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A DENTAL PERSPECTIVE ON CHILD MALTREATMENT

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A dental perspective on child maltreatment
THESIS FOR DOCTORAL DEGREE (Ph.D.)

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In 2009, the Nordic Ombudsmen for Children stated that dental professionals are uniquely placed for identifying child maltreatment. Three factors make dental professionals special: they (i) perform regular examinations in and around the oral region, (ii) may observe children's behaviors and reactions during treatment, and (iii), are able to note patterns in attendance behaviors over long periods of time. The Ombudsmen for Children declares that extensive caries ought to be considered neglect until proven otherwise and, furthermore, that failure to attend dental appointments may indicate broader neglect. Thus, routines for how to manage such situations must be established. According to the Social Services Act, dentists, dental hygienists and dental nurses must report suspicions of child abuse and neglect to the Social Services. However, it is well known that few will actually submit a report for every suspicion that occurs. The Ombudsmen for Children urge all Nordic nations to take steps to ensure that dental caregivers follow through with mandatory reporting; the state must provide education to students and professionals as well as initiate inter-professional collaborations. Furthermore, within pediatric dentistry, cutting-edge competence must be established and research should be initiated to understand why dental professionals fail to report. All other professionals who work with children must receive systematic updates on the dental perspective regarding maltreatment. The Ombudsmen for Children state that, in order to prevent child maltreatment and identify children at risk for maltreatment, authorities in each nation must acknowledge the important role of dental professionals within child protection.

ABSTRACT

Children who are exposed to child maltreatment are at risk of developing physical and mental ill-health and of expressing risk-taking behaviors. International studies describe associations of child maltreatment with caries, head and neck injuries and intra-oral injuries. Similar studies in a Swedish context are scarce, and little is known. The present thesis analyzed associations of oral health and oral health behaviors among children exposed to child maltreatment, as well as among children who were enrolled at the Social Services because of suspected child maltreatment. The thesis studies also describe the clinical management of suspected child maltreatment within dental health services concerning mandatory reports (decision-making, prevalence, and characteristics).

Study I investigated – among 5,940 Grade 9 compulsory school and second-year high school pupils – the association between self-perceived oral health and (i) self-reported experiences of physical abuse, (ii) intimate partner violence, (iii) forced sex, and (iv) bullying. The following items were included: socio-demographic variables, abuse variables, and self-perceived oral health. Adolescents who reported poor self-perceived oral health also reported experience of physical abuse, intimate partner violence, bullying and forced sex (aOR 2.3–14.7). The likelihood of reporting poor oral health increased from aOR = 2.1 for a single incident of abuse to aOR = 23.3 for multiple incidents.

Study II investigated the management of suspicions of child maltreatment among specialists in pediatric dentistry. Four focus groups with a total of 19 informants were formed. Discussions were video-recorded, transcribed verbatim, and analyzed with thematic analysis. There was common agreement on the meaning of child maltreatment, such as poor oral health, lack of tenderness and love in the family and a child being exposed to various kinds of violence or ill treatment. The main theme for decision-making in mandatory reporting was identified and labeled as “the dilemma of reporting suspicions of child maltreatment”. The dilemma occurred in three subthemes: (1) to support and report, (2) to differentiate between poor well-being and child maltreatment, and (3) the supportive or the unhelpful consultation.

Study III included all mandated dental reports to the Social Services concerning suspicions of child maltreatment in one municipality during the study period. The study analyzed age, gender, and socioeconomic status; main cause for the report; the content of the report; and concurrences with other mandated reports or own applications. The results showed that 111 children had been reported a total of 147 times from dental care services between January 2008 and December 2014. During 2008–2011 a significant increase from 6 to 37 reports per

year occurred ($p < 0.001$). Most reports originated in low socio-economic areas ($p = 0.043$), and 86% of the reports concerned a child who had had prior contact with Social Services. The main reasons for reporting were (i) failure to attend to regular dental check-ups (without known treatment need), and (ii) dental neglect ($p < 0.001$).

Study IV evaluated oral health, oral health behaviors, and parental factors among 86 children investigated by the Social Services because of suspected child maltreatment and for whom a dental record had been requested. The findings were compared with those in 172 controls. Children in the study group were shown to have increasingly severe dental treatment needs compared with controls. Missed appointments and dental health service avoidance occurred more often because caregivers did not bring their children, than for legitimate reasons. Furthermore, children suspected of experiencing maltreatment are more likely to lack parental support in maintaining good oral health and to have been referred for specialist pediatric treatment.

Conclusions Poor self-perceived oral health, presence of dental neglect, and dental health service avoidance- may indicate broader social problems and possible child maltreatment. Thus all dental health professionals should ask questions about the child's social situation when dental disease and/or attendance behaviors cannot be reasonably explained. Pediatric dental care at a specialist clinic is a particularly important setting where children and their families' social situation should be assessed. Dental neglect as a diagnosis or a suspicion should be used more often; it should be documented in the dental records and subsequently reported to the Social Services. A report from dental professionals may help children and their families receive, from other sources, supportive interventions that are unavailable in the dental health services. Furthermore, the Social Services should acknowledge oral health when investigating children's needs according to the Social Services Act.

LIST OF SCIENTIFIC PAPERS

- I. Kvist T, Annerbäck EM, Sahlqvist L, Flodmark O, Dahllöf G. Association between adolescents' self-perceived oral health and self-reported experiences of abuse. *Eur J Oral Sci* 2013; 121: 594–599.
- II. Kvist T, Wickström A, Miglis I, Dahllöf G. The dilemma of reporting child maltreatment in pediatric dentistry. *Eur J Oral Sci* 2014; 122: 332–338.
- III. Kvist T, Cocozza M, Annerbäck EM, Dahllöf G. Child maltreatment-prevalence and characteristics of mandatory reports from dental professionals to the Social Services. *Int J Paediatr Dent* 2016; DOI: 10.1111/ipd.12230.
- IV. Kvist T, Annerbäck EM, Dahllöf G. Oral health in children and adolescents investigated by the Social Services on suspicions of child maltreatment. In manuscript.

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INTRODUCTION

A 5-year-old child came to the dental health clinic for an emergency appointment because it had had a toothache for 1 week. The child's previous appointments for preventive interventions had been irregular since the age of 3 and now there were initial and manifest carious lesions in the primary teeth. The child's oral hygiene and dietary habits were good, according to the parents, although the child ate a lot of cookies and raisins. The parents said this was only because the child refused to listen to them and took cookies from the kitchen even if they had said "no." Also, the child often refused tooth brushing. Two of the child's primary teeth needed extraction because of pulpal lesions and four teeth needed fillings. Thereafter the child needed support for persistent deficits in oral hygiene. The child was referred to a specialist pediatric dental clinic because of behavior management problems in general dentistry. The family failed to attend appointments on several occasions, sometimes without making any contact, so there were interruptions and a delay of several months in the treatment plan. Subsequently, the condition of another tooth became so poor that the tooth needed to be extracted. The clinic plan for treatment under general anesthesia.

In cases like the one above, questions need to be answered:

- To what extent is the disease affecting the child's daily life?
- Why is the child's oral health deteriorating?
- What factors affect the family's capacity to cooperate with treatment?
- Could this situation have been prevented? If so, how?
- Is poor oral health a sign of a broader problem?
- Is this child maltreated?

Children's rights

In 1989, the United Nations (UN) Convention on the Rights of the Child drafted 54 articles based on four main principles in a declaration of children as their own individuals, entitled to free will, safety, nourishing care, and tenderness. As of January 2016, 196 countries, including Sweden, have signed and ratified the UN Convention. Currently, ratification means that the convention will be incorporated into the spirit of any amendments to current legislation and of all new legislation, though the convention is not directly invoked in courts of law. To oversee how countries carry out these recommendations, the Committee on the Rights of the Child holds hearings every fifth year with all countries that have ratified this convention. In 2015, this committee urged Sweden to improve mandatory reporting. They recommended that Sweden acknowledge the child's best interest within the Social Services and incorporate the convention into law. The UN Convention on the Rights of the Child asserts in Article 24: "States Parties recognize the right of the child to the enjoyment of the

highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. States Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services”.

Oral health in a life-course perspective

Good oral health is as important as good mental and physical health. Several factors affect oral health in children, including the presence of oral symptoms, emotional well-being, functional limitations, and social well-being. When the ability to eat, sleep, play, focus, and interact with others is impaired – and when there are feelings of embarrassment, shyness, irritation, frustration, and worries about what other people think – oral health is impaired (1). Oral disorders and oral conditions are known to have a negative impact on the quality of life, while treatment of these improves quality of life (2-5). Poor oral conditions and disease can subsequently affect general health and well-being and undermine weight gain in small children (6), impair school performance (7), and cause parental stress (8). Poor oral health in childhood creates a predisposition for impaired oral health in adulthood, irrespective of socioeconomic conditions (9). Also, unfavorable dental health beliefs from adolescence to young adulthood are related to poorer self-perceived oral health and dental disease (10). Routine visits to the dental health services in adolescence also associate with better oral health in young adults than for those with irregular attendance (11). Socioeconomic differences also affect the perceived impact of oral disease on health-related quality of life (12), as well as the prevalence of dental disease (13) and the desire to attend dental health services on a regular basis (14).

Oral health in Swedish children

Children in Sweden are entitled to comprehensive free dental care, including specialist pediatric dental care and essential orthodontic treatment through the age of 19. Dental visits are organized by the dental health services and children are offered a visit at least biannually. The majority of children and adolescents (85%) attend Public Dental Service clinics with about 15% attending private clinics. The parents choose the dental clinic, thus, children depend on their parents to receive dental health services. In each county, dental clinics are reimbursed through a capitation system for general dentistry. The system for reimbursement within specialist pediatric dental care is financed either through the local government using a fee-for-service system or by direct government funding (15). Thus, parents need not consider financial issues related to dental treatment costs. However, they may have to consider indirect costs such as time away from work and possible effects on their salary.

Dental caries

Dental caries is a multifactorial disease that results from an imbalance between the tooth mineral and the acidic substrate of oral bacteria; but caries also depends on factors such as socioeconomic status, attitudes, parental education level, and family traditions of preventive dental care (16-18). Experience of caries before 3 years of age (severe early childhood caries) predicts caries development into adolescence (19, 20). According to the World Health Organization (WHO), Swedish children have a low prevalence of dental disease in a global perspective. Still, in 2016, dental caries affects every fifth 6-year-old and two-thirds of all 19-year-olds (21). Sweden meets the goal set by the WHO that the average number of decayed or filled teeth (DFT) among 12-year-old children should not exceed 1.5. However, a polarization of dental caries remains: among children with the highest prevalence of dental caries (significant caries index), Sweden still exceeds the goal of an average DFT less than 3.0.

Self-perceived oral health

Subjective measures of self-perceived oral health (SPOH) ask patients to rate their oral health and may provide an excellent complement to clinical examinations (22, 23). Poor SPOH has been associated with dental treatment needs, poor subjective esthetics, and poor self-perceived general health in youths (24, 25). In the Swedish context, however, the correlation between adolescent dental status and SPOH is weak, although other important associations exist that subsequently affect oral health and the development of disease. Adolescents' perceptions of oral health focus mainly on oral symptoms, parental support, the sense of control over oral health, and information from the dental professional about oral health needs (26, 27). Parents' and adolescents' perceptions of dental treatment need do not always coincide (25). Also, there are associations between poor SPOH and risky oral health behaviors (28). No studies have investigated SPOH among children and adolescents in association with child maltreatment.

