Child Protection Evidence Systematic review on Dental Neglect

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While the format of each review has been revised to fit the style of the College and amalgamated into a comprehensive document, the content remains unchanged until reviewed and new evidence is identified and added to the evidence-base.

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Summary

Varying definitions of dental neglect exist and broadly encompass "the persistent failure to meet a child's basic oral health needs, which is likely to result in the serious impairment of the child's oral or general health and development"[1]. This systematic review evaluates the scientific literature on abusive and non-abusive dental neglect in children published up until **May 2024** and reflects the findings of eligible studies. The review aims to answer two clinical questions:

- Which socio-behavioural characteristics are associated with dental neglect in children?
- What are the oro-dental characteristics associated with dental neglect in children?

Eight new studies have been included in the 2024 update addressing risk factors, socioeconomic and lifestyle factors, and recognition of dental neglect.[2-9]

Key findings:

- Failure to attend appointments when the child is experiencing pain or discomfort, or failure to adhere to a recommended treatment plan should prompt a full investigation.
- A child who is experiencing pain, discomfort, social embarrassment or medical complications as a consequence of caries should be attending for appropriate treatment.
- Dental neglect can have a significant impact on children's oral health and manifests in several key oral characteristics, such as increased tooth decay, higher rate of tooth injuries, signs of inadequate oral hygiene and increased prevalence of dental pain: Children with dental neglect have a significantly higher experience of dental pain.

Background

This systematic review evaluates the scientific literature on abusive and non-abusive dental neglect in children published up until **May 2024,** and reflects the findings of eligible studies. The review aims to answer two clinical questions:

- Which socio-behavioural characteristics are associated with dental neglect in children?
- What are the oro-dental characteristics associated with dental neglect in children?

Methodology

A literature search was performed using a number of databases for all original articles and conference abstracts published since November 1947. Supplementary search techniques were used to identify further relevant references. See Appendix 1 for full methodology including search strategy and inclusion criteria.

Potentially relevant studies underwent full text screening and critical appraisal. To ensure consistency, ranking was used to indicate the level of confidence that abuse had taken place and also for study types.

Findings of clinical question 1: Which socio-behavioural characteristics are associated with dental neglect in children?

Failure/delay in seeking dental treatment

Nine studies recorded a delay in seeking appropriate dental treatment.[4,10-18] The reasons provided varied and included domestic violence.[10] Children's presenting symptoms varied, and these were well documented in one study.[12]

A comparison of children undergoing dental extractions under general anaesthetic had an over representation of dental neglect with significantly more children having missed or cancelled appointments and visits with acute pain. It is notable that very few children were referred to social services.[13]

Failure to follow the dental advice given

Failure to adhere to the recommended treatment plan was the primary characteristic which highlighted the neglect a child was suffering.[14] In other instances, this formed one of a number of features of neglect.[2,10-12,15,17-19]

Failure to provide basic oral care

While developing a dental neglect scale for children, one control study highlighted inadequate tooth brushing and cariogenic snack behaviour.[17] Other studies documented inadequate oral hygiene.[5,7,9,10,16,19,20]

1.1. Key evidence statements

- Failure to attend appointments when a child is experiencing pain or discomfort, failure to engage with a recommended treatment plan or failure to provide basic oral care should prompt a full investigation for the explanation of this.

Dental neglect appears to be linked to several factors, with both family structure and children's characteristics playing a role.

Family factors:

- Digital habits: In a study from Japan, fathers spending two or more hours daily on the internet and games was significantly associated with dental neglect in their children[2]
- Socioeconomic status: Non-affluent families were more likely to have children experiencing dental neglect compared to affluent families[2]
- Parental engagement: Lack of engagement in after-school activities by children was another significant association with dental neglect[2]

Child characteristics:

- Age: Children between 10 and 12 years displayed higher dental neglect scores than those aged 6-9 years[3]
- Grades: Higher grades in school were paradoxically associated with higher dental neglect, suggesting potential masking of neglect in lower-performing students[2]

Protective factors:

- Maternal education: Higher maternal education was linked to lower dental neglect scores, highlighting the impact of parental knowledge and resources[3]
- Household income: Affluent families generally had lower dental neglect scores, suggesting the influence of financial stability on access to care[3]
- Sibling status: Being a single child was associated with lower dental neglect scores compared to those with siblings, possibly due to greater parental focus and resources[3]

1.2. Research implications

- This review provides healthcare professionals with valuable knowledge to identify potential dental neglect through socio-behavioural characteristics.
- A deeper understanding of the socio-behavioural characteristics of dental neglect enables the development of tailored interventions that address both the immediate oral health needs and the broader context of neglect. This might involve

collaboration with social services, child protection agencies, and community support networks to tackle root causes and provide holistic support to the child and their family.

