Community Dental Health (2023) **40,** 154–161
Received 9 November 2022; 15 February 2023

doi:10.1922/CDH_00252Hurry08

The Dental Health of Looked After Children in the UK and Dental Care Pathways: A Scoping Review

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Background: There has been a 37% increase in the number of Looked After Children (LAC) in England over the past decade. Although LAC have more health and social problems than their peers, little is known about their dental needs, barriers to dental care, and pathways used to access it. ***Objectives***: This scoping review assessed the evidence on the dental health needs of LAC in the UK and their different dental care pathways. ***Methods***: Embase, MedLine(R), Scopus, Web of Science, PubMed and CINAHL, grey literature databases and third-sector organisation websites were searched up to February 2022. Included studies were any study type involving UK resident LAC aged 0-18 with no limits placed on time in care/placement. Thematic analysis identified access barriers and dental care pathways. ***Results***: Twenty-eight articles were included (nine publications, 11 abstracts and 8 grey literature). Oral health surveys, population linkages studies and service evaluations described the poor oral health of LAC and their unmet needs. Barriers included the lack of dental care and irregular attendance; the lack of integrated working between health and social care teams, lack of self-care and oral health promotion, and psychological issues complicating dental treatment. Four dental care pathway models were identified: care navigation, facilitated access, nurse-led triage and referral, and signposting to local dentist with multi-agency information sharing. ***Conclusion***: LAC are a vulnerable group with barriers to care suggesting the need for integrated working between health and social care teams, specialist services and an evaluation of pathways to identify best practice.

Keywords: *Dental health, scoping review, looked after children, children looked after, foster child, dental care pathways*

Introduction

The Children Act 1989 defined Looked After Children (LAC) (also known as Children Looked After) as any child under the care of the local authority or provided with accommodation for a continuous period of more than 24 hours by the local authority. The number of LAC in the United Kingdom (UK) has increased over the past 10-years with more children entering than leaving care (Department of Education, 2022). In 2021, there were: 80,850 LAC in England (67 per 10,000 children), 13,255 in Scotland (131 per 10,000 children), 7,263 in Wales (115 per 10,000 children) and 3,530 in Northern Ireland (80 per 10,000 children) (Department for Education, 2022; Scottish Government, 2022; Welsh Government, 2022; Northern Ireland Executive, 2021). There are more unaccompanied asylum-seeking children (UASC) seeking refuge in the UK with 3,762 applications in 2021: an increase of 36% since 2020 (Refugee Council, 2022).

Most LAC in England (71%) live in foster placements with family members, friends, or other carers (Department for Education, 2022). One challenge for LAC is placement instability as they frequently change foster homes, which can disrupt health routines and access to local services (Konijn *et al*., 2019). Over 64% of LAC in England had a placement change in 2021, with 30% percent having two or more placements during the year (Department for Education, 2022). The most common reasons for care placements are physical abuse, neglect, or absent parenting (66%) (Department for Education, 2022). Physical abuse and neglect associated with adverse childhood experiences before entering care can lead to poor health for LAC including mental ill-health and unhealthy weight loss or obesity (Herwig, 2022; Merforth *et al*., 2019). LAC also have poorer education attainment and higher rates of special educational needs than non-LAC. When they leave care, they experience higher rates of unemployment and homelessness than their peers (State of Child Health, 2021).

The poor health and social outcomes for LAC led to the development of guidelines setting out the statutory responsibilities and key organisations that should be involved in their care (NHS, 2022; NICE, 2021). This requires all LAC to have scheduled immunisations, dental check-ups, and an initial health assessment (IHA). Despite these guidelines, little is known about the oral health needs of LAC who are not identified in national epidemiological surveys.

Despite an earlier increase in LAC having dental check-ups, this number dropped by over 50% in 2020/21 compared to 2019/20; marginal improvements were made in 2021/22 as dental practices recovered from the COVID-19 pandemic (Local Government Association, 2022). Although general health checks were maintained during the pandemic, the proportion of LAC having dental check-ups fell from 86% to 40% (Department for Education, 2022).

