case history is essential. Likewise, standardized guidelines and strategies are needed to help dentists detect cases of CA, as well as multidisciplinary work with other health professionals in both the public and the private settings. The definition of reporting protocols and improved training in CA are crucial for reducing morbidity-mortality among these children.

## CONSENT FOR PUBLICATION

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## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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