- There is a need for rigorous methodologies, standardised criteria for defining and identifying dental neglect, and diverse data sources that encompass broader health and social indicators.
- Future researchers can refine investigation methods and gather more comprehensive data, ultimately generating robust evidence to inform effective child neglect prevention and intervention strategies.

1.3. Limitations of review findings

While our review identifies potential socio-behavioural characteristics associated with child dental neglect cases, it is crucial to acknowledge inherent limitations that necessitate further research with robust methodologies.

- Confounding Factors: Socioeconomic background, limited healthcare access, and pre-existing medical conditions can affect ability to seek dental care and may present remarkably similar to dental neglect, complicating the diagnostic process. Differentiating dental neglect from these confounding factors requires rigorous statistical analyses to tease apart these complex inter-relationships and requires further research.
- Publication Bias: Our findings are inevitably shaped by the specific contexts and populations represented in the included studies. Publication bias, which tends to focus on certain research populations, risks skewing our understanding of the broader landscape. Utilising comprehensive search strategies and incorporating unpublished data are essential to mitigate this bias and ensure a more balanced representation of the issue.
- Subjectivity of "Dental Neglect:" Lack of a universally agreed-upon definition and identification criteria for "dental neglect" poses a significant challenge. This subjectivity hinders clear comparisons across studies and limits the ability to draw definitive conclusions. Standardised assessment tools and operationalised definitions are crucial for establishing a unified understanding and enhancing the validity and reliability of research findings.

Findings of clinical question 2: What are the oro-dental characteristics associated with dental neglect in children?

Oral features

There are 17 included studies that addressed this question.[3-9,11-20] The ages recorded ranged from birth to 15 years old.

All studies documented caries, many of which were "nursing bottle caries" or extensive childhood caries.[3-5,7,8,10-20] The presence of dental pain or dental abscesses were recorded features in four studies.[5,6,13,15,18] One study reported an increased frequency of tooth injuries or dental trauma,[5] and poorer oral hygiene was noted in three studies.[4,5,9]

One larger study of children aged three to eight years noted that 60.5% required extractions for dental caries, which included conditions that were painful or carried a risk of infection[15]. This finding was also reported by another two studies.[4,5]

Two studies reported on children requiring general anaesthesia for dental. treatment[6,13] In 40% of children requiring general anaesthesia for incision and drainage of a dental infection were already known to social services; thus, hinting at a potential overlap with broader child protection concerns.[6]

One study of 65 buprenorphine-exposed infants were recalled for examination at 3-4 years of age and compared to control infants. Those antenatally exposed to buprenorphine had greater decayed, missing, filled teeth and were less likely to be free of caries than controls. The buprenorphine exposed group were also more likely to have visible plaque. There were no differences in dental trauma or developmental enamel defects.[20]

2.1. Key evidence statements

- Given the varying prevalence of caries amongst young children in Western populations, it is impossible to define a precise threshold for dental neglect based on

this feature. However, a child who is experiencing pain, discomfort, social embarrassment or medical complications as a consequence of caries should be attending for appropriate treatment.

- Dental neglect can have a significant impact on children's oral health and manifests in several key oral characteristics:
  - Increased tooth decay: Dentally neglected children experience three times more permanent tooth decay compared to their non-neglected peers.[3-5,7,8,13] This decay often progresses to involve the tooth's pulp, requiring more complex interventions such as dental extractions under general anaesthesia[6,13]
  - Higher rate of tooth injuries: children who suffer from dental neglect have a 14-fold higher rate of tooth injuries, including fractures, chips, and even missing teeth[5]
  - Signs of inadequate oral hygiene: Visible plaque build-up, food debris, and stained teeth indicate inadequate or inconsistent oral hygiene practices in dentally neglected children[4,5,9]
  - Increased prevalence of dental pain: Children with dental neglect have a significantly higher experience of dental pain.[5,13] This pain can lead to difficulties eating, infections, disturbed sleep, school absences and can impact children's overall health, development and wellbeing.