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LAC were also identified as an under-researched vulnerable group in the 2021 Public Health England Oral Health Inequalities Report, which only included three peer-reviewed publications, limited grey literature and no evidence from local reports or health needs assessments. This demonstrated a clear research gap. Thus, the aim of this scoping review was to review the evidence on the dental health needs of LAC as a vulnerable child population and to explore the current dental pathways in place for LAC in England, Scotland, Wales, and Northern Ireland. For this review, dental pathways are defined as the process of accessing dental care (Schrijvers *et al*., 2012). The research questions for were: (i) what are the dental needs of LAC in the UK; (ii) what are the barriers to dental care for LAC; and (iii) what dental pathways have been developed for LAC in the UK?

Methods

The scoping review followed the five stages proposed by Arksey and O'Malley (2005): (i) Identifying the research question(s); (ii) Identifying relevant studies; (iii) Selecting studies; (iv) Charting the data; and (v) Collating, summarising, and reporting the results.

The research questions were developed by the research team who included a Dental Public Health academic, two consultant Paediatric dentists and a Paediatric dental core training academic. The questions were generated through discussion drawing on the research team's clinical experiences with LAC, previous research and involvement with foster carers, and health and social care teams.

Relevant studies were identified by searching OVID (including Embase and MEDLINE), Scopus, Web of Science, PubMed, CINAHL and Google Scholar up to February 2022. The search strategy was developed in consultation with a librarian (available at https://qmro.qmul.ac.uk/xmlui/handle/123456789/85640). Searches were limited to human subjects and English language abstracts. The inclusion criteria were: (i) LAC up to the age of 18 (extended to 22 years if the LAC was still in full time education) with any reason for placement and any length of stay; (ii) any study design carried out in the UK and available in the English language; and (iii) any grey literature as defined by GreyNet international (GreySource, website) searching the GreyGuide, Social Care Online and EThOS grey literature databases. The websites of key organisations were searched for relevant literature including British Society of Paediatric Dentistry, Royal College of Paediatrics and Child Health, Royal College of Nursing, National Society for the Prevention of Cruelty to Children (NSPCC), Become (The Charity for Children in Care and Young Care Leavers), Family Action, and Catch 22. Studies were excluded if they did not address the dental health needs of LAC or dental pathways within the UK.

After removing duplicates, non-English language and non-human subjects, titles and abstracts were screened independently by two authors (KJH and LR) to determine if they met all three eligibility criteria. Full texts of included articles were obtained and reviewed. Any disagreements were discussed with the third and fourth authors (JD and VEM) until consensus was reached. Additional evidence was obtained through personal communication between the authors and clinicians who had developed local pathways. None of the key organisation websites searched included information about dental health for LAC or pathways to accessing dental care.

The data were charted through extraction of key variables to summarise the study design, population characteristics, location of study as well as the objectives of the study and key findings. The title, author and year of publication were also collected. Descriptive thematic analysis was guided by the research questions to enable data analysis, reporting of results, and applying meaning to those results as proposed by Levac et al. (2010). A data extraction spreadsheet adapted from Marshall et al. (2016) was used to identify themes from the relevant articles; allowing a framework approach to analyse different data sources.

The peer-reviewed publications were critically appraised by two authors using the Mixed Methods Appraisal Tool (MMAT) (Hong *et al*., 2018). The MMAT allows appraisal of mixed studies via a checklist of screening and rating questions, followed by an explanation section. As recommended by Pham et al. (2014), study quality was appraised to identify further gaps within the literature but was not used to exclude articles from the review.

Results

The searches identified 3,612 published papers and 10 sources from the grey literature including health notes, letters, and reports (Figure 1). Duplicates were removed (n=1,287) leaving 2,335 articles available for title and abstract screening. Then, 2303 articles that did not meet the inclusion criteria were excluded. From the 32 articles remaining for full-text screening, four that focused solely on medical issues were excluded. This left 28 articles in the narrative analysis.