Specialist pediatric dental care

Approximately 1% of the child population is referred to specialist pediatric dental clinics annually. According to The Swedish Society of Paediatric Dentistry, medically compromised children; children with extensive dental treatment needs, dental fear, or dental phobia; and children at social risk or who exhibit social risk behaviors should be prioritized to receive specialist pediatric dental care (29). Results from a web-based survey to all specialist pediatric dental clinics in Sweden shows that the most common patients referred are (*i*) those with a dental treatment need combined with dental anxiety and/or behavior management

problems, (ii) medically compromised children and (iii) children with extensive dental treatment needs. Also, this survey showed that the informants had noticed an increasing proportion of children having social problems (15).

Characteristics of the child's personality affect the child's ability to cope with dental treatment. Dental behavior management problems (BMP) is a term describing the dentist's perception of how the child cooperates during treatment; uncooperative and disruptive behaviors that delay treatment or render treatment impossible, regardless of the type of behavior or its underlying causes (30, 31). General anxiety, deficits in emotional regulation, internalizing and externalizing behaviors, and difficulties coping with stressful situations are common in children referred to specialist pediatric dentistry because of behavior management problems (32, 33). Underlying conditions, such as attention deficit hyperactive disorders, also increase the risk for BMP (34).

Ethical considerations when treating children in the dental health services

Medical ethics comprises four principles of value: autonomy, beneficence, non-maleficence, and justice. Values specify no exact answers for how to handle specific situations; instead they can only be guidelines. The Swedish Society of Paediatric Dentistry adapted these values and modified them for treatment of children in dental health services (Table 1) (35). All treatment involving children should consider children's physical, psychological, and social abilities. Without violating the child's integrity, the dentist must create conditions that allow the child to follow through with necessary treatment. Dental treatment of children requires planning and arrangement concerning family prerequisites and the child's ability to follow through with the treatment plan. Dentists must communicate with both the parent and the child, who may each have different needs and goals, while determining the best treatment possible (36). Furthermore, assessments of children's overall health and well-being must also evaluate children's oral health needs (37).

Table 1. Ethical values and standpoints regarding dental treatment of children according to the Swedish Society for Paediatric Dentistry. Different situations may occur depending on the perspective of the child, the parent, or the dentist.

A child's perspective	Clinical considerations	A parental perspective	Clinical considerations	A dental perspective	Clinical considerations
The child wants and will participate in treatment.	Ethical conflicts seldom occur.	There is treatment need and the parents agree to the proposed treatment.	Ethical conflicts seldom occur	There is treatment need, and the dentist recommends treatment.	Ethical conflicts seldom occur.
The child refuses to consent to treatment..	Patients are entitled to decline treatment. The dentist should explain why treatment is recommended and investigate the reasons for the child's refusal. There may possibly be a need for a substitute decision-maker.	There is no treatment need but the parents demand treatment.	Dentists must give information and explain why treatment is unnecessary.	There is no treatment need, but the dentist recommends treatment.	Overtreatment violates the principles of good practice, do-no-harm, and fairness. To recommend treatment where no need exists also violates the patient's autonomy due to lack of correct information.
The child is unable to undergo treatment.	For example, there may be dysfunction, illness, social factors, or language barriers. There is a need for a substitute decision-maker.	There is treatment need, but the parents refuse the proposed treatment. Treatment may be postponed with little risk of complications or pain.	Dentists must accept the decision although follow-up is essential.	There is treatment need, but the dentist does not recommend treatment.	<i>Supervised neglect</i> , violates the principles of good practice, do-no-harm, and fairness. To <i>not</i> recommend treatment when need exists violates the patient's autonomy due to lack of correct information.
The child does not dare undergo treatment (anxiety for or fear of the treatment).	Dentists must acknowledge the child's age and functional abilities in order to adapt treatment to the child's level of autonomy	There is treatment need, but the parents refuse the proposed treatment. Postponing treatment would put the child at risk of pain and medical or dental complications.	There may be a need for a substitute decision-maker. If medical consequences are a risk, physicians should be consulted.		
The child is not allowed to undergo treatment.	Assess treatment necessity and a substitute decision-maker must be considered.				

Child maltreatment

Definitions

Definitions and terms vary when referring to children exposed to abuse, neglect, or those who live in risky environments, although most definitions include various types of violence and neglectful caring (38). The WHO defines child maltreatment as “all forms of harm or potential harm towards a child... [which] can be both intentional and unintentional.” As such, actions constituting maltreatment can be either active (harm that is committed) or passive (care that is omitted). An official report of the Swedish government and the Committee Against Child Abuse defined child abuse as when an adult subjects a child to physical or psychological violence, sexual assault, or humiliating treatment, or fails to meet to a child’s basic needs, with a “child” being defined as every human being under the age of 18 years (39). The intention of this definition was to be broader than the Penal code, including a wider context of abuse, neglect, and maltreatment. In another proposition, the government uses the terms *child maltreatment* or *children at risk of maltreatment* instead of *child abuse*. Reasons for persistent difficulties in creating a definition include differences between what is encompassed in the judicial aspect of abuse and neglect, as opposed to aspects related to Social Services administration, and also difficulties in collaboration between professionals (38, 40).

Child maltreatment has four major subtypes (39, 41).

Physical abuse entails intentional use of physical force against a child that results in – or has a high likelihood of resulting in – harm to the child’s health, survival, development, or dignity. Such actions may include, among others, hitting, pulling, punching, or forcing objects into the mouth.

Psychological abuse includes actions such as criticizing, having unreasonable demands, or constantly refusing to listen to the child’s views. This also includes children who live in environments in which violence or the threat of violence is a recurrent feature (intimate partner violence). These actions can be isolated incidents or patterns of failure over time.

Sexual abuse entails engaging a child in sexual activity that he or she does not fully comprehend, or for which the child is unable to give informed consent or is not developmentally prepared, or which violates the laws or social taboos of society.

Neglect includes omission of physical and/or psychological care to provide for the child's development and well-being and can include isolated incidents, a pattern of failure over time, or both. This may include deficiencies in hygiene, diet, and clothing, as well as omission of medical and dental care.

This thesis uses child maltreatment as an umbrella term for physical abuse, psychological abuse, intimate partner violence, sexual abuse, and neglect according to definitions proposed by the Swedish government and The International Society for the Prevention of Child Abuse and Neglect (ISPCAN) (39, 41)

Prevalence

Definitive estimates of international or national prevalence of child maltreatment are not possible, due to wide variations between countries in the method of research used, the definitions of maltreatment, and the organization of child welfare. For example, some countries have child protection registries, while Sweden only maintains official statistics from police reports and self-reports of exposure to child maltreatment. Self-reports may originate from parents who report they have abused their children or from children who have themselves been abused. It is assumed that the true prevalence of child maltreatment is closer to the number of self-reports than to other estimates (42).

Physical abuse. Recent national studies on self-reported child physical abuse show that 13%–15% of Swedish adolescents report experiencing physical abuse. The prevalence of severe physical is approximately 4% (40, 43, 44).

Psychological abuse. Witnessing violence toward another family member, intimate partner violence, is considered as psychological abuse. The prevalence of children who live in homes where there is physical violence is approximately 10% (40, 44).

Sexual abuse. A review in 2016 found that any kind of child sexual abuse in the Nordic countries shows a prevalence varying between 3% and 23% in boys and 11% and 36% in girls (45). Previous studies in Sweden show that 25% of girls and 7% of boys report some type of sexual abuse in childhood (46).

Neglect. From an international perspective, neglect is the most common reason for a report to child protective services (42). In Sweden, a thesis showed that preschool childcare personnel identified signs of neglect in approximately 10% of children (47).

It is common that different kinds of maltreatment overlap, especially regarding intimate partner violence and physical abuse, although the extent of co-occurrence varies. Many children are victimized repeatedly in various ways (42, 48-50).

Risk factors

The etiology and risk factors for child maltreatment are not straightforward. It is a combination and interaction of factors found at different levels that result in an imbalance between risk factors and protective factors (51). Factors that increase susceptibility to child maltreatment are known as risk factors and include parental characteristics, child characteristics, the social context, and the social network; for example, families with difficulties to cope with stress, parental mental disorder, child hyperactivity, chronic illness, or living in a risk environment. Factors that decrease susceptibility are referred to as protective factors (such as secure, warm and loving relationships (41). Close attachment to another person is an important factor for resilience (52). The risk for physical abuse increases with up to 60% when there is intimate partner violence in the home (40). About a third of all children who grow up with maltreatment do not develop any health consequences (52).

Child maltreatment and associated consequences for health

Child maltreatment is recognized as a public health, human rights, legal and social problem (41). In their “Adverse Childhood Experiences (ACE) Study” Felitti et al. (1998), found several features in adults that were associated with maltreatment and household dysfunction in their childhood. Exposure to multiple types of maltreatment further accumulated the risk of ill health later in life and may also lead to economic costs due to low educational achievement, hospitalization, and medical needs (42, 49). Stress is a normal and healthy reaction to danger or exciting events in life. Constant and repeated exposure to possibly dangerous or scary situations, such as child maltreatment or living with intimate partner violence, may lead to chronic stress. Children exposed to child maltreatment may develop a variety of disorders because of this induced stress. However, the impact depends on the child’s prerequisites, available support, and social context. Studies have exposed deficits in self-regulation, poor social relationships, unhealthy lifestyle choices, oppositional behaviors, difficulties in concentration and attention, aggressiveness, eating disorders, low self-esteem, and post-traumatic stress disorder as well as psychosomatic symptoms such as stomachache, headache and sleep disturbances (42, 53-55). In addition, multiple exposure to violence further increase children’s psychiatric symptoms and negative beliefs (55, 56).

The child welfare system

Systems for child protection and child welfare vary among countries. In Sweden, the organization is a family-oriented system with a protective responsibility. Thus, child welfare agencies focus on how the social context affects parental problems and dysfunction within the

family and view child maltreatment mainly as an expression of family dysfunction and social problems (57). The Social Services is the authority responsible for providing either support or protection to children.

The child protection process

In Sweden, the Social Services manages suspicions and investigations of child maltreatment through a child protection process. This is regulated in the Social Services Act (SSA) (58).

The report: Professionals working with children in an authority, in health and dental care, Social Services and prison and probation services are obliged to report to the Social Services if they suspect that children are maltreated. Others in public are requested to report although not obliged.

The investigation: Social Services are obliged to initiate an investigation when something is disclosed through report or application that could lead to any action by the Social Services. In the investigations the aim is, among other things, to confirm or dismiss the suspicion of child maltreatment. The focus is on the child's perspectives and includes a total compilation of the child's needs, parental abilities and social context.

The intervention: An investigation may result in different interventions. First, the investigation may show that no intervention is required. Secondly, the social worker may decide that voluntarily interventions should be suggested. The family may then accept or decline to the proposed intervention. When the child is in danger or is likely to develop unfavorably, coercive care may be proposed according to the Care of Young Persons Act (LVU) (59). In those cases, this decision has to be decided in an administrative law decision.

Prevalence and characteristics

Reliable estimates of the total number of investigations because of suspected maltreatment during a certain period of time are unknown due to the lack of child protective services registries in Sweden. Instead, estimated numbers are based on local studies. The most comprehensive study in Sweden gathered information from 100 municipalities and found that approximately 30 children per 1000 were reported to the Social Services (60). Another local study followed children from 1968 to 1975 in Stockholm and found that Social Services initiated investigations of 12% of children and interventions for 7% on at least one occasion before the age of 18 (61). The recurrence of children in child protection processes varies. A national review reports numbers from 30% to 70%; the most common reason for a recurrence is neglect (62).