2.2. Research implications

- This systematic review examines oro-dental characteristics associated with dental neglect in children and extends beyond academic inquiry to deliver significant implications for both research and clinical practice. Our findings equip healthcare professionals, particularly dentists, with valuable knowledge to identify potential dental neglect through oral signs and symptoms. This will empower healthcare professionals to act as vigilant sentinels, safeguarding children by sharing information regarding suspected cases to social services. Early identification paves the way for timely interventions, potentially reducing the adverse consequences for neglected children.
- To date, there are no large-scale studies comparing children with dental neglect to appropriate controls to define precise characteristics that distinguish these cases. Future studies should include routine oral assessment, including oral quality of life evaluation of children experiencing maltreatment of any type undergoing medical

assessment. Researchers are strongly advised to undertake such work as a matter of priority.

- Based on the findings, the systematic review highlights many potential implications including:
  - The prevalence of caries, particularly "nursing bottle caries" and extensive early childhood caries, as a key indicator of dental neglect. The review also identifies other features like dental pain, visible plaque deposits, dental trauma injuries and missing teeth as potential markers of dental neglect. This broader understanding can help identify children potentially suffering from dental neglect, even if they are caries-free.

  - The need for targeted interventions for children experiencing dental neglect, ensuring careful consideration of the specific oral health challenges they face. This may involve focusing on pain management, early caries prevention strategies, and addressing underlying risk factors like poor hygiene practices. The review also points to the importance of collaboration between dental professionals and other healthcare providers and social services, to address any underlying family or social factors contributing to the dental neglect.

  - The review provides evidence for the potential link between dental neglect and broader child protection concerns. This can encourage greater collaboration and communication between dental professionals and social services to identify and address cases of neglect more effectively.

  - Socioeconomic factors associated with dental neglect (e.g., non-affluent families, lack of parental engagement) can inform policy initiatives and programmes aimed at improving access to preventive oral healthcare for vulnerable families. The review can also contribute to advocacy efforts for increased education and support resources for families on proper oral hygiene practices and the importance of regular dental checkups.

2.3. Limitations of review findings

While our review identifies potential oro-dental characteristics associated with child dental neglect cases, it is crucial to acknowledge inherent limitations that necessitate further research with robust methodologies.

- Sample size and generalisability: While the studies included in this review provide valuable insights, their sample sizes, demographics, and specific contexts may limit the generalisability of the findings to the wider population. Further research with larger and more diverse samples is needed to confirm the associations identified and ensure applicability across different backgrounds and communities.
- Potential confounding factors: The complex interplay of individual, family, and socioeconomic factors makes it difficult to isolate the specific causes of dental neglect. Hence, caution should be taken when interpreting the study findings.
- Subjectivity in defining and measuring dental neglect: Defining and measuring dental neglect can be subjective, relying on clinical observations and questionnaires. This limitation introduces potential bias and highlights the need for standardised criteria and assessment tools to ensure consistency and accuracy in identifying cases of neglect.
- A number of authors elected to examine children who were identified as suffering from physical abuse or neglect, however, they did not specify dental neglect.

Other useful resources

The review identified a number of interesting findings that were outside of the inclusion criteria. These are as follows:

Clinical question 1

National Standards Relating to Dental Neglect

- UK Standards[1,21,22]
- US Standards[23-27]

Oral Features of Children admitted into the Child Welfare system for causes of maltreatment other than dental neglect (i.e. physical, sexual, emotional abuse, or general neglect)

- Features described included extensive childhood caries, poor oral hygiene and gingival inflammation[28-33]
- The introduction of a standardised pre forma for oral examination of all children undergoing a child protection medical improved the recognition of intra-oral features and onward referral of children for dental treatment[33]
- One case control study noted that the study group had almost eight times as many dental caries as five year olds in the general population[32]
- A study of children entering out-of-home care interviewed carers and professionals with regards to oral and dental care. A number of barriers and facilitators to the provision of appropriate dental care to children in foster care were identified[34]

A study of repeat treatment under general anaesthetic in children demonstrated the following:

- A case control study of children undergoing repeat GA for dental treatment versus those who only required a single GA highlighted a number of key differences[35]:
    - Those requiring repeat GA had more behavioural issues undergoing dental treatment
    - They were more likely to be responsible for brushing their own teeth (mean age 2.6 years, range 1.8 – 5.8) than controls (mean age 2.7 years, range 1.4 – 5.7)
    - Parents were more likely to give their child a drink other than water in their bottle at bedtime

Adverse consequences of dental caries in children and risk factors for dental neglect

- Adverse consequences
    - A randomised controlled trial of Bush Creole children demonstrated a significant association between short stature and levels of dental caries. However, the

longitudinal study did not show any 'catch up' in growth for those children who were randomised to receive dental treatment versus controls[36]

- A study of 12 year old school children in Brazil highlighted that those with dental caries or dental trauma are associated with reduced school performance and those who had worse self-perceived oral health missed more days of school[37]
- School absence related to dental pain or infection was related to poor school performance (p = 0.001) [38]

- Risk factors
  - Other risk factors include drinking fruit juice before being able to walk; however drinking milk or fruit juices after the child can walk is protective. Fluoridation was also found to be protective[39]

Low Income

- A number of studies have reported an association between low income and dental disease[39-42]
- Children in low income families have a higher prevalence of cavitated lesions than those in high income families[40]
- Low socio-economic group, consumption of sweet foods and the use of a pacifier in a survey of Italian children had a strong association with dental caries[41]

Dental Health Behaviours / Attitudes

- Higher caries prevalence in caregivers was associated with higher caries prevalence in children[40]
- Parents did not value the primary teeth[41]
- Survey of attitudes to dental health, care and consequences among British children aged 13 – 14 years[43]
- Attitudes of Public Health Nurses in UK to considering dental neglect in children less than five years old[44]
- A study in an area of free dental health care noted that the parents did not feel it was necessary to take their children to the dentist, even in the presence of oral abnormalities[45]

- A survey of parental attitudes to their child's oral health identified associations between dental caries and general health concerns in addition to a lack of concern about the child's dental health[45]

Quality of Life (QoL)

- A study of Inuvik children in Canada highlighting the prevalence of pain associated with dental caries in this population disease[39]
- Maternal anxiety did not appear to correlate with oral health related QoL assessments for pre-school children[42]
- Excellent systematic review of Oral Health Related Quality of Life (ORQoL) tools for children, which highlights that there are validated tools, but also that account needs to be taken of the child's age, cognitive level and language development[46]
- Valuable systematic review exploring the complex relationship between clinical oral health status and ORQoL[47]
- Poor oral health, in combination with poor general health, has a negative impact on school performance[48]
- A comparison of an Oral Specific QOL (ECOHIS) measure with a generic Paediatric QOL measure (Peds-QLTM 4.0) in preschool children with Severe Early Childhood Caries (S-ECC), demonstrated that children with S-ECC exhibited a significant effect on wellbeing, for the child and family[49]
- A UK QOL survey conducted in addition to a dental examination survey demonstrated that up to a third of children aged 12 years are experiencing a negative impact on their overall wellbeing as a result of dental problems, with pain being the most frequently reported effect[50]
- In a sample of 12 year old Brazilian children, untreated caries and dental overjet were significantly associated with a lower QOL score[51]
- Children aged 30 – 60 months with more dental caries exhibited greater problems with externalising behaviour, sleep disturbances, anxious / depressed and attention deficit / hyperactivity scores than those who were caries free, although neither group had scores outside the normal range for age[52]
- 550 children with a mean age of 7.2 years completed the 'Child oral health-related quality of life (COHQoL) score'. Those children with a higher dmft score had a poorer oral health related quality of life[53]

Dental Practitioners Response to Child Abuse and Neglect

- A UK study surveying general dental practitioners identified that although 37% of respondents had suspected abuse and neglect, only 11% had made a child protection referral. 73% of dentists were interested in identifying dental neglect[54]

Related publications

Publications arising from the dental neglect review

Bhatia SK, Maguire SA, Chadwick BL, Hunter ML, Harris JC, Tempest V, Mann MK, Kemp AM. Characteristics of child dental neglect: A systematic review. Journal of Dentistry. 2014;42(3):229-239

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Appendix 1 – Methodology

We performed an all-language literature search across 16 bibliographic databases to identify original articles published since 1947. The initial search strategy was developed across OVID Medline databases using keywords and Medical Subject Headings (MeSH headings) and was modified appropriately to search the remaining bibliographic databases. The search sensitivity was augmented by the use of a range of supplementary 'snowballing' techniques including consultation with subject experts and relevant organisations, and hand searching selected websites, non-indexed journals and the references of all full-text articles.