Of the 28 data sources, nine were peer-reviewed publications, 11 were abstracts and eight were from the grey literature (Online Appendix, https://qmro.qmul.ac.uk/xmlui/handle/123456789/85640). This included four audits, eight service evaluations, two opinion pieces, two pathway descriptions and three review articles. Most audits and service evaluations were meeting (n=5) or conference (n=6) abstracts especially for Child Protection Medical Examinations (CPMEs) and IHAs.

The sources were published from 2001 to 2021; 19 were published between 2010-2020. Most were set in England (n=21); three in Scotland, one in Wales, one in Northern Ireland, one in England and Wales and one included all four nations.

Seven sources captured information from LAC alone, four from UASC, four from LAC and their non-LAC counterparts, two from 'vulnerable children' (including LAC, refugees, homeless children, children from travelling families, and children subject to a CPME), and eight from stakeholders including previous LAC, foster carers, social workers, clinical directors, and community dental officers. The remaining three sources did not disclose their participants. Articles included children aged between 0-19 years old. The number of LAC included in studies ranged from 20 to 10,927.

Four peer-reviewed studies were considered high quality (Hunter *et al*., 2008; McMahon *et al*., 2018; Muirhead

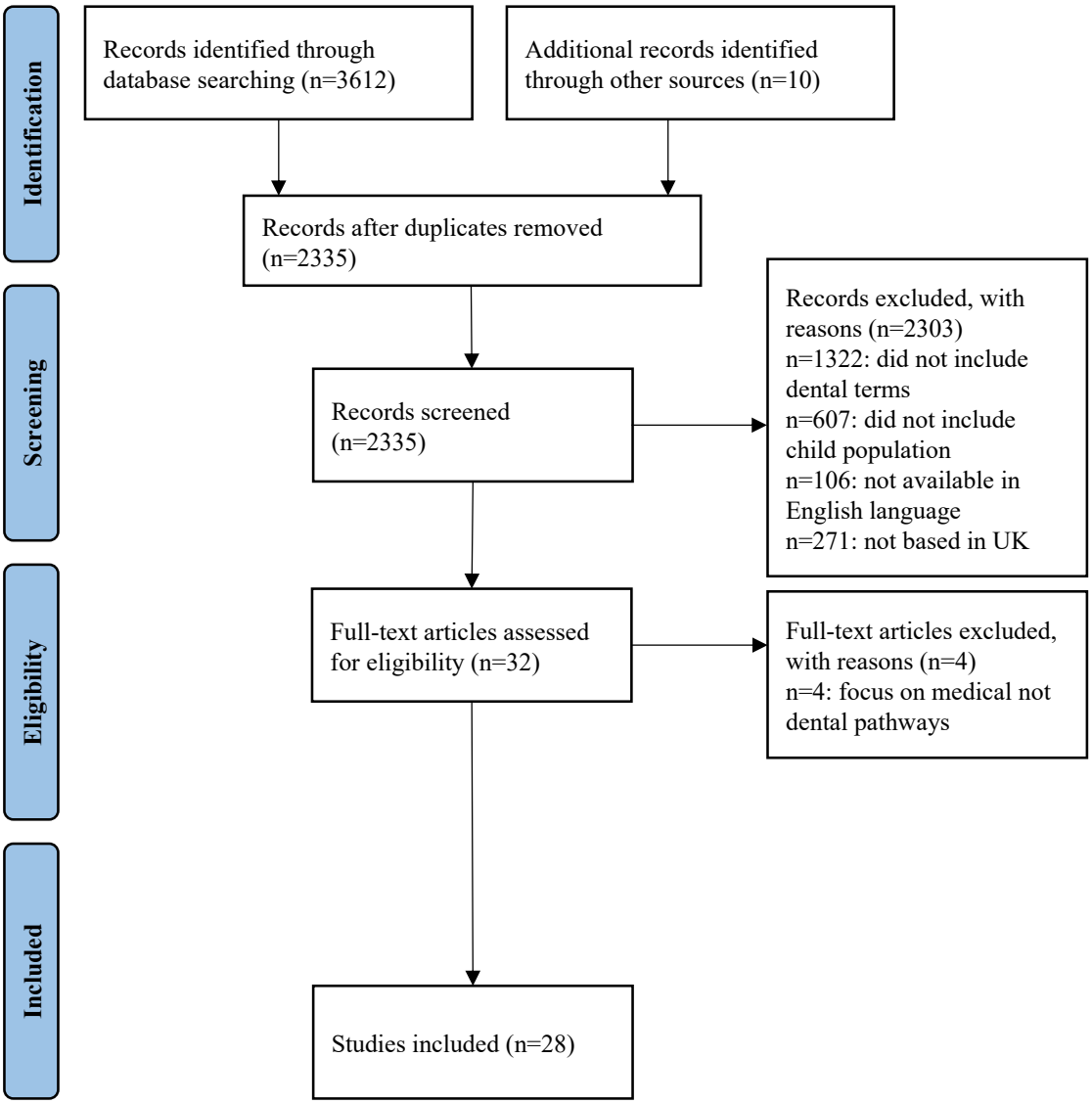


***Figure 1**. PRISMA flowchart for selection of sources.*

et al., 2017; Sarri *et al*., 2012), four were of medium quality (Clark *et al.*, 2017; Leck *et al.*, 2019; Williams *et al*., 2001; Williams *et al.*, 2014), and one low quality (Simkiss, 2005). The main concerns among studies that were of low and medium quality included insufficient interpretation of results and a lack of explanation when comparing qualitative and quantitative components. These concerns were not used to exclude studies.

