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NARRATIVE REVIEW

A qualitative meta-synthesis of carers' perceptions of factors influencing preschool children's oral hygiene practices—A social practices perspective

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Abstract

Objectives: This study comprises a synthesis of published qualitative studies from developed countries on the perspectives of carers regarding the oral hygiene toothbrushing practices of preschool children, through the lens of social practice theory.

Methods: A search of the following electronic databases was conducted for all available years: MEDLINE, EMBASE and Global Health using the Ovid platform; Dentistry & Oral Sciences Source (DOSS), Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Scopus. Included qualitative studies reported primary caregivers' perceptions of oral hygiene practices (focusing on toothbrushing) in preschool children (0–5 years old) in developed countries. A thematic synthesis of the qualitative findings was undertaken for the results of each study.

Results: Eleven articles were included in this meta-synthesis. The focus of this paper was toothbrushing practices. A conceptual map of toothbrushing as a social practice was developed. Key findings included practice elements (meanings, competences, and materials), spatial and temporal aspects, and barriers and facilitators to performance.

Conclusions: The application of a social practice lens to published qualitative research on the oral hygiene of preschool children provided insights into the meanings and competences related to toothbrushing, as perceived by primary caregivers. However, it also revealed limited information on material, spatial and temporal aspects of toothbrushing practices, indicating the importance of considering social practice theory as a framework in future research to address this gap. Furthermore, exploring toothbrushing in connection with related social practices has the potential to increase understanding of factors influencing oral health in preschool children.

KEYWORDS
carers, dental caries, ECC, oral health, preschool children, qualitative research, social practices

1 | INTRODUCTION

There is a high prevalence and cost of oral diseases in preschool children.[1] Dental caries, often called early childhood caries in young children, and gum diseases are the most common oral diseases in early childhood globally.[2,3] Untreated caries and oral diseases can lead to a range of health and wellbeing problems including dental pain, developmental issues, irritability, eating, sleeping and talking disorders, missing school, having lower academic performance and an overall negative effect on quality of life.[4–9] Furthermore, the impact extends to the child's family who incur the cost of treatment and potential time off work to care for their child.[5] Examining novel approaches to understanding how oral hygiene practices are formed and re-enacted has the potential to offer a more comprehensive insight into this health problem.

Bronfenbrenner[10] and Fisher-Owens et al.[11] have developed conceptual models that illustrate the influences on child health at multiple levels. The latter model relates specifically to oral health and categorizes influences at three levels: (i) child-level influences; (ii) family-level influences and (iii) community-level influences. In current health research and prevention, the significance of family-level factors is evident. These factors include the conditions and features of a family environment, as well as caregivers' oral health behaviours, attitudes, knowledge and beliefs.[11–14]

Current interventions often aim to improve knowledge with the expected outcome of behaviour change. However, the effectiveness of these interventions can be limited,[15–17] and there is an evident 'value-action gap', as changes in knowledge, attitudes and values do not always translate into the desired behaviour.[18,19] Such individualistic approaches have failed to adequately improve the oral health of preschool children.[20] Social sciences can therefore help shift the current paradigm (which may invoke victim blaming) in oral health by exploring how the social context and social practices, rather than individual behaviour, are related to health.

Social Practice Theory offers a new, more holistic perspective that goes beyond an individualistic and fragmented view of human behaviour.[16] It further provides an insight into the routine daily practices that affect oral health within families, including the role of intergenerational relations in the formation and performance of these practices. The focus moves from individuals to social practices as the unit of analysis.[16,21–23] Shifting the focus in this way recognizes the complexities of the world we live in and subsequently redirects public health interventions and policy-making efforts.[15,24]

Social practice theory is not a unified theory. It is instead a collection of theoretical ideas and assumptions of practice, with nuances in the way practice is defined, analysed and conceptualized among individual theorists.[25] What follows is a selective overview of some of the core tenets of practice theory relevant to the immediate research question. We adopt Reckwitz's definition of social practices as being 'routinised way(s) in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood'.[26] As a large part of daily life happens unthinkingly and routinely, this routinised nature of social practices means they are often enacted automatically and without conscious deliberation.[27]

Practices are constituted by the active integration of three key elements: meanings about how and why to do things (cultural norms, social expectations, symbolic meanings, states of emotion, ideas and aspirations), tacit and explicit competences (the know-how, technique and embodied skills) and materials (tools, infrastructure, body itself, technology, etc.).[21,22] These elements are integrated and linked in the performance of the practice.