Prior to the 2024 update, identified citations, once scanned for duplicates and relevancy, were transferred to a purpose-built Microsoft Access database to coordinate the review and collate critical appraisal data. Abstracts and selected full-text papers were scanned by the lead researcher and eligible studies identified for review. Relevant foreign language articles were considered for translation, though none were undertaken. Where applicable, authors were contacted for primary data and additional information.

A panel of community and paediatric dentists, paediatricians, child protection practitioners, a lecturer in dental public health, social worker and pathologist conducted two independent reviews of each relevant article. Reviews were undertaken using a standardized critical appraisal form based on criteria defined by the National Health Service's Centre for Reviews and Dissemination [55-60]. All reviewers underwent critical appraisal training purposefully designed for this review. A third review was undertaken to resolve disagreement. For the 2024 update studies were managed using Endnote and only data included in English language papers or with an English language abstract were accessed for relevancy. No contact was made with authors in this update.

Definition of dental neglect chosen for the purpose of this review:

"Neglect refers to the failure of a parent or guardian to meet a child's basic oral health needs, such that the child enjoys adequate function and freedom from pain and infection, where reasonable resources are available to the family or caregiver" [1,24,61-63].

Inclusion criteria

Inclusion	Exclusion
Children aged 0-18 completed years (17 yrs & 364 days)	Studies relating to adults 18 yrs or over, either exclusively or where relevant data cannot be extracted
Primary studies (all evidence types)	Studies of physical abuse, sexual abuse, emotional abuse, general neglect, where oral neglect was not present
Documenting features of oral neglect (oral, systemic, social, behavioural) in children	Studies of management or complications of dental neglect
Characteristics of parent/carer of a child with dental neglect	Studies addressing risk factors for dental neglect
Confirmation of dental neglect rank A- C2	Formal consensus/expert opinion/personal practice/review article/systematic review
	Inadequate detail for oral features or parent/carer characteristics to be extracted

Ranking	Criteria used to identify/confirm oral neglect
A [10,14]	Oral neglect confirmed at Child Protection case conference, multi-disciplinary assessment including social services, Child in Need Framework Assessment or Court proceedings, or admitted by perpetrator, or described by the child
B1 [11,14,16]	Confirmation of oral neglect by dental care professional or professional with dental training
B2 [10,14,15,18,19]	Failure to attend follow-up appointments
B3 [10,12*]	Failure to follow treatment or preventive regime
C1	Oral neglect confirmed by **referenced** criteria / tool or by non-dental health professional
C2 [17]	Oral neglect defined by **unreferenced** criteria / tool
D	Oral neglect suspected or stated, **with no supporting detail given**

*failed to SEEK treatment

Quality standards for oral examination

1. Was / were the child / children examined by a dental care professional or other professional with dental training appropriate to the study?
2. Were the intra / extra oral features identified using a referenced recognised index? For example, – ICDAS, BASCD, WHO criteria for decay / caries – PUFA for clinical features consequent upon decay, such as dental abscesses, facial swelling, spreading cellulitis
3. Were the intra / extra oral features identified using unreferenced but explicitly stated criteria, **or** were the features described in detail?
If you have been UNABLE TO ANSWER YES TO EITHER QUESTION 2 OR 3, the study is excluded. **If you <u>HAVE</u> ANSWERED YES TO EITHER QUESTION 2 OR QUESTION 3, please answer questions 4, 5 or 6.**
4. Was the practitioner trained in the use of the index / criteria?
5. Was the amount / prevalence of caries quantified in the child (e.g. DMFT)?
6. Was the child / children examined by more than one practitioner? If YES, how many?

Search strategy

The below table presents the search terms used in the 2024 Medline database search for dental neglect, truncation and wildcard characters were adapted to the different databases where necessary. Changes to the search strategy were adopted only after consultation with the clinical expert sub-committee.