Evidence on the dental health needs of LAC came from local oral health surveys (Muirhead, 2015; Muirhead *et al*., 2017; Sarri *et al*., 2012), population-based linkage studies (Clark *et al.*, 2017; McMahon *et al.*, 2018), case control studies (Williams *et al*., 2001), service evaluations (Banerjee *et al.*, 2019; Battersby *et al*., 2019; De Keyser and Berg, 2020; Leck *et al*., 2019; Williams *et al*., 2014), audits (Ogundele and Zaidi, 2021; Paradise and Sadavarte, 2017; Teh and Peet, 2021), reports (Mooney *et al*., 2009; McSherry *et al*., 2015) and reviews (Newton, 2012; Welbury, 2014).

Most surveys compared the oral health of LAC with other children in the population. All reported that LAC had poorer dental health in terms of a higher prevalence of dental caries, periodontal diseases, dental trauma, and dental pain than their non-looked after counterparts (Clark *et al*., 2017; De Keyser and Berg, 2020; Leck *et al*., 2019; McSherry *et al*., 2016; Mooney *et al*., 2009; Muirhead *et al*., 2017; Sarri *et al*., 2012; Welbury, 2014; Williams *et al.*, 2001; Williams *et al*., 2014). LAC had higher repored rates for urgent dental treatment, being more likely to require urgent dental treatment than their non-looked after counterparts in both 5-year-old and 11-year-old populations (McMahon *et al*., 2018; Muirhead, 2015; Williams *et al*., 2001). LAC were more likely to have both primary and permanent dental extractions (McMahon *et al*., 2018; Muirhead, 2015). LAC were twice as likely to have teeth removed under general anaesthetic than their counterparts (McMahon *et al*., 2018). Teenage LAC needs for orthodontic treatment were higher than local, regional, and national rates (Muirhead, 2015).

UASC had higher rates of dental disease than their peers (Banerjee *et al*., 2019; Battersby *et al*., 2019; Paradise and Sadavarte, 2017).