Mandatory reporting in Sweden mainly concerns children's behaviors, engaging in criminal acts, parental conflicts, or deficits in care, often because of multiple problems and less frequently involving abuse and neglect (60, 61). Most reports come from professionals, mainly police and schools, whereas healthcare represents a minor proportion of reports (60, 62, 63). Reports from dental health services are not coded separately, so those reports are probably included among healthcare reports. No studies on mandatory reporting from dental health services have been published.

Dental health services and child maltreatment

Mandatory reporting

Dental professionals' legal responsibility regarding child protection is to file a report when they suspect maltreatment. It is not to diagnose or investigate abuse or neglect. Despite this, studies consistently show a failure to report. Studies using questionnaires suggest that the barriers that prevent or delay reports most often involve fear and uncertainty (Table 2). These studies, as well as others, suggest employing educational approaches, as well as collaborating with the Social Services, to overcome low reporting rates and increase knowledge of child maltreatment (64-76).

Table 2. Studies describing the most common barriers toward reporting suspicions of child maltreatment among dental health professionals.

Reference	Uncertainty of diagnosis	Lack of knowledge of procedure	Fear of consequences of reporting for the child	Fear of impact on the dental clinic	Fear of violence toward themselves or their family
Al-Habsi et al (2009)	x	x	x	x	x
Cairns et al (2005)	x	x	x	x	x
Harris et al (2013)	x	x	x	x	x
Laud et al (2012)	x	x	x	x	x
John et al (1999)	x		x	x	
Kilpatrick (2009)	x		x	x	
Tilvawala (2014)	x	x	x		
Uldum et al (2010)	x	x	x		
Welbury et al (2003)	x	x	x		

Other health and medical professionals disclose similar reasons regarding failure to report as those stated by dental professionals (77-82). It is difficult for healthcare workers to separate a "normal" child from one experiencing problems with child maltreatment. Lykke et al. (2008) described that general practitioners react to things they feel are beyond normal (83).

Studies on mandatory reporting among Swedish dental professionals show that most clinics in Public Dental Service have guidelines on how to manage suspicions of child maltreatment and that one-third of the clinics had filed at least one report with the Social Services during a 12-month period. Guidelines also made them more inclined to file a report or contact the Social Services (84). Also, a majority of Swedish specialists in pediatric dentistry report that they had made at least one report during a 24-month period, with “neglect” as the most common trigger for reporting (85). Because the questionnaires mainly involved close-ended questions and predetermined response options, there is little knowledge on why reporting from dental professionals is still inadequate. In a qualitative study among general dentists, Welbury et al. (2003) found that their main reasons for not reporting were a lack of knowledge of the signs and symptoms of physical abuse and lack of confidence in their suspicions of emotional or sexual abuse (72). Factors that make dental professionals suspect child maltreatment and affect their subsequent actions in different situations are unknown.

Oral and dental health in children exposed to maltreatment

Traumatic injuries

There are circumstances in general that should concern dentists when children seek care for traumatic injuries. Studies have revealed situations and localizations that suggest that the injury/condition is related to maltreatment; in the context of the history offered as well as past medical and developmental history (86-88). Extra- and intraoral injuries may occur in association with physical abuse. These include, for example: injuries to the lips, gums, tongue and palate; signs of bites and contusions; and fractures and intrusive and extrusive dental injuries. However, studies seldom find intraoral injuries, possibly because the medical examination seldom includes an oral examination (89-92).

Dental caries

Studies have revealed a high prevalence of untreated dental caries among physically and sexually abused children (93-95). Children enrolled in child protection registries have also been found to have more dental caries in primary teeth compared to controls, although this was not true for the permanent dentition (96). Other studies have found no association between levels of caries and exposure to maltreatment (97). Household dysfunctional problems and intimate partner violence are according to parental reports associated with their children having recent experience of toothache, decayed teeth and/or unfilled cavities (98).

In Sweden, one study have found high levels of decayed and filled teeth in a population receiving assistance from the Social Services for out-of-home care (99).

Dental neglect is defined as a failure to meet a child's basic oral health needs that is likely to result in the serious impairment of a child's oral or general health or development. The UK uses the term "persistent" failure, whereas the USA uses the term "willful" failure (100, 101). The Swedish Dental Association describes dental neglect as when parents fail to ensure dental treatment needs despite knowledge of those needs (102). Despite this, there are difficulties in separating dental caries and parental ignorance from neglect (103).

Dental disability is when dental disease or an oral condition substantially limits a child's development and participation in daily life (104). One study has associated children who have undergone general anesthesia and who had presented with dental pain and infections that impact their daily life with previous experiences of dental neglect (105).

Dental fear and anxiety

Dental fear and anxiety and difficulties coping with dental treatment have been found among adult women with previous exposure to sexual abuse. Regardless of the type of sexual abuse, these women report a higher prevalence of dental fear and anxiety than women in the general population (106, 107). Also, experience of child sexual abuse seems to correlate with negative attitudes and lack of trust toward dental health services (108). Hagqvist *et al.* (2015) found gender differences in dental fear: men's experience of psychological abuse were more likely to be associated with dental fear than the same in women, although women who had experienced multiple traumatic events were also associated with dental fear (109).

Health care attendance

Irregularity in attendance seems to draw attention to children and cause general practitioners to question a child's well-being (83). One case series study in the UK found that one-third of children who had died or been severely harmed because of maltreatment had a history of missed appointments in healthcare (110). A study based on medical records in which there had been injuries related to child maltreatment found dental caries, as well as failure to adhere to medical treatments, to be ICD codes (codes for the International Statistical Classification of Diseases and Related Health Problems) that should raise awareness of child maltreatment (87). Dental health service avoidance and missed appointments relate to the individual child, the social context, dental disease, and parental attitudes (111). To safeguard children and understand underlying reasons for avoidance, some suggest using the term "was not brought" instead of "missed appointment" or "did not attend" when children do not attend health services (112). Dental diseases and disorders requiring extensive treatment increase the risk of developing dental fear and anxiety, difficulties coping with treatment, and subsequent

irregular attendance for dental care (32, 113-116). No studies on associations between dental health service avoidance, missed appointments, and child maltreatment have been done.

Developments in Swedish dental health services on child maltreatment

The Nordic Children's Ombudsmen in 2009, described dental professionals as an untapped resource for recognizing and reporting child maltreatment. This led to guidelines and educational approaches for the dental health services. The Swedish Dental Association drafted national guidelines (102), and the various Swedish counties produced local guidelines as well as introduced training and information on mandatory reporting. In 2014, the National Board of Health and Welfare published guidelines on intimate partner violence and mandatory reporting of child maltreatment (117); also followed by guidelines on intimate partner violence from the Swedish Dental Association.

Most studies on child maltreatment originate in countries other than Sweden where organization of the dental health services and the child welfare system differs, as does the prevalence of dental disease (57, 118). As of March 2016, few studies on oral health in Swedish children who have experienced maltreatment have been published. Existing studies describe oral health among children who have received interventions from the Social Services. Thus, there are no studies on oral health in association with mandatory reporting from dental health services, nor are there studies on oral health as an indicator of child maltreatment or other social dysfunctions.

AIMS OF THESIS

General aim

The general aim of this thesis was to investigate whether there is any relationship between exposure to child maltreatment and perceived oral health. It also aimed to study how specialists in pediatric dentistry think about mandatory reporting when they suspect child maltreatment and what characterizes such a report. Furthermore, the thesis aimed to investigate if there are oral health characteristics associated with child maltreatment.

Specific aims

Study I

To study the association of self-perceived oral health and self-reported experience of exposure to physical abuse, intimate partner violence, bullying, and forced sex.

Study II

To understand how dentists within pediatric dentistry think about and manage suspicions of child maltreatment in their daily work.

Study III

To study the prevalence and characteristics of mandatory reporting to the Social Services from dental health services.

Study IV

To study and describe characteristics of oral health and oral health behaviors among children investigated by the Social Services because of suspected child maltreatment.

MATERIALS AND METHODS

Materials

Study groups

Study I

In 2008, all grade 9 compulsory school pupils and all second-year high-school pupils (in a 3-year high-school system) in Södermanland County, Sweden, were invited to take part in a population-based study ($n = 7,262$). The Center of Public Health conducted the study in collaboration with the Center for Clinical Research at the Södermanland County Council. School nurses and teachers managed questionnaire distribution and collection. The pupils answered the questionnaire in the classrooms. All answers were anonymous and were returned in sealed envelopes. The pupils were informed about the purpose of the study and were told that all information collected would remain confidential. The parents were not informed because, in Sweden, adolescents over 15 years of age are allowed to decide for themselves whether to participate in studies.

Study II

This study involved specialists and postgraduate students in pediatric dentistry discussing child maltreatment. We received 55 statements of interest to participate and, after corresponding by e-mail, we strategically selected 19 for the study based on area of residence. The groups were homogenous, all working full time in pediatric dentistry. We did not consider age, gender, experience, or level of education in the selection process. The study included 4 focus groups. Group size varied from 2 to 6 informants. The small group with two participants was the consequence of late cancellations. In this group, the moderator sometimes had to facilitate the discussion by acting as an informant, revealing personal experiences of clinical encounters and other opinions. In the other groups, the moderator was more passive and simply made sure that everyone could share their thoughts and opinions.

Study III

The study population included all children who, in accordance with the Social Services Act, had been reported by a dental professional in a Public Dental Service clinic, a specialist pediatric dental clinic, or a private clinic within one municipality in Sweden between January 2008 and December 2014. The Social Services Act defines children as persons aged 0–18 years. But because patients receive free dental care until they turn 20, some of the mandatory reports from dental health services could involve 19-year-olds.

Study IV

Study IV included children under investigation for suspected child maltreatment for whom the Social Services had requested a dental record. Child maltreatment includes physical abuse, psychological abuse (including intimate partner violence), sexual abuse, and neglect (39). A matched control group was selected based on gender, age, and the clinic from which the dental record in the study population had been requested.

Methods

The questionnaire (Study I)

Södermanland County Council constructed the questionnaires. The questionnaire administered to the grade 9 pupils comprised 96 items, and the questionnaire administered to the second-year high-school pupils comprised 98 items. This study focused on the following items, which were the same for both grades: sociodemographic variables, abuse, and self-perceived oral health. Sociodemographic variables were coded and categorized into two groups per variable: “boy” or “girl,” “ ≥ 1 parent born in Sweden” or “both parents foreign born,” “live in a purchased house” or “live in a rented apartment,” and “live with both biological parents” or “parents are separated.” Status of employment was categorized into “both parents employed,” “one parent unemployed/on sick leave,” or “both parents unemployed/on sick leave.” Three of the abuse variables were divided into three groups (“no abuse,” “abuse once,” or “abuse more than once”). Forced sex was indicated if the child responded “Yes” to the item concerning it. Questions regarding oral health had five alternatives, which were dichotomized in multivariate logistic regressions by merging “Very good,” “Good,” and “Neither good nor poor” into the category “Good”; “Poor,” and “Very poor” were merged into the category “Poor.” Response rates were 84% in Grade 9, 78% in second-year high school, and 82% overall. The internal response rate for “How do you perceive your oral health?” was 99%, which, in a final sample of 5,890 pupils, represents an internal dropout of 43 persons. Non-respondents were given a second chance to fill out the questionnaire. Reasons for non-participation were illness, absence from school for an internship, or unknown. Screening removed seven individuals for suspected hyper-response (e.g., the individual consistently selects the worst alternative for every question).