1.	exp Child/
2.	exp Child Preschool/
3.	exp Infant, Newborn/
4.	exp Infant/
5.	infancy.ti,ab.
6.	child*.ti,ab.
7.	infant*.ti,ab.
8.	(baby or babies).ti,ab.
9.	toddler*.ti,ab.
10.	neonat*.ti,ab.
11.	(pediatric* or paediatric*).ti,ab.

12. or/1-11
13. (abus* adj neglect*).ti,ab.
14. (abuse and negl*).ti,ab.
15. (maltreat* or mistreat*).ti,ab.
16. neglect*.tw.
17. (malnourish* or malnutrition).tw.
18. (fail* adj2 grow*).tw.
19. (falter* adj2 growth).tw.
20. exp Failure to Thrive/
21. non organic failure to thrive.tw.
22. body weight.tw.
23. quality of life.tw.
24. underweight child*.tw.
25. Growth failure.tw.
26. (child adj2 need*).tw.
27. child* in need*.tw.
28. vulnerable child*.tw.
29. Unmet treatment needs.tw.
30. or/13-29
31. neglected dentition.ti,ab.
32. ((oral or dental injur* or tooth or teeth) adj2 (failure or disreg*or overlook*or failed or neglect*)).ti,ab.
33. (oral hygiene adj3 neglect*).ti,ab.
34. (("oral care" or "dental care") adj3 (fail* or disreg*or overlook* or negl*)).ti,ab.
35. oral neglect.ti,ab.
36. (neglect* adj oral).ti,ab.
37. (failure to thrive adj3 caries).tw.
38. (dental hygiene adj3 neglect*).ti,ab.
39. dental neglect.tw.
40. or/31-39
41. exp Tooth Avulsion/
42. exp Tooth Injuries/
43. exp Tooth Extraction/
44. exp Tooth Discoloration/
45. exp Toothbrushing/
46. exp Mouth Mucosa/
47. exp Orthodontic Extrusion/
48. exp Tooth Extraction/
49. *"Oral Hygiene"/
50. Tooth Movement/
51. exp Gingivitis/
52. exp Orthodontic Extrusion/
53. Gingival Diseases/
54. exp Dental Plaque/
55. Tooth Movement/
56. *"Tooth Diseases"/
57. exp Toothache/
58. Dental Caries/
59. Periodontal Diseases/

60. exp Periodontitis/
61. exp Oral Health/
62. exp Pacifiers/
63. ((erosion or wear) adj2 (teeth or tooth or dental)).tw.
64. (luxation* or subluxation*).tw.
65. ((intrusion* or disease* or injur*) adj2 (tooth or dental)).tw.
66. rampant caries.ti,ab.
67. early childhood caries.ti,ab.
68. baby bottle caries.ti,ab.
69. baby bottle tooth decay.ti,ab.
70. ((tooth or dental) adj3 (decay or plaque)).tw.
71. (dental adj2 (infection or decay)).ti,ab.
72. dental extraction.ti,ab.
73. plaque control.ti,ab.
74. nursing bottle.ti,ab.
75. baby bottle.ti,ab.
76. gum disease*.mp.
77. (tooth or teeth).ti,ab.
78. (toothache or tooth pain).ti,ab.
79. oral health.ti,ab.
80. Oral mucosa.ti,ab.
81. gum inflam*.tw.
82. oral mucosal health.ti,ab.
83. caries.mp.
84. (dental adj2 fracture*).tw.
85. (dental adj2 concussion).tw.
86. (tooth adj2 fracture*).tw.
87. ((dental or orthodontic or oral) adj2 (intrusion or extrusion)).tw.
88. tooth fill*.tw.
89. (discol* adj2 (teeth or tooth or dental)).tw.
90. (infection adj2 (tooth or teeth or mouth)).tw.
91. tartar.tw.
92. discolo* tooth.tw.
93. ((clean* or brush*) adj2 (tooth or teeth)).tw.
94. lift the lip.mp.
95. nursing caries.tw.
96. (plaque adj2 level).tw.
97. dental abscess.tw.
98. dental infection.tw.
99. excessive calculus.tw.
100. Gingivitis.tw.
101. bleeding gums.tw.
102. gingival bleeding.tw.
103. oral health.tw.
104. poor tartar control.tw.
105. dental pain.tw.
106. dental rehabilit*.tw.
107. Dentin* decay.tw.
108. dental trauma.tw.