Overall, LAC had little to no experience of tooth brushing before entering care, inconsistent meal patterns and higher sugar diets (McSherry *et al*., 2016; Muirhead *et al*., 2017; Williams *et al*., 2014). This lack of self-care

was mirrored in their limited experience of dental care; four themes were identified related to perceived barriers to accessing dental care by LAC: (i) the lack of dental care experience because of their irregular attendance before and during their care placement; (ii) the lack of integrated working between health and social care teams; (iii) the lack of self-care and oral health promotion aimed at LAC and their carers; and (iv) psychological issues (such as dental anxiety) making dental treatment more complicated.

Some LAC had little to no experience of visiting the dentist and/or a record of irregular attendance before entering care (Beagley *et al*., 2014; Coyle *et al*., 2016; McSherry *et al*., 2016; Muirhead *et al*., 2017; Williams *et al*., 2014). Poor attendance whilst in care was also reported (Leck *et al*., 2019; McMahon *et al*., 2018; Williams *et al*., 2001; Williams *et al*., 2014) often resulting in children being 'de-registered' from their dentist. Patient refusal was also stated as a reason for irregular attendance (Leck *et al*., 2019). LAC reported feeling stigmatised because of poor dental attendance due to travel difficulties, late cancellations and 'was not brought' (Hawkey, 2020; Williams *et al*., 2014). Their limited co-operation and underlying behavioural difficulties meant that General Dental Practitioners (GPDs) were resistant to treating them especially under the current NHS dental contract (Leck *et al.*, 2019; Welbury, 2014; Williams *et al*., 2014). These access difficulties often resulted in their higher treatment needs remaining unmet (Teh and Peet, 2021; Williams *et al*., 2014).

Several studies described lack of integrated working between health and social care teams with engagement difficulties between NHS staff and foster carers through social work departments as an important barrier (Hunter *et al*., 2008; Muirhead *et al*., 2017; Poynor, 2004; Unsworth *et al*., 2017; Welbury, 2014; Williams *et al*., 2014). Muirhead et al. (2017) described tension between foster carers and dentists due to inconsistent oral health advice and refusal to see younger children which conflicted with statutory guidance.

An IHA should be provided by a medical practitioner for every LAC within 20 working days of entering care; these should be reviewed by a nurse or midwife every 6-to-12-months depending on length of time in care (Children Act, 1989). Oral health related questions include last dental assessment and whether the patient has a GDP. The outcomes include recommendations that steer subsequent healthcare provision. However, few pathways lead LAC to necessary dental care despite local service evaluations of IHA reported high levels of dental decay in LAC and UASC (Banerjee *et al*., 2019; Paradise and Sadavarte, 2017; Whittington *et al*., 2016).

There was a lack of self-care and oral health promotion for LAC and their carers to support their oral health. As many children become looked after due to neglect, poverty, and abuse, they can struggle to attain optimal oral health behaviours (Muirhead *et al*., 2019). Most research focused on whether LACs had seen a dentist rather than the extent of disease or urgency of treatment required. Few studies involved dental education or dental education (Poynor, 2004). One qualitative study of foster carers found that dentists often gave inconsistent advice, particularly to teenager LAC who struggling with smoking and eating disorders (Muirhead *et al*., 2019).

Psychological conditions (such as dental anxiety) could make dental treatment more complicated. LAC may require more complex management than their counterparts in dental settings (Leck *et al*., 2019; Williams *et al*., 2014). LAC had a fear of dental treatment with high levels of anxiety and resultant appointment refusal; with underlying emotional or behavioural difficulties that were often sensitive in nature and required more time to overcome (Williams *et al*., 2014). Leck et al. (2019) shared the following participant opinion: "Lack of NHS dentists and General Dental Services contract does not encourage GDPs to provide extensive and comprehensive treatment plans for children with high dental needs that require extra time over multiple visits".

The scoping review identified four different types of dental care pathways for LAC in the UK described below (Figure 2). These pathways were discussed by the authors, who agreed they could all be allocated into one of four categories, representing different models of care. Although the authors may not have identified all care pathways in use, it was felt that most would fall into one of these four types.