Focus groups (II)

We invited specialists and postgraduate students in pediatric dentistry to discuss issues regarding child maltreatment. Invitations were made at a yearly meeting of the Swedish Society of Paediatric Dentistry, thereby using ‘existing lists’ recruitment strategy. This selection process resulted in a snowball effect; others informed individuals who did not sign up at first. In total, 55 statements of interest to participate were received and, after corresponding by e-mail, we strategically selected 19 for the study. The selection of informants was based on their place of residence and number of informants with possibility to attend on the same day in the same area; therefore it was not possible to include all registrations of interest. A theme guide was present, but the informants discussed the topic freely after the moderator introduced it with the open-ended question ‘What is child maltreatment?’ A method used to get informants to reveal the aspects of the topic they find most important. The informants had the opportunity to freely discuss and raise issues or questions on their own. The moderator only asked follow-up questions when necessary or when discussion faded out. Each group lasted approximately 1.5 h. Focus group discussions were conducted at the informants’ dental clinics and were video recorded and transcribed verbatim.

Thematic analysis (II)

Study II analyzed the transcripts from the focus groups using thematic analysis according to the method of Braun and Clarke (119). To evaluate the informants’ experiences and how they understand their role in clinical management of suspected child maltreatment, we searched for themes and patterns across the entire set of data. This analysis is not aimed at theory development, but rather at interpretation of the whole context of the informants’ reality, including both the possibilities and limits of that reality. This study used a “contextualist” method, in-between realism and constructionism, to interpret how participants make meaning and how the social context influences these meanings.

The analysis focuses on how the informants understand their professional role within the child protection system and how they manage clinical encounters when they suspect child maltreatment. First, we familiarized ourselves with the data by reading and rereading the transcribed interviews and reviewing the recordings several times. We then began initial coding of the content by summarizing the data and categorizing it into codes that expressed key concepts in the data. Next, we grouped the various codes into themes. To identify a theme, it must satisfactorily answer the question “What is this expression an example of?”

and must appear as a repeated pattern of interest in the data, though it need not appear verbatim in the transcript (119, 120). We used thematic maps to help us visualize the relation of themes before applying all the themes to the data set as a whole.

The mandatory reports from dental health service and Social Services Acts (III)

Data collection

The Social Services arranged to collect all mandatory reports from the computerized documentation system; *Barns behov i centrum*, (BBIC) [children's need in focus] system, which is based on the British Integrated Children's System (ICS) for processing child protection. All reports were filed under "other healthcare/dental care." The case files for analysis consisted of the dental mandatory report; other sources of concurrent reports; and number of previous self-applications, investigations, and interventions. We analyzed the total and annual number of reports from dentistry during 2008–2014, assessing the prevalence and incidence of reports, characteristics of the children involved, characteristics of the reports, and co-occurrence with other reports and prior contacts with the Social Services.

Characteristics of the child

We documented age and gender of the child and sociodemographic factors of the child's area of residence. The sociodemographic status of the area was based on a combination of the average socioeconomic status (educational level and total income based on Statistics Sweden) and caries prevalence in the area (local epidemiological data). The local government uses this calculation as a basis for reimbursement to the clinics for childhood dental care: the lower the socioeconomic status, the higher the reimbursement for each child. We assessed the socioeconomic status of an area as high, medium, or low. In reports from pediatric specialist clinics, the child's primary clinic was unknown, so we excluded these from the analysis of socioeconomic area.

Characteristics of the report

The reports came from Public Dental Service or specialist pediatric dental clinics or from private clinics. Not all original reports from dental health services were incorporated into BBIC. In these cases, the social workers had made a note on the source of the referral and in some cases the source of referral was unknown. We divided the reports into three main groups, adopted from Wiklund. (2006) (60), based on the primary issue that had prompted the report: abuse and neglect (physical abuse, psychological abuse, intimate partner violence, sexual abuse, or neglect including dental neglect), child-related problems (behavior problems), or parental and parent–child-related problems (deficiencies in care, such as failure

to attend dental appointments). We analyzed reports not incorporated into the BBIC based on the social worker's written interpretation of the main issue.

Previous contacts with Social Services

We registered a prior contact with Social Services if there had been any previous reports, self-applications, investigations, or interventions. We classified the specific source of reports into mandatory versus non-mandatory and divided these into six different sources. Mandatory sources were the police, schools and daycare, Social Services, and health and medical services (including child welfare centers). Non-mandatory sources included other authorities (landlords, senior enforcement officers) and private persons (neighbors, relatives, anonymous, parents, or caregivers). We classified a parental or child application for support as "self-application".

Information from dental records and Social Services acts (IV)

Data collection

We included in the study all children investigated for a suspicion of child maltreatment between 1 March 2014 and 1 November 2015 for whom dental records had been requested. The time period for this study depended both on number of incoming reports of suspected child maltreatment and on the local social worker's inclination to request dental records. We then chose a matched control group based on gender, age, and the dental clinic from which the dental record in the study population had been requested. The controls were not under an investigation during the same period of time, however it is not excluded that they had been previously. In addition, the Social Services office gathered and coded the reasons for the mandatory report and the subsequent outcome of the investigation before handing these records over to the authors. Controls were gathered in collaboration with the Public Dental Services after the study population was finalized.

Child characteristics

We recorded the following characteristics of the children in our sample: gender; age; reason for the report and investigation (physical abuse, psychological abuse, intimate partner violence, sexual abuse or neglect); outcome of the investigation as suggested by the Social Service (still ongoing investigation, no intervention required, suggested for voluntarily intervention, or coercive care is called for).

Oral health variables

Oral health variables, as assessed from notes in the dental records, included: number of annual attended appointments (including emergency visits); missed and cancelled appointments (separated into “did not attend” (DNA); cancellations or no-shows followed by a reasonable explanation for the missed appointment or “was not brought” (WNB) missed appointments without such reasonable explanations); oral hygiene (notes from the last regular examination and assessed as poor if tooth brushing was irregular or plaque or signs of gingivitis were visible); dietary habits (poor if the parent or child disclosed irregular meals or an intake of sweets, snacks, and soft drinks more than three times a week at the latest regular examination); caries diagnosis and treatment performed (in the records: evidence of a dental caries diagnosis, extractions or fillings in primary and permanent dentitions). We recorded severe early childhood caries (S-ECC) if a child had presented with a carious lesion under the age of 3. Dental trauma (when dental treatment was related to a traumatic experience, and depending on cause and context, classified as a traumatic injury with adequate explanation (seeking treatment in time, injuries consistent with history), without adequate explanation, or with insufficient notes to assess whether the explanation was adequate or inadequate); dental behavior management problems (when severe disruptive behavior delayed treatment or rendered treatment impossible at any time); general anesthesia; sedation with benzodiazepines or nitrous oxide.

Dental neglect (if there was a persistent failure to meet a child’s basic oral health needs that was likely to result in the serious impairment of a child’s oral or general health or development) (100); dental disability (when dental disease or an oral condition substantially limited a child’s development and participation in daily life. This included dental pain, infection, or a non-functional dentition that restricts nutritional intake to levels inadequate for growth and energy needs, delays or otherwise alters growth and development, or limits normal life activities) (104).

Parental factors

This was based on a tool for assessment of parental capacity created by the National Society for the Prevention of Cruelty to Children (120). The classifications for parental capacity were either “good enough” or “risky”. Good enough included parents meeting children's oral health and oral developmental needs, putting children's needs first, providing routine and consistent care, acknowledging oral problems, and engaging with dental health services. Risky parenting included parents neglecting basic oral needs and/or putting adults' needs first,

providing chaos and a lack of routine, unwilling or unable to engage with dental health services, and not meeting children's oral health and oral developmental needs.

Information and agreement

Study I

The study population was informed about the purpose of the study and told that all information collected would remain confidential. They also received written information about counseling opportunities because questions about violence can cause distress. The regional Ethics Review Board of Linköping approved this study [Daybook no. (Dnr) M180-08].

Study II

Due to the sensitive topic, all informants received oral and written information about the study and signed an informed-consent form. They also received information about their own responsibility for discretion about the topics and cases discussed. The Regional Ethics Review Board at Karolinska Institutet in Stockholm approved this study [Daybook no. (Dnr) 2010/1881].

Study III

The study was conducted without shared consent from the families involved. We handled all material with confidentiality and present the results without sharing the specific location of the study in order to protect the anonymity of the children and families. The local child welfare agency granted us permission to use the case files. The Regional Ethics Review Board of Stockholm approved the study. Due to the sensitivity of the subject, we withheld information on the Daybook number of the study to prevent any possible identification of the location.

Study IV

This study was conducted without informed and shared consent from the families involved. To secure the privacy of the children and families, we handled all material with great consideration for confidentiality. We present the results without sharing information on the location of the study, as that could possibly disclose the identity of a specific family. It was not appropriate to obtain consent from parents and children in the study group. Because of that, it was not appropriate in the control group either. We made no computer registries with names or personal numbers. Permission to use case files was granted locally by the child welfare agency and the dental head office. The Regional Ethics Review Board of Stockholm

approved the study. Due to the sensitivity of the subject, we withheld the Daybook number to prevent any possible identification of the location.

Statistical analyses

Study I

The chi-square test and Fisher's exact test analyzed response distribution and comparisons between groups. The multiple logistic regression analyses were carried out in a forward stepwise model to identify sociodemographic factors independently associated with SPOH. To estimate associations between abuse and SPOH, we used multivariate logistic regression analysis with the independent variables entered simultaneously in the model. Results are presented as adjusted odds ratios (OR) with a 95% confidence interval (CI). A p-value less than 0.05 was considered statistically significant.

Study III

The study presents frequencies with medians and percentages. It used the independent t-test to analyze the prevalence, incidence, and content of reports. One-way ANOVAs provided comparisons within socio-economic groups. A p-value less than 0.05 was considered statistically significant.

Study IV

Comparison of continuous variables used the Mann-Whitney U-test, while nominal variable analysis used the chi-square test and a multivariate logistic regression. A p-value less than 0.05 was considered statistically significant. To assess inter-examiner agreement, two authors underwent an inter-examiner test for reproducibility for the variables was not brought, did not attend, and parental capacity with kappa values of 0.732, 0.811, and 0.867 respectively. In addition, the co-authors, whose skills include special competence in pediatric dentistry and training as a social worker with experience with child abuse, discussed any concerns in interpretation of the information in the dental records and information from the Social Services. When opinions differed, the co-authors discussed the case until they reached a consensus.

Analyses employed the Statistical Package for the Social Sciences (SPSS, versions 19.0 and 23.0; SPSS, Chicago, IL, USA).

RESULTS

Self-perceived oral health (Study I)

Of the 5,890 respondents, 29.4% (n = 1,729) rated their SPOH as “very good,” 54.9% (n = 3,232) as “good,” 12.7% (n = 750) as “neither good nor poor,” 2.3% (n = 137) as “poor,” and 0.7% (n = 42) as “very poor.” A forward stepwise regression analysis found that three variables were independently and significantly related to poor SPOH: “parents separated” ($p < 0.001$); “both parents foreign born” ($p = 0.017$); and “one parent unemployed or on sick leave” ($p = 0.009$). Boys rated their SPOH as “poor” or “very poor” significantly more often (3.5%) than did girls (2.5%) ($p = 0.027$). In total, including internal dropouts, 1,239 (21.4%) reported lifetime experiences of CPA (n = 5,788), and 738 (12.8%) reported violence between adults in the family (n = 5,767) (Table 3).