109. (linguae or buccarum).tw.
110. (Buccal mucosa or labial mucosa).tw.
111. morsicatio labiorum.tw.
112. ("tongue biting" or "cheek biting").tw.
113. or/41-112
114. 40 or 113
115. Patient Compliance/
116. dental appointment.mp.
117. dental attendance.tw.
118. failed appointment*.tw.
119. (dental adj3 failed appointment*).tw.
120. (dental adj3 missed appointment*).tw.
121. (non compliance adj3 dent*).tw.
122. (attendance pattern* adj3 dent*).tw.
123. dental attendance pattern*.mp.
124. (attendance pattern* adj3 oral health).tw.
125. missed appointment* or 'was not brought'.tw.
126. attendance pattern*.tw.
127. No-show.mp.
128. failure to turn up.tw.
129. (fail* adj2 appointment*).tw.
130. failure to follow advice.tw.
131. (fail* adj prevent*).tw.
132. (fail* adj treat*).tw.
133. "did not attend".tw.
134. "recall visit".tw.
135. (non-attendance or non attendance).tw.
136. Socio-behavioural.tw.
137. Deprivation.tw.
138. Socioeconomic factors.tw.
139. or/115-138
140. Family/
141. Mother-Child Relations/
142. Parent-Child Relations/
143. *"Parenting"/
144. exp Parents/
145. exp Mothers/
146. exp Fathers/
147. (parent* or mother or father or carer* or guardian).tw.
148. (mum or dad or families or caregiver*).tw.
149. or/140-148
150. 12 and 30 and 113
151. 12 and 113 and 139
152. 12 and 40
153. 12 and 30 and 114 and 149
154. 150 or 151 or 152 or 153
155. limit 154 to yr="2014 – Current

Sixteen databases were searched together with hand searching of particular journals and websites. A complete list of the resources searched can be found below.

Databases	Time period searched
ASSIA (Applied Social Sciences Index and Abstracts)	1987 – 2024
CINAHL (*Cumulative Index to Nursing and Allied Health Literature)*	1960 – 2024
Cochrane Central Register of Controlled Trials	1960 – 2004
EMBASE	1980 – 2024
ERIC (Education Resources Information Center)	1966 – 2014
HMIC (Health Management Information Consortium)	1983 – 2014
MEDLINE (ALL)	1947 – 2024
OpenGrey	1980 – 2014
SCOPUS	1960 – 2024
Social Services Abstracts	1979 – 2014
Sociological abstracts	1952 – 2014
Web of Knowledge – Conference Proceedings Citation Index- Science (CPCI-S) –1990-present	1992 – 2014
Web of Knowledge – Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) -1990-present	1990 – 2014
Web of Knowledge – Science Citation Index	1960 – 2014
Web of Knowledge – Social Science Citation Index	1960 – 2014
Journals 'hand searched'	**Time period searched**
Child Abuse and Neglect	1979 – 2014
Child Abuse Review	1992 – 2014
New York State Dental Journal	2005 – 2014
Proceedings of the British Paedodontic Society. Continued as: International Journal of paediatric dentistry.	1991 – 2014

Websites searched	Date accessed
American Academy of Pediatric Dentistry	From inception 05/11/2014
European Academy of Pediatric Dentistry	From inception 05/11/2014
British Society of Paediatric Dentistry	From inception 05/11/2014
British Society of Periodontology	From inception 05/11/2014
Google scholar	From inception 05/11/2014

Pre-review screening and critical appraisal

Papers found in the database and hand searches underwent three rounds of screening before they were included in this update. The first round was a title screen where papers that obviously did not meet the inclusion criteria were excluded. The second was an abstract screen where papers that did not meet the inclusion criteria based on the information provided in the abstract were excluded. In this round the pre-review screening form was completed for each paper. These first two stages were carried out by a systematic reviewer at the RCPCH and a clinical expert. Finally, a full text screen with a critical appraisal was carried out by members of the clinical expert sub-committee. Critical appraisal forms were completed for each of the papers reviewed at this stage. Examples of the pre-review screening and critical appraisal forms used in previous reviews are available on request (evidence@rcpch.ac.uk).