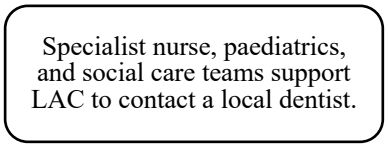
Care Navigation involved supporting LAC to contact a local dentist e.g. the use of specialist nursing service in Scotland (Hunter *et al*., 2008). Evaluation of this pathway, where nurses liaised with dentists to receive appropriate health advice found that the number of children 'registered' with a dentist increased from 14% to 63% (Hunter *et al*., 2008). This type of pathway was also used by paediatricians and social care teams who shared dentists' details with foster carers to help them find a dentist (personal communication – Hearnshaw, 2022).

Facilitated access describes health and social care agencies working with carers and LAC to refer directly to Community Dental Services or GDPs, examples of which are operating in several parts of the UK (Biggadike, 2021; Williams *et al*., 2014; personal communication – Facenfield, 2022). Access was facilitated by an established and/or commissioned referral pathway and improved access, interagency working and facilitated record keeping (Williams *et al*., 2014). Some pathways included follow up care.

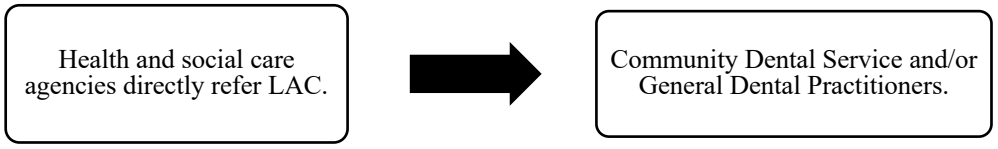
Non-dental professional led oral health triage and onward signposting/referral was illustrated in East of England, where non-dental health teams carried out a simple 'mouth check' as part of their IHA (personal communication – Liu, 2022). The assessment was supported by the Mini Mouth Care Matters Mouth Check Tool (Health Education England, 2019) and the child was signposted or referred to appropriate services based on their dental needs where necessary.

Signposting to local dentists plus multi-agency information sharing describes the most integrated care pathways, where multiple organisations were involved in providing care for LAC. A pathway in Yorkshire and the Humber facilitated access to dental care and enabled GDPs to record information about LAC's oral health. This was then shared with health and social care professionals, ensuring that all organisations involved in the child's care were aware of their dental needs (personal communication – Ridsdale, 2022). Facilitated access was supported by a flexible commissioning model, where part of existing dental contract value was used by GDPs to target local needs and commissioning challenges, which included LAC (Mustufvi *et al*., 2020). A similar pathway