Table 3. Cross tabulation of self-perceived oral health among adolescents reporting exposure to intimate partner violence (n=5,767) or child physical abuse (n=5,788).

Exposure	Self-perceived oral health				
	Very good	Good	Neither good nor bad	Poor	Very poor
	(%)	(%)	(%)	(%)	(%)
Has violence ever occurred between adults in your family?					
Never	90.3	87.2	83.5	78.9	52.5
Once	7.4	8.3	10.5	12	15
> Once	2.4	4.5	6.1	9	32.5
Have you ever been boxed on the ear/been hit by a parent or a caregiver?					
Never	84.0	78.4	72.8	55.6	47.5
Once	10.5	13.0	15.2	25.9	10.0
> Once	5.6	8.5	11.9	18.5	42.5

Compared with non-abused adolescents, a trend of increasingly poor SPOH was observed among those who reported experience of physical abuse, intimate partner violence, forced sex, and bullying. When controlling for the confounding factors “parents separated,” “both parents foreign born,” and “one parent unemployed or on sick leave,” we entered all variables simultaneously into a multiple logistic regression analysis, which showed significant associations between poor SPOH and all abuse types.

Experiences of repeated abuse further increased the likelihood of poor SPOH. The strongest increase in poor SPOH was among adolescents who had been bullied once or more each week (adjusted OR = 14.7; 95% CI: 8.0–27.0) (Table 4).

Table 4. Association between self-perceived oral health, child physical abuse, bullying, intimate partner violence, and forced sex. The table presents the number and percentages of children in each abuse group and the odds ratio and 95% confidence interval adjusted for sociodemographic variables (n= 5,729).

Variables	Good SPOH ¹	Poor SPOH ¹	aOR ²	
	N= 3817 (%)	N= 417(%)	(95% CI)	p-value
Abuse variables				
No abuse	3752 (98.3)	65 (1.7)		
CPA, once	520 (95.1)	27 (4.9)	2.3 (1.3-4.1)	0.004
CPA, more than once	384 (92.1)	33 (7.9)	3.6 (2.1-6.3)	0.000
Bullying, ≤ once a month	400 (95.9)	17 (4.1)	2.3 (1.2-4.4)	0.009
Bullying ≥ once a week	100 (75.8)	32 (24.2)	14.7 (8.0-27.0)	0.000
IPV 1–2 times	463 (95.5)	22 (4.5)	2.4 (1.3-4.3)	0.048
IPV >3 times	228 (90.1)	25 (9.9)	3.1 (1.5-6.4)	0.003
Forced sex	292 (89.3)	35 (10.7)	5.4 (3.0-9.6)	0.000
Combinations of abuse				
No abuse	3752 (98.3)	65 (1.7)		
CPA	404 (96.0)	17 (4.0)	2.1 (1.1-4.1)	0.022
CPA + one other type of abuse	367 (95.6)	17 (4.4)	2.1 (1.1-4.1)	0.035
CPA + two other types of abuse	112 (91.1)	11 (8.9)	5.0 (2.2-11.6)	0.000
CPA + three other types of abuse	21 (58.3)	15 (41.7)	23.3 (8.5-63.6)	0.000

SPOH, self-perceived oral health; CPA, child physical abuse; IPV, intimate partner violence; OR, odds ratio; CI, confidence interval

¹ Dichotomized as “Good” (response = very good, good, or neither good nor bad) and “Poor” (response = poor or very poor).

² aOR= adjusted for these sociodemographic variables: family situation, foreign born parents, and parent’s employment.

³ Multiple regression analysis, enter model.

The impact of various combinations of abuse appeared to be cumulative; the more types of abuse adolescents experienced, the more likely that they would report lower SPOH. In the four groups of abuse, the lowest SPOH occurred when the adolescents had experienced both physical abuse and the other three types of abuse – intimate partner violence, forced sex, and bullying – as well. In this group, the adjusted OR increased to 23.3 (95% CI: 8.5–63.6).

The dilemma of reporting child maltreatment (Study II)

All informants described child maltreatment as involving a child in need, with descriptions varying from a child with poor oral health, or living without tenderness and love, to a child being exposed to physical violence, forced sex, or other ill treatment. The analysis process identified one main theme, labeled as “the dilemma of reporting child maltreatment”. We also identified three subthemes that describe the considerations and dilemmas faced by the

informants when deciding whether to report a suspicion of maltreatment: “to support or report,” “differentiating concern for well-being from maltreatment,” and “the supportive or unhelpful consultation” (Fig. 1).

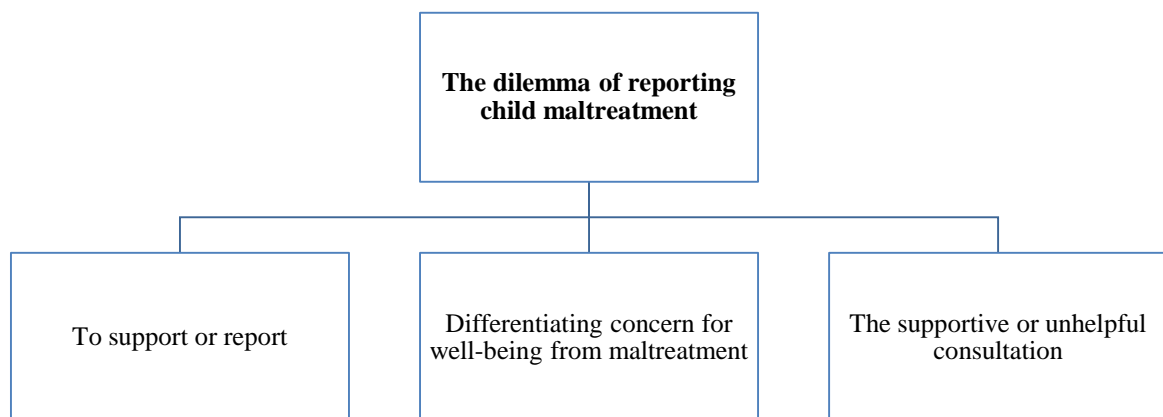


Figure. 1. The dilemma of reporting suspicions of child maltreatment occurred in a variety of situations and we identified three subthemes that described the considerations and dilemmas faced by the informants when deciding whether or not to report to the Social Services.

To support or report

The informants interpreted their professional responsibilities in managing suspected child maltreatment to entail two roles: the supporter and the reporter, roles that appeared contradictory and was often incompatible. In a supporting role, informants presumed that all parents want to do their best to care for their child. The informants’ main focus was to provide dental care in order to prevent negative developments in oral and dental health. To do this, it was important for informants to involve and motivate families to provide dental care and avoid conflicts in order to build a positive working relationship.

I want to help and support these parents because I think, and I hope, that it will help them feel better. I don’t want them seeing me as another authority figure.

This shows that giving support is preferred to reporting because of fear of damaging the working relationship. It also reflects the informants’ uncertainty that making a report would help the family.

On the other hand, in the role of reporter, participants expressed good knowledge of their professional obligations to unconditionally report any suspicion of child maltreatment to the Social Services.

You can’t confirm maltreatment. We don’t have to know. It is not our job to know. A suspicion is enough.

The general attitude about reporting was that a concern or suspicion of maltreatment is enough and that that is the standard with which dental professionals must comply. The reporting dilemma was evident when informants felt they had to choose between providing dental care and their obligation to report suspicions of maltreatment. Informants made their decision on whether to report by balancing considerations of the seriousness of the dental disease with their perceptions of the urgency of reporting their suspicions. Informants expressed ambivalent feelings about reporting because of negative preconceptions about the expected consequences of a report. These preconceptions included worries that children would fail to attend treatment after a report and concerns about receiving threats from the family, although few had any experience of threats.

Then you are afraid to scare the family away. When you see the dental treatment needed, you are happy that they are coming at all. You don't want treatment to become more delayed than it already has been because the parents get upset about what we have done.

The discussion above highlights how informants prioritize providing dental treatment over reporting because a report would probably disrupt the dental treatment plan and harm the relationship with the family. It also emphasized the informants' concerns that there might not be sufficient evidence to file a report.

Differentiating concern for well-being from maltreatment

When identifying which cases they thought should be reported, the informants used clinical guidelines to differentiate between children with questionable well-being (not amounting to maltreatment) and those potentially experiencing maltreatment. However, these guidelines did not provide enough direction to navigate the ill-defined boundaries between concerns for well-being, suspicion of maltreatment, and confirmed maltreatment. Informants were mostly likely to decide to report when they could confirm maltreatment from a dental point of view, whereas they often interpreted signs of maltreatment outside their professional comfort zone as indicating only a child with questionable well-being. The informants considered a history of repeatedly missing appointments, in combination with extensive treatment needs, as dental neglect and within their professional competence.

And this is . . . what we have to take action on: caries and no-shows. We don't have anything else . . . [just that your child has] a disease and you refuse treatment.

When parents failed to attend treatment with their children despite untreated caries, it confirmed informants' suspicions of maltreatment by dental neglect. Informants viewed this as the only indisputable sign of maltreatment, having both concrete dental evidence and

meeting the available guidelines. However, informants expressed ambivalence in reporting maltreatment when families seemed to provide acceptable compliance with dental treatment but suspicions of dental neglect remained as a result of progressing caries. Informants reported that, in theory, it was possible in dental practice to recognize signs of physical abuse, forced sex, and psychological abuse. But, in their clinical practice, most of the informants had never had any of these suspicions and none had reported such a case.

There's something you wonder about, but the parents are always there. These things make you stop and think, but there is never anything that is actionable, to my mind [. . .] Yet, these signs . . . you can't pick up on it properly. But the cases will always be in your mind, those children, the way they reacted, every time you raised your hand.

As the excerpt above illustrates, a sudden movement from the dentist, such as a raised hand, can make the child react with watchfulness but the reason for the reaction is not easily interpreted. Informants often wanted to understand why a child behaved in a certain way. Often they found an acceptable explanation in social difficulties known to be present in the family, e.g. when the family already had contact with Social Services. The explanation could also be found in other normal challenges in child rearing.

The supportive or unhelpful consultation

To report suspected child maltreatment to Social Services, the informants expressed a need for reassurance that their suspicion was adequate. In most situations they consulted with colleagues or other professionals, such as child healthcare providers, school nurses, medical doctors, child psychiatrists, or Social Services themselves. Informants expressed differing opinions about who should report maltreatment suspicions. Some thought that the clinical department head should send the report; others thought it was the responsibility of the individual dentist. Most of the informants initially consulted with their clinical department head or a colleague before reporting.

It is never your decision alone, at least not for me. I always discuss the case before reporting.

The statement above describes the importance that most informants attached to collegial support and lack of support from colleagues could lead to a failure in reporting. Consultation with Social Services was also common. Informants with previous positive experiences viewed these social service consultations as an asset, whereas those with no experience or negative experiences were more reluctant to undergo consultation.

But you can always call Social Services if you have reached a point where you feel like, 'This is it. I can't go on,' but you still don't want to put it into writing [to file the report].

The informants found the lack of knowledge of the outcome of a report to be a major issue in reporting, although they blamed this on the overall organization of child protection rather than on the Social Services as an authority.