Practices need to 'recruit' individuals or 'practitioners', who are both willing and able to carry them out and enact them.[21,26] Different practices can be entangled and influence one another as they can be in competition or collaboration.[21] Practices are in competition when one practice is taking away resources from another practice (cycling and driving compete for space on the roads).[28] Practices can also be in collaboration when there is a sequential or functional dependence between them (grocery shopping is necessary before cooking a meal). The connections between different practices is dynamic in nature and forms patterns of daily life.[21]

A shared assumption of practice theoretical approaches is that the world is populated with practices and they are therefore the base unit of analysis within social enquiry.[29] Theoretically, practices can be considered as discrete entities, and for the purpose of this meta-synthesis toothbrushing has been considered as a discrete practice which contributes to oral hygiene. Empirically, however, toothbrushing is connected/entangled with many practices. Thus, when studying practices, it is important to consider both individual practices and interconnected social practices that exist within specific population groups and contexts.[22,30,31]

The current meta-synthesis aims to apply a social practice theory lens to the results of published qualitative studies on the perspectives of carers regarding the oral hygiene of preschool children, focusing on toothbrushing practices.

2 | METHODS

Qualitative meta-synthesis was employed to gain a deeper understanding of a particular topic by integrating and interpreting findings from multiple qualitative studies.[32] The application of social practice theory in oral health research was limited.[33] A preliminary search of PROSPERO, MEDLINE, The Cochrane Database for Systematic Reviews and Joanna Briggs Institute Evidence Synthesis revealed no completed or currently registered qualitative meta-syntheses, systematic or scoping reviews on this topic. The study protocol details were previously published.[33]

The steps in this qualitative meta-synthesis, adapted from Erwin et al.[32] involved:

2.1 | Formulating the research question

The research questions were: (1) 'What does existing literature reveal about primary caregivers' perception about the factors influencing preschool children's oral hygiene practices in developed

countries? and (2) 'How can these perceptions provide insight into oral hygiene social practices?'

2.2 | Conducting a systematic literature search

The search strategy was designed to comprehensively encompass various relevant concepts. We identified keywords related to the topic, such as 'preschool children', 'dental health', 'family', 'qualitative' and related synonyms. In this meta-synthesis, 'developed countries' classification was adopted from the United Nations, based on data that World Economic Situation and Prospects used in 2022 for delineating all countries based on their economy.[34] The names of these countries were included as search terms. The university librarians provided guidance and feedback on selecting appropriate databases, choosing keywords, employing Boolean operators, and utilizing subject headings. During our preliminary test search, we noticed many publications that did not align with our study objectives. To address this, we cautiously applied the 'NOT' function to exclude irrelevant concepts.

A search of the following electronic databases was conducted with no time limits applied: MEDLINE, EMBASE and Global Health using the Ovid platform, as well as Dentistry & Oral Sciences Source (DOSS), Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Scopus. The search strategy initially developed for the MEDLINE database in the Ovid platform was then adapted for the remaining databases. The search strategy for all databases is included as File S1.