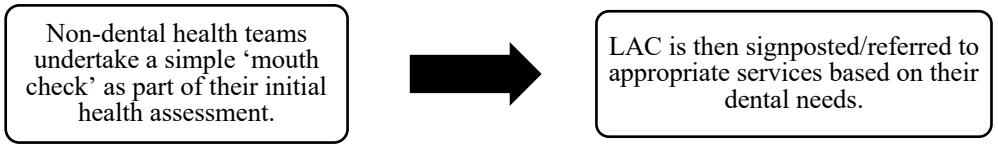
1. Care navigation



2. Facilitated access



3. Non-dental professional led oral health triage and onward signposting/referral



4. Signposting to local dentists plus multi-agency information sharing

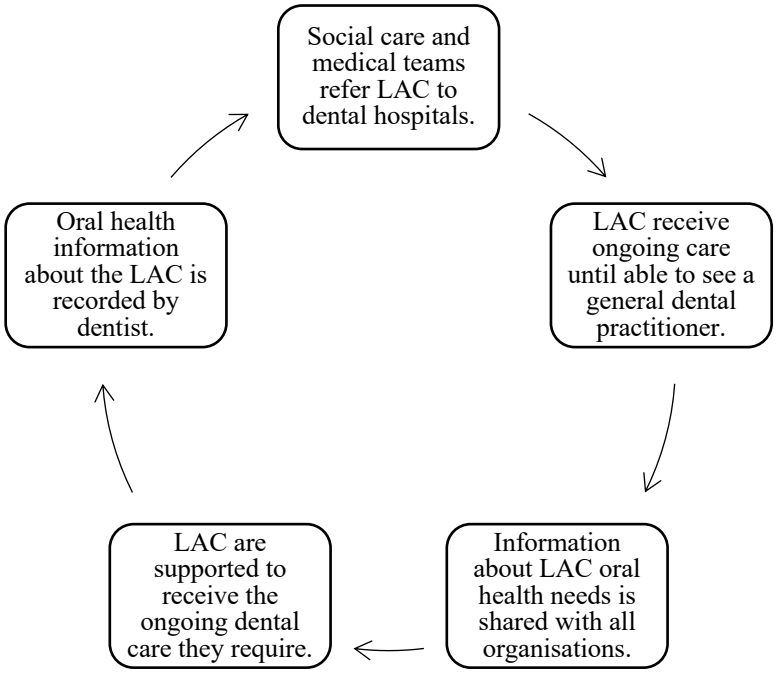


Figure 2. *Current dental pathways in the UK.*

was operating in East Surrey where social and medical care teams referred LAC to a local dental hospital for treatment and ongoing care until they could see a local GDP. Information about dental health was again shared with social care teams (Patel *et al*., 2021).

Discussion

This scoping review identified nine peer-reviewed publications that reported consistently on the poorer oral health and greater oral health needs of LAC. However, few studies collected clinical information from local oral health surveys or used population-based data. Most were based in England using service evaluations and audits of LAC accessing services. For LAC unable to use services, little is known about their oral health, which could underestimate their needs. This is a limitation of the current evidence: locally commissioned oral health surveys of LAC are needed to understand better this population's dental needs. The decennial Children's Dental Health Survey samples children aged 5, 8, 12 and 15-years-old from England, Wales, and Northern Ireland (Office for National Statistics, 2015). One recommendation to capture the oral health needs of all LAC could be to include an indicator that identifies LAC in national oral health surveys, akin to the information collected about children's eligibility for free school meals. However, due the opt-in nature of consent may make this challenging.

Although there are no nationwide dental care pathways to support LAC, we identified four types of local dental care pathway that varied in structure and level of involvement with different agencies. Signposting to local dentists plus multi-agency information sharing pathway was the most involved. This pathway demonstrates that without access to health and social care electronic systems, it can be difficult for dentists to share the information they have about children's dental health with the appropriate parties (Patel *et al*., 2021; personal communication – Ridsdale, 2022). This pathway is a more complete package of ongoing prevention, treatment, and regular recall.

This review has several implications, including putting evidence into practice and making research recommendations The PAGER framework (Table 1) adapted from Bradbury-Jones et al. (2021) is a useful tool to summarise the Patterns, Advances, Gaps, Evidence for practice and Research recommendations.

Four key themes or patterns were identified from the limited evidence to show the poor oral health of LAC. LAC have higher levels of dental disease and neglect than their non-looked after counterparts with poor dental attendance, poor oral hygiene habits and dietary routines both before and whilst in care. LAC have greater dental treatment needs, including those that are urgent and under general anaesthetic. There are multiple locally adapted pathways to support LACs' access to care that provide different levels of intervention across the UK. Despite these models, there is little interagency communication between dental, health, social care, and foster carers to support the access.

Moreover, most evidence focused on access to dental care rather than on wider oral health promotion for LAC and their carers. Gaps in the evidence demonstrate the need to identify LAC in population-based oral health surveys to allow robust assessment of their needs and oral health behaviours at home (e.g. toothbrushing, dietary habits and smoking), and the knowledge, attitudes, and training needs of foster carers.