Child maltreatment - prevalence and characteristics of mandatory reports from dental professionals to the Social Services (Study III)

Prevalence and incidence

The total number of children reported by dental health services during the study period was 137. Of these, we excluded 26 because of ongoing investigations or interventions. The final cohort included 111 children with a total of 147 reports. The annual median number of reports was 25 (range 3–37). Of these, 82 children had 1 report, and 29 had been reported 2–5 times. This represents a total prevalence of reports from dental professionals to the Social Services of 1.5 per 1000 children in the municipality during the study period (Fig. 2). There was a significant increase from 6 reports in 2008 to 37 reports in 2011 ($p < 0.001$). Thereafter the rate decreased to 18 reports during 2014. Since several children were reported on multiple occasions, the median incidence (new cases per year) during the study period was 20 reports a year (range 3–30 reports). There was an equal distribution between age groups: 0–12 years ($n=74$), 13–17 years ($n=59$), and 18–19 years ($n=14$). Significantly more reports were submitted from clinics in areas of low socioeconomic standing ($p = 0.043$).

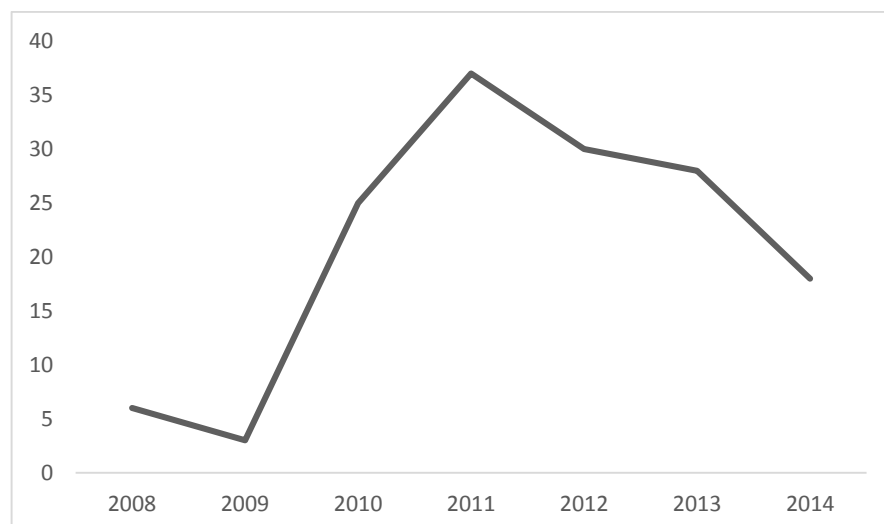


Figure 2. Total prevalence of mandated reports from dental health services during 2008–2014 in the studied municipality.

Report characteristics

Public Dental Service clinics were the major source of reports, with 117 total. Specialist pediatric dental clinics submitted 13 reports. There were no reports from private clinics and 17 reports were classified as “source unknown.” Table 5 shows there were significantly more reports regarding deficiencies in care (n=93), such as a failure to attend regular dental check-ups (without a known treatment need), compared to reports about dental neglect (n=52) ($p < 0.001$). None of the reports stated suspicions of physical abuse, psychological abuse, sexual abuse, general neglect, or a disclosure of intimate partner violence from an adult as the reason for report.

Table 5. Main issue disclosed in the 147 mandated reports received by the Social Services from dental health services during 2008–2014.

Main stressor	n
Child abuse and neglect	
Physical abuse	0
Psychological abuse	0
Sexual abuse	0
Neglect (dental neglect)	52
Child-related problem	
Child behavior	1
Parental and parent–child-related problems	
Parental drug use	1
Deficiencies in care (failure to attend appointments)	93

Previous contacts with Social Services

Among all reports from dental care services, 86% involved a child who had prior contacts with the Social Services. This was either by a report from another source, self-application, or a past or ongoing investigation or intervention. We found applications from parents and/or children for 43 children, which represent 39% of the total study population. All together there were 497 reports (excluding self-applications) from all sources combined regarding the 111 children in our study. Dental reports represented 30% (147/497) of these. Of the total, 33 reports (7%) concerning 28 children were only reported through dentistry. In total, 382 of the reports were mandatory reports (including dental reports) and 115 were non-mandatory reports. The police reported most frequently (n=87) while healthcare providers (not in dentistry) (n=24) reported the least.

Oral health in children and adolescents investigated by the Social Services on suspicions of child maltreatment (Study IV)

Of 89 children in the study population, our investigation retrieved dental records from the Public Dental Service for all but 3 children. Reasons for no available dental record included low age (<1 year), or children who had switched to a private dental clinics prior to the investigation; these were excluded from the analysis. Thus, the final cohort comprised 86 children (46 boys and 40 girls; mean age 8.9 ± 4.3 years) in the study population and 172 matched controls.

Sixty-five percent of the investigations were due to suspected neglect, 21% to suspected intimate partner violence, 11% to suspected physical abuse, 2% to suspected psychological abuse, and 1% to suspected sexual abuse. Most investigations (77 cases) were closed with decisions, leaving 9 cases still being processed. Among cases with decisions, 21% required no support from the Social Services, 45% were offered supportive interventions, and 23% were suggested for coercive interventions.

The annual attendance rate at a specialist pediatric dental clinic was significantly higher in the study group ($p < 0.001$). In total, 20% of the children in the study group had been referred, compared to 1% in the control group. Children under investigation for suspected maltreatment were also more likely than the control group to have missed appointments classified as “was not brought” at both general dental health services ($p < 0.001$) and specialist pediatric dental clinics ($p = 0.036$). Furthermore, children investigated because of suspected maltreatment had a higher prevalence of dental caries and more experience of dental treatment in both the primary dentition ($p < 0.001$) and permanent dentitions ($p = 0.004$) (Table 6).

Children suspected of exposure to maltreatment were more likely to have had avoided dental health care ($p < 0.001$), they had more notes showing difficulties coping with dental treatment ($p = 0.029$), treatment under general anesthesia ($p = 0.004$), and sedation ($p = 0.021$) than the control group. Reasons for all mandatory reports were either dental avoidance for periods of 6 months up to 6 years or dental neglect. Among controls, 1 of 172 children had been the subject of a mandatory report compared to 7 of 86 in the study group ($p = 0.018$).

Traumatic experiences were equally distributed between the study and control groups. In most cases, it was not possible to assess the adequacy of the context and explanations for the traumatic injury (Table 7).

Table 6. Descriptive statistics of attendance behaviors and experience of caries and treatment performed in the study group and controls. Results are presented as means and standard deviations.

Variables	Study group (N=86) mean (SD)	Controls (N=172) mean (SD)	p-value
Notes in dental records covering (years)	6.2±4.0	6.8±4.0	
Mean number of appointments per year			
<i>General dentistry</i>			
Attended	2.3±1.7	2.2±1.2	0.507
Emergency	0.1±0.2	0.1±0.2	0.749
Was Not Brought	0.5±0.7	0.1±0.3	<0.001
Did Not Attend	0.4±0.6	0.2±0.3	<0.001
<i>Pediatric dentistry specialist clinic</i>			
Attended	0.3±1.0	0.0±0.1	<0.001
Emergency	0.1±0.1	0.0±0.1	0.679
Was Not Brought	1.0±1.0	0.0±0.0	0.036
Did Not Attend	0.5±0.8	0.1±0.1	0.209
Caries diagnosis and treatment performed			
<i>Primary dentition</i>			
Decayed	0.4±1.1	0.1±0.5	0.003
Extracted	1.0±1.9	0.5±1.2	0.037
Filled	1.8±2.6	0.8±1.7	<0.001
Total	3.1±4.2	1.3±2.2	<0.001
<i>Permanent dentition</i>			
Decayed	0.2±0.5	0.0±0.0	0.003
Extracted	0.3±0.9	0.2±0.7	0.910
Filled	1.2±1.9	0.6±1.5	0.009
Total	1.8±2.2	0.8±1.6	0.004

Concerning the included subtypes of suspected child maltreatment, we found no significant differences for any oral health variable or in oral health behavior. Nor were there any significant differences based on the outcome of the investigation (not requiring intervention, suggested intervention, or coercive intervention).

Our assessment found significantly more parents in the study group to have a risky parental capacity compared to the control group ($p<0.001$).

Table 7. Descriptive statistics of oral health variables presented as percentages of the study group and controls

Variables	Study group (N=86) (%)	Controls (N=172) (%)	p-value ¹
Dental health service avoidance	56	7	<0.001
Poor oral hygiene	25	9	<0.001
Visible plaque	47	23	<0.001
Gingivitis	15	4	0.003
Poor dietary habits	39	13	<0.001
Severe early childhood caries	19	2	<0.001
Dental traumatic injury	33	33	0.554
Behavior management problems last 12 months	20	10	0.029
Treatment under general anesthesia	6	0	0.004
Sedation with nitrous oxide or midazolam	22	11	0.021
Dental neglect	30	2	<0.001
Dental disability	12	1	0.001
Mandatory report by dental health services	7	1	0.018

We performed a forward logistic regression analysis with investigation of suspected child maltreatment as the dependent variable and all variables that were significant in the univariate analysis entered as co-variables. As table 8 shows, four variables remained in the model.

Table 8. Logistic regression analysis with investigation of suspicion of child maltreatment as dependent variable and all significant ($p<0.05$) variables in the univariate analysis as predictors.

Variables	B	<i>p</i>	OR	95% CI
Dental health service avoidance	2.22	<0.001	9.23	4.06–20.99
Referral to specialist pediatric dentistry clinic	1.62	0.029	5.06	1.18–21.76
Dental caries in primary teeth	1.31	0.008	3.69	1.41–9.66
Filled permanent teeth	0.98	0.011	2.68	1.26–5.69

Avoiding contact with dental health services was the strongest predictor for being investigated for suspicions of child maltreatment by the Social Services, with an odds ratio of 9.23 (95% CI 4.06-20.99). The variables referral to specialist pediatric dentistry clinics, dental caries in the primary dentition, and fillings in the permanent dentition also showed a significant association.

GENERAL DISCUSSION

The four papers in this thesis describe how child maltreatment affects oral health and oral health behaviors. Furthermore, the study shows the annual prevalence of dental mandatory reports to the Social Services. Dental neglect and dental avoidance are the main reasons for these reports. However, the decision to report is often fraught with dilemmas. The first study showed how SPOH associates with exposure to physical abuse, intimate partner violence, bullying, and forced sex. The second study showed how three clinical contexts *i)* to support or report, *ii)* differentiating concern for well-being from maltreatment, and *iii)* the supportive or unhelpful consultation, make the decision to report to the Social Services problematic. The third study found that dental health professionals are more likely to report failure to attend dental appointments and dental neglect to the Social Services than other signs. The fourth study showed that avoidance of dental health services, deficits in parental support with regard to oral health, and poor oral health are more likely among children for whom the Social Services have initiated an investigation because of suspected child maltreatment in comparison to their peers.

Self-perceived oral health as an indicator of child maltreatment (I)

We found a strong association between poor SPOH and exposure to child physical abuse, intimate partner violence, bullying, and forced sex.

Our results show that social factors such as maltreatment and bullying associate with SPOH. These findings add a new perspective on associations between child abuse and oral health (89-99). The association of poor SPOH and bullying is important as victims of bullying are at increased risk of psychiatric disorders in adulthood (122, 123). In Sweden, dental care is not a part of the school system and dental professionals are not expected or obliged to recognize the victims of bullying in schools. However, this threat to children's social well-being affects their perceptions of their oral health. Adolescents who reported forced sex by a peer or an adult showed significantly poorer SPOH than those with no experience of any other abuse. Childhood sexual abuse has been shown to relate to dental fear and anxiety later in life (106-109, 124). Co-occurrence of all types of abuse increased the likelihood for self-reported poor SPOH by a factor of 23. Other literature has reported a similar enhancing effect of multiple abuse on poor health outcomes (125, 126) and our results indicate the same pattern on SPOH.