TABLE 1 Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Type of publication: published peer-reviewed journal articles with available full text; *Timeframe*: all full-text articles retrieved in database searches (with no time limits applied) *Type of study*: qualitative or mixed methods studies, if their qualitative component meets other inclusion criteria (rationale: qualitative studies selected to obtain in-depth understanding of factors that can impact oral health of preschool children) *Language*: English (rationale: the majority of studies published in English language); Population: primary caregivers of 0–5 year old children (rationale: based on our research question) *Location*: developed countries, as per the United Nation classification from 2022[34] (rationale: countries with similar economies as being more comparable)	Studies focusing on children with medical conditions, physical or mental disabilities (rationale: exploring primary caregivers perceptions of factors that can influence oral health of children in these context warrants separate studies) Studies involving primary caregivers of children older than 5 years (rationale: inability to distinguish factors relevant specifically for the age group of our interest, 0–5 year olds) Studies focusing on primary caregivers from diverse backgrounds or particular populations, such as asylum seekers, immigrants, Indigenous, people from culturally and linguistically diverse backgrounds, (rationale: exploring social practices of these groups are beyond the scope of this study and require a separate study to explore specific cultural issues and to ensure cultural security in the research) Commentaries, reviews, editorials, grey literature

2.3 | Screening, inclusion and exclusion criteria

All retrieved articles were deduplicated and screened using a team approach. The screening involved: (1) title and abstract screening and (2) full-text review. The inclusion and exclusion criteria for this study (Table 1) were formulated based on the research question and were established prior to the screening process to ensure consistency in decision-making.

The process of conducting a qualitative meta-synthesis involves the critical appraisal of studies.[32] Nevertheless, in this meta-synthesis the decision was made to prioritize the contextual richness and depth offered by the included qualitative studies over extensive methodological critique and formal quality assessment. This choice was rooted in the belief that different research paradigms can contribute unique insights, ultimately enriching the evidence base and aligning with the overarching goal of this meta-synthesis.

2.4 | Analysing and synthesizing qualitative findings

Study characteristics from articles meeting inclusion criteria were extracted using a data extraction tool (File S2). The 'data' analysed in this qualitative meta-synthesis included all text labelled as 'Results' in primary studies. Full-text articles were imported into NVivo 20.[35] The analysis of the included studies involved three stages with inductive and deductive approaches.[36] The process for the first two stages in data analysis, as outlined by Thomas and Harden,[37] involved the utilization of inductive line-by-line coding of the data. Subsequently, the codes were grouped, and descriptive themes were formulated. Moving on to the third stage, the analysis of these descriptive themes was conducted using a deductive approach, specifically through the lens of social practice theory.[16,21,22] Descriptive themes were categorized according to: meanings, competences and materials necessary to perform social practices[21] The spatial and temporal aspects of these social practices were also included, if identified in the studies. In the final step of the analysis, two researchers undertook 'third-order interpretations' of the descriptive themes, subsequently formulating more abstract analytical themes.[37]

3 | RESEARCH TEAM

The research team consisted of first author (IMG, MPH, PhD candidate, female) with interest and experience in health promotion research. The second author (PW, PhD, male) is a sociologist with

interest in public health issues and an extensive experience in qualitative research methods. The third author (AD, PhD, female) is an anthropologist with qualitative research experience and special interest in oral health. The fourth author (CM; MPH, female) is a PhD candidate who previously practiced as a paediatric occupational therapist, with an interest in public health and parenting. The fifth author (SL, PhD, male) is a social scientist with an interest in improving outcomes for vulnerable populations and innovation in the care sector. The sixth author (HC, PhD, male) is a paediatric dentist and researcher, with extensive public dental health experience. The seventh author (SRB, PhD, female) is a social scientist and researcher with special interest in applying psychological theory, methods and techniques to people's experiences of their oral health. The eighth author (LSS, PhD, female) is a social epidemiologist using qualitative, quantitative and translation approaches in her research, with a focus on disparities in oral health.

4 | RESULTS

The search of all databases retrieved 482 results, which were de-duplicated in EndNote 20[38] and then imported into Covidence[39] for secondary de-duplication and screening. One researcher screened titles and abstracts based on inclusion/exclusion criteria (Table 1). Subsequently, a second researcher performed a rapid scan and verification of the excluded articles to ensure accuracy and consistency in the exclusion process. A total of 51 articles were included for full-text screening. Two reviewers independently reviewed full-