The implications for practice are that for dental care pathways to improve oral health, interagency working between health professionals is key. While there are barriers to interagency working around LAC, there is a paucity of research on interagency communication regarding their health. There is often a lack of understanding about the role of dental care professionals, social teams, and other healthcare professionals in caring for LAC and that each role has its own unique scope. Progress can be made when these teams work together. Clarifying roles and responsibilities through partnership working would help to identify and address barriers to better serve LAC.

National and regional discrepancies in dental care pathways have resulted in variation in dental access for LAC in different parts of the country. Further research should explore the possibility of developing national dental pathways or guidance for best practice when developing a local care pathway that could allow integration and information sharing between all key professionals.

It is important to recognise this review's strengths and limitations. First, it is strengthened by including published literature, grey literature, and personal communications,

Table 1. Patterns, Advances, Gaps, Evidence for practice and Research recommendations for oral health and dental care of Looked After Children.

Pattern	*Advances*	*Gaps*	*Evidence for practice*	*Research recommendations*
LAC have poor oral health and unmet treatment needs	Variations in evidence of poor oral health	LAC to be analysed as a group in oral health surveys.	Ensure access to care. Dental professionals to raise concerns about dental neglect or WNBs*, in audit and service evaluations. Understand consent to participate in surveys.	Include oral health survey of LAC. Support dentists to see and treat Include in Child Dental Health Survey.
Multiple dental care pathways for LAC	Locally adapted pathways provide different levels of care.	Lack of a nationwide dental care pathway. Limited evaluation of current pathways.	Share information about existing pathways, share flexible commissioning approaches and identify good practice.	Determine, measure and evaluate pathway outcomes. Pilot pathways and share outcomes to evidence policy change.
Little interagency communication to support LAC	Lack of evidence of interagency working between professionals that care for LAC.	Limited research focused on interagency communication regarding the health of LAC.	Dental, other health and social teams should understand each other's roles. Make policy makers aware of LACs' dental needs and ensure access to care.	To carry-out qualitative research with these agencies to highlight barriers to communication and methods to overcome this.
Lack of oral health promotion for LAC and their carers	Limited evidence of oral health promotion provided to LAC and their carers.	Little known about oral self-care of LAC or oral health promotion needs for foster carers.	Dental teams to place greater emphasis on oral health promotion	To use co-production research to tailor oral health promotion for LAC and their carers

* WNB=Was Not Brought.

providing a wide range of evidence without the confines of the publication process. Secondly, we used the PAGER framework (Bradbury-Jones *et al*., 2021) to provide specific practice and research recommendations which can otherwise be non-specific and vague. Limitations include limiting the search to online resources. Whilst scoping reviews are considered less rigorous than systematic reviews, following the PRISMA-ScR and critically appraising the evidence overcame this limitation to a degree. The review cannot include all LAC dental care pathways active in the UK. Many pathways would be considered standard practice and therefore have not been published. We attempted to overcome this limitation by contacting dental practitioners who treat LAC but acknowledge that there will likely be other active pathways in the UK.

In conclusion, this scoping review found evidence to support the poor oral health and high dental needs of LAC in the UK. Most studies collected information from LAC already accessing services which may underestimate the total unmet needs of this vulnerable population. Barriers to accessing dental care were multifactorial, including lack of treatment experience due to irregular attendance, lack of integrated working between health and social teams, lack of self-care and oral health promotion, and psychological issues making receiving treatment more challenging. No national pathway to access dental care for LAC was found. Different regions provided varying levels of dental care from assistance accessing initial care to a cyclical pathway designed to meet LAC dental needs and ensure longer term access to local care. We recommend improving dental care for LAC by including LAC within national oral health surveys to describe their needs accurately and creating an evaluated long term dental care pathway and resolving barriers to interagency communication.

Acknowledgement

The authors would like to acknowledge and thank Paula Funnel, QMUL Library, for her support and guidance during the literature sourcing. We would also like to thank the academics who supported this project by providing their full-texts, posters, and unpublished work. It is excellent to have such a supportive community.

Funding

The authors received no financial support for the research, authorship, or publication of this article.

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