A dilemma to report suspicions of child maltreatment (II)

Reporting a suspicion of child maltreatment is a clinical and ethical dilemma for specialists in pediatric dentistry. The dilemma arises from concerns about having contradicting professional roles, difficulties in confirming suspicions of maltreatment, and the perceived shortcomings of the child protection system. All the informants knew of local and national recommendations and guidelines on how to identify possible maltreatment and how to manage suspicions. Still, there were contradictions in all group discussions between the theoretical obligation to report and the cases in which dentists actually reported suspicions. Discussions in all groups consistently focused on dental neglect and management of these situations. The groups did not discuss physical abuse, psychological abuse, sexual abuse, or general neglect to the same extent.

To support or report. Building relationships with the parents, instead of judging, in order to understand the child's needs and behavior is an approach that accords well with being a reflective practitioner (127). Striking a balance between "helping" and "controlling," can cause problems and as has been found among child abuse physicians (128) and general practitioners (129). The informants in our study had difficulties with this balance. They regarded families with previous or ongoing contact with the Social Services as vulnerable and wanted to provide support. In such situations, our informants considered a report to be an additional burden on the family or unnecessary as the family was already receiving Social Services support. Before deciding whether to report, they looked for reassurance that their suspicion was accurate. As previous reports have shown, such reassurance included evaluation of the situation and consultations with colleagues or other professionals with more experience (66, 71). Often, informants assumed that the dental treatment would be resolved without support from the Social Services. Thus, they viewed the report as a last resort when nothing else improved attendance behavior or the progression of dental disease.

To differentiate between poor well-being and child maltreatment. The point at which dental caries becomes dental neglect is a difficult decision (103). The severity of disease, as well as family considerations, are important decisive factors in general medicine (130). The informants in this study based their judgment of when to file a report upon the certainty of their suspicion (including factors such as the severity of disease, the risk of dental pain, and the length of time of treatment avoidance). The informants considered physical, psychological, and sexual abuse to be the most difficult cases to assess, as has been shown previously (72).

The supportive or unhelpful consultation. The dilemma of reporting also arose from uncertainty whether a report would actually improve the child's situation and fear that reporting unnecessarily would damage the care relationship with the family. A common barrier to reporting was the lack of feedback from the Social Services. As previously shown, the Social Services in Sweden rarely contacts the reporter during their initial assessments or during the investigation (63). This perceived shortcoming in the organization of child welfare is known to cause hesitation to report. Other factors that affected their decision to report included previous experiences of support they received from colleagues and local guidelines. These factors are consistent with those reported by other professionals as well (131, 132).

Characteristics of reports of suspected child maltreatment from dental health services (III)

Dental neglect and failure to attend appointments were the most likely causes for a report from dental health services to the Social Services. The majority of children reported on by the dental health services were already known within the Social Services.

This study is the first to describe the prevalence of mandatory dental reports. We found variations during the 6 years of the study. The increase between 2008 and 2011 is probably the result of continuous work during these years to raise awareness among dentists of child maltreatment. At that point, the Ombudsmen for Children from all the Nordic countries had described dental professionals as an untapped resource for identifying child maltreatment. This statement subsequently led to educational approaches, collaboration, articles, and guidelines focusing on reporting child maltreatment by dental professionals. The decrease after 2011 may have arisen from lack of continuous education, lack of cooperation with the Social Services, previous negative experiences with reporting, or any combination of these (64-76). Also, as other research has shown, established collaborations with the Social Services may actually lead to fewer reports (133).

Of all the reports in our study, 8% came from specialist pediatric dental care. As only 1% of children receive such a referral, this proportion is high.

In accordance with previous studies, the main reasons for a mandatory report from dental health services were repeated failure to attend dental appointments and dental neglect, whereas other types of abuse were not usually reported (84, 85). This is probably because reporters react most strongly to the things they see in their everyday work or at home (134). Failure to attend dental appointments is often part of complex family problems and more frequently occurs in families that lack traditions of dental care (135). Failure to attend

appointments also associates with caries, dental fear (113-116), interventions for out-of-home care (99) and severe abuse (110).

The Social Services had previous knowledge of the majority of children reported from dental care services due to reports, investigations, interventions, or self-applications. Prior knowledge with the Social Services is known for children exposed to child physical abuse (136, 137) as well as among children reported from nursery schools (138).

Most children in this study had treatment needs. Thus it is important to stress potential oral health consequences in reports to the Social Services. Several of the reports lacked comprehensive information. The same child was sometimes reported on multiple occasions to the Social Services. This result is discouraging as it suggests that, despite a mandatory report, oral health remains neglected.

Oral health in association with suspected child maltreatment (IV)

This study showed that children investigated because of suspected child maltreatment for whom there had been a request for dental records were more likely to have had dental disease, to have been in need of specialist pediatric dental care, to have a history of dental health service avoidance, and to have poor parental support regarding oral health needs.

Among the children in our study who were investigated because of suspicions of child maltreatment, 20% had been referred to a specialist in pediatric dentistry. However, among the controls, only 1% had been referred to a pediatric dental specialist, a proportion consistent with general estimates (15). We also found more behavior management problems in children being investigated because of suspected child maltreatment, which agrees with a previous study in Sweden on difficulties in coping with specialist pediatric dental care and having witnessed violence in the home (139).

Missed appointments that were labeled as “was not brought” occurred more frequently in the study group, a finding that agrees with social factors affecting dental attendance behaviors (99, 111, 135, 140), dental disease and dental fear (113-116). As most children in this study were young, they depended on their caregivers for access to dental health services. The persistent failure to attend dental appointments among children investigated because of suspected child maltreatment probably reflects difficult social situations for these families. According to our findings, behaviors that delay or prevent children from receiving dental health services should raise awareness of possible child maltreatment. Labeling missed appointments according to the “was not brought” and “did not attend” scheme could better

indicate unwarranted dental avoidance, which could facilitate the decision of whether to submit a mandatory report (a decision known to be difficult) (103, 112). Parents supporting their children to promote good oral health is important for future oral health. We found a high prevalence in the study group of risky parenting. This indicates parents with a low ability and/or willingness to promote and maintain good oral health in their children (121).

Total caries prevalence (including S-ECC) and treatments performed were significantly higher in the study group than for controls in both the primary and permanent dentitions, except for extractions of permanent teeth, which can be explained by the low mean age of the children. Previous studies support this difference in prevalence of disease between the study group and controls (93-96, 98, 99) and Swedish Statistics on dental caries (21). However, our results are not directly applicable, as we have based our results on notes in the dental records. The study did not include any treatments not shown in the records (such as treatments at previous or other clinics). Thus, the results show the minimum level of disease and treatment.

Treatment under general anesthesia has been shown to relate to dental neglect and dental disabilities among preschool children (105) which is in line with our findings. Our results differ from another study on the association between general anesthesia and child maltreatment (64) which may be due to different perspectives on child welfare between the studied countries (57).

Notes on traumatic injuries were equally distributed in the study group and controls. Previous studies suggest the occurrence of injuries in the head and neck area in conjunction with physical abuse (87-92). The majority of notes in the dental records contained little information regarding the context and cause of trauma. Thus, it was impossible to assess whether or not the explanations from parents and children were adequate.

The dental perspective on child maltreatment

The findings of these four studies add to previous knowledge on how social factors affect self-perceived oral health as well as actual dental status and attendance behaviors. This could be valuable for understanding the social context when evaluating oral health needs.

Studies III and IV showed a high proportion of referrals to specialists in pediatric dentistry. This may possibly depend on the characteristics of children within specialist pediatric dental care: extensive treatment needs, functional disabilities, chronic diseases, and difficulties to cope (15). These factors can induce stress in the family and are also associated with increased risk of child maltreatment (8, 137, 141, 142).

There are several situations in which a dental professional could raise a concern of maltreatment (Study II). Dental professionals are well-educated in the theory of their legal responsibility to report any suspicion of child maltreatment to the Social Services. However, extensive treatment needs and dental avoidance were the main reasons for their reports to the Social Services (Studies II–IV). There was no consistency with regard to when dental treatment need and dental health service avoidance became dental neglect, and hence should be reported. These findings are all in line with previous studies (84, 85, 103, 105, 143-145). Across countries and professions, there are barriers to reporting a suspicion of child maltreatment; the likelihood of sending a report has even been described as “a lottery” (146). Our findings indicate that dentists base their reports on substantiated dental neglect instead of suspicions of dental neglect. Thus, there may be a significant delay between the onset of concern and a subsequent report to the Social Services, a phenomenon reported among other professions as well (138). As found in study II, reporting is not only a question of professional behavior but also a question of the overall organization of the child protection system. Individual practitioners act in a complex organization and use the support they may get from colleagues and local guidelines (78-80, 130).

Neither the mandated reports in Study III, nor the dental records in Study IV used the term “dental neglect” directly; instead we inferred this when the notes fulfilled the definition of dental neglect (86, 88). Dentistry is not the only profession exhibiting deficits in the documentation of suspected abuse. In one studied emergency department, only a few caregivers had made notes regarding potential child physical abuse (147). The potential unwillingness to state dental neglect in writing may explain why dental health service avoidance or extensive treatment need instead was stressed as main reasons to report.

Child healthcare rarely assesses the social and family context (148) and in Study II, we found that the family perspective was a reason for dental professionals not reporting. Nearly all children in study III were reported by a dental professional because of neglect and parental deficits. Among these children, self-applications for support from the parents were common as well as having had other prior contacts with the Social Services. Study IV showed that children in the study group were more likely to have had missed appointments without a legitimate reason (was not brought) and had parents with behaviors that had a negative impact on oral health, which we labelled as risky parenting (112, 121). These findings suggest that a neglected oral and dental health is associated with having prior social problems regardless of the reason for contact with the Social Services. Thus poor oral health in childhood associates with having social difficulties. Dental histories should include the basic

conditions of the child's family when there is extensive dental treatment needs. These findings also suggest that the Social Services should include oral health needs at an early stage when children are enrolled for support or protection.

Physical abuse is associated with lesions to the head and neck areas, although intraoral lesions are rare (86- 92). Study I found an association of poor SPOH with both physical abuse and intimate partner violence. However, neither Study III nor Study IV found mandatory reports because of suspected physical abuse, results that are consistent with statements from the informants in Study II. Nearly all emergency visits because of a dental trauma in Study IV lacked comprehensive histories in the dental records. Thus it was not possible to assess the adequacy of the history provided by the child and the parents.

Methodological considerations

This thesis includes a variety of study designs and populations. The first study was a population-based study of adolescents' self-reports. The second study was a qualitative study based on focus group discussions with specialists in pediatric dentistry. The third and fourth studies were cross-sectional studies based on records. This variety in methods and study designs, combining qualitative and quantitative research, gives a coherent description of the dental perspective on child maltreatment in a Swedish context (149). Quantitative data describe actions, whereas qualitative data describe why such actions take place. The combination of information from the Social Services and dental clinics made it possible to understand oral health associated with child maltreatment from two perspectives: oral health and the social context. Marshman et al. (2007) recommends including children as participants instead of as objects in research (150). Study I emphasized this approach, but in Studies II, III, and IV, active participation of the children was not possible.

Self-reported information (study I)

Södermanland County Council developed the questionnaire, and it has been used since 2004. The use of a five-point scale of oral health is consistent with other studies on perceived oral health (151). Using anonymous questionnaires led us to draw conclusions at the group level. Perceived oral health and exposure to child maltreatment, as well as the consequences of child maltreatment, are complex issues with factors that are suitable for study at the group level rather than on an individual level. In Sweden, there are no registries for children enrolled in the child protection process. Self-reported childhood exposure to child maltreatment has been found to be a reliable measure, although it is likely that factors such as age, social influences, and fear of disclosure can affect the result (152). One source of bias in

connection with questionnaire-based studies is that some subjects may consistently report the most “negative” alternatives, whereas others score the most “positive” (153). In this study, we assumed that adolescents who tended to over-report or under-report the items related to abuse would probably also choose to do this for SPOH and skewness would not arise.

Focus groups

By using focus groups we were able to learn from the informants. We could do evaluation research and identify opportunities for improvement (154). Focus groups allow informants to reflect and discuss issues and topics that might have been overlooked in individual interviews. In research using focus groups, there are three levels of communication within the gathered information: *(i)* the researcher decides the focus of the discussion, *(ii)* the informants discuss their view of this focus, and *(iii)* the researcher compiles and interprets the discussion. Groups with vibrant interactions when discussing the focus of the research are considered to be groups of good quality. The level of response we saw from the informants suggests that they were interested in the topic and perhaps had a higher degree of involvement with cases of maltreatment and reporting than did those who were not interested in participating (154).

A moderator should guide the group but not control the discussion (154). As the moderator was also a pediatric dentist, professional preconceptions might have influenced data collection and analysis (155). We achieved credibility in our results by sharing them with the informants before finalizing the results and, thereby, could include their thoughts in the final analysis.

Thematic analysis

Thematic analysis is a basic method for qualitative analysis that can be applied across a range of theoretical approaches; however, it is not designed to be a method of theory development (119). Rather, it aims to understand and interpret the whole context of the informants’ reality, their perceptions of the possibilities as well as the possible limits of that reality. Thematic analysis identifies and analyzes patterns of themes within a data collection of transcripts of various origins. Analysis usually aims at realism or constructionism. This study used a combination of those aims, a “contextualist” method (119). By using thematic analysis, the researcher identifies themes, selected based upon the focus of the research, that describe how the informants understand their role in issues related to child maltreatment and, furthermore, how the social context influences these understandings. We searched for these themes across the data. Thus, the analysis focused on how the informants interpreted their professional role

within the child protection system and their management of a suspicion of child maltreatment in the context of Swedish legalization.

Record based studies

The lack of national registries related to child protection makes data collection vulnerable to both administrative and interpretive errors. The study population in Studies III and IV should be regarded as the minimum number cases of suspected child maltreatment as many mandatory reports never lead to an investigation (60, 63), social workers tend to omit contacts other than the family and health factors are rarely the focus (156, 157). Another limitation is that the written information might not accurately describe the problem, subsequently affecting the results. It is possible that the dentists (Studies III and IV) as well as the social workers (Study III) filtered the information before putting it in writing. Also, we do not know if any of self-reports in study I, or cases in studies III and IV actually were substantiated maltreatment. However, self-reports of child maltreatment are described as likely to be more accurate than official statistics, although there are still probably many unrevealed cases (42). While the data in study IV indicate the results of the investigations (both supportive and protective interventions were offered), we do not know the exact outcome of the investigation. Nevertheless, studies have shown that exposure to abuse or neglect tends to result in interventions (61, 62). Another limitation is that we only had data provided from the Social Services. Factors that could have been important to include as co-variables and confounding factors are children's disability status and the socioeconomic context (141). Study III based its assessment of socioeconomic status on the child's area of housing, although a more reliable measure would have included family income and living conditions. In Study IV, we used matched controls based in the same dental clinic, which should control for some socioeconomic differences.

Ethical reflection

New and useful knowledge is essential for conducting research, but study designs must account for safety, privacy, and confidentiality, especially when the research involves child maltreatment. The research team must consider the potential need for protection of children, which includes reporting concerns of child maltreatment to the Social Services (158). In Study I, the pupils received written information on counseling opportunities. In Studies III and IV, all cases had had their identification stripped, thus it was not possible to report any potential maltreatment. Instead, the regional Public Dental Service received repeated information and education on the obligation to report suspicions. We assume that the children

and families who were already in contact with the Social Services because of suspected child maltreatment received adequate support and protection.

Studies III and IV used a retrospective design in which children and families were unaware of the study, and none were directly involved. As children depend on their parents, they may have to rely on them for support and protection. But in the context of suspected child maltreatment, the parent(s) are the possible perpetrator. Hence it is not ethical or possible to propose participating in research under such conditions. As it was not appropriate to obtain consent from the parents and children in the study group, it was also inappropriate to do so in the control group. We handled all material with great consideration for confidentiality. We present all results in Studies II, III, and IV without sharing information on the specific areas of the studies, as that could possibly disclose a specific family. We stripped all records of their identification immediately after collecting them at the child welfare agency (Studies III and IV) and at the Public Dental Service (Study IV). We made no computer registries with names or personal numbers. Permission to use case files was granted locally by the child welfare agency and the dental head office.

MAIN FINDINGS AND CONCLUSIONS

Study I

There is an association between poor SPOH and exposure to physical abuse, intimate partner violence, and forced sex.

Study II

Reporting a suspicion of child maltreatment is a clinical and ethical dilemma for specialists in pediatric dentistry because of concerns about having contradicting professional roles, difficulties in confirming suspicions of maltreatment, and perceived shortcomings in the child-protection system.

Study III

The prevalence of reports to the Social Services from dental professionals was 1.5 per 1000 children during the study period. These reports of a suspicion of child maltreatment usually address parental deficiencies (failure to attend appointments) and neglect (dental neglect). In addition, reports from dental health services often co-occur with other reports disclosing suspected child maltreatment or social dysfunction.

Study IV

When compared to controls, children investigated because of suspected child maltreatment for whom social workers have requested dental records show a higher prevalence of dental health service avoidance, poor oral health, behaviors that negatively impact oral health, and referrals to specialist pediatric dentistry clinics. Furthermore, they are more likely to lack support from their parents in the promotion of good oral health.

CLINICAL IMPLICATIONS

The professional imperative of dental care is to treat and prevent oral disease, but there is also a legal responsibility to report any suspicion of child maltreatment to the Social Services. Early detection of dental disease and provision of adequate support are essential to prevent the development of poor oral health with its subsequent need for extensive treatment. Also, early detection of possible child maltreatment is essential for the protection of children from harm. In this thesis, we have described the association of oral health with child maltreatment in a Swedish context. It shows oral health and dental health services to have an important part in child welfare. Concerning our findings, there are needs for designed interventions to prevent poor oral health and to identify children at risk of child maltreatment. These two roles of a dental professionals are possible without interfering with each other. We suggest changes with regard to how to take a dental history and the documentation of clinical findings and behaviors, as well as improved guidelines for reporting a suspicion to the Social Services. Furthermore, oral health interventions should be planned and adjusted according to families' basic conditions and social context.

The causes of poor oral health in this group of children are probably a combination of factors, although it is important to assess parental support and social context. Thus, all dental health professionals, in general dentistry as well as within specialist pediatric dentistry, should ask questions about a child's social situation when dental disease and/or attendance behaviors are not explained by other reasonable causes. Specialist pediatric dental care is a particularly important setting for assessment of the social situation of children and their families. Assessments of SPOH can help estimate oral health needs, social well-being, and parental support on oral health among adolescents. This may be used within the Social Services for estimating needs of dental treatment as well.

Dental neglect is an appropriate term when parents are unable or unwilling to support their children's oral health and adhere to making essential improvements to complete dental treatment and stop progression of disease. The ethical guidelines produced and published by the Swedish Society of Paediatric Dentistry describe two situations that should either trigger diagnosis or raise suspicions of dental neglect (35).

Dental neglect should be *diagnosed* when (1) there are treatment needs and the child is not permitted to receive treatment (dental avoidance or missed appointments labeled as "was not brought"), or (2) there are treatment needs and the parents disagree on the proposed

treatment, but postponing treatment is not possible without affecting the child's physical and dental health.

Dental neglect should be *suspected* when (1) there is no treatment need, but the child is not permitted to take part in regular preventive dental care (dental avoidance or missed appointments labeled as "was not brought"), or (2) there is treatment need and the parents disagree on the proposed treatment, but postponing treatment is possible without affecting the child's physical and dental health.

Dental neglect (diagnosed or suspected) should be documented in the dental records and subsequently reported to the Social Services. This may help children and their families to receive supportive interventions from sources other than those that dental health services can offer.

To improve oral health, there must be greater collaboration and educational approaches between dental health services and Social Services. As of today, there are no specific guidelines on how to manage children known to have been exposed to child maltreatment. When children are placed in out-of-home care (not explicitly because of child maltreatment), their dental treatment and regular appointments are often disrupted as the children are frequently placed in cities outside their hometown. It is therefore up to the Social Services, or the family, or the foster home, to engage in providing dental health services. These children are known to have poor oral health and irregular dental attendance (99).

The Swedish Society of Paediatric Dentistry mention social risk and social risk behavior (29) but they provide no further explanations of what constitutes them. Our findings indicate that guidelines should include definitions of social risk and social risk behavior such as (i) children with contacts with the Social Services, (ii) dental neglect, and (iii) dental health service avoidance. By using such a document, Social Services could perhaps more easily assess the severity of dental disease as well as arrange for referrals to specialists in pediatric dentistry to help children with social problems to receive adequate dental treatment. Furthermore, the investigation within the Social Services would benefit from regular requisitions of dental records when investigating a child's needs for support or protection.

To improve the quality of reports to the Social Services, dental professionals must give concrete descriptions of the child's oral health needs, as well as possible consequences for the child if treatment is not followed. Dentists should when reporting, describe these consequences and possible impairments of oral health in both a short- and long-term perspective.

Previous recommendations state that investigations should seek a dental opinion when there are intraoral injuries in association with child maltreatment. Also, dental professionals must be aware of inadequate histories, assess possible child maltreatment as causative of a dental trauma, and document all information they receive with regard to dental trauma (86).

To make the essential improvements and efforts to promote a good oral health the family may require other supportive interventions than conventional prevention or treatment. As of today, current systems for caries prevention are often recurrent visits for oral hygiene instructions and application of fluoride varnish. Studies have shown that use of professional coaches for caries prevention among preschool children may help and support families instead of visits to the dental clinic (159).

Our results provide some answers to the questions about the case study posed at the beginning of this thesis

- To what extent was the disease affecting the child's daily life?
 - There was a dental disability.
- Why had the child's oral health deteriorated?
 - The parents did not provide oral hygiene or dietary routines and consistent dental care.
 - The child's basic oral needs were neglected and adults' needs came first.
 - The parents did not engage with dental health services.
- What factors made the family reluctant to seek treatment?
 - Based on the findings in this thesis, it is likely that this family needs the support of Social Services.
- How could this situation have been prevented?
 - Dental neglect should have been stated and subsequently reported.
- Is deteriorated oral health a sign of a broader problem?
 - According to the findings, this is likely.
- Was this child maltreated?
 - In the sense of dental neglect, this child was maltreated.

With this thesis we have found that children's oral health and families' use of dental health services are shown to be an important indicator of a broader family dysfunction or child maltreatment. New recommendations for both dental health services and the Social Services, could hopefully initiate future collaborations to prevent the continuing maltreatment of children and poor oral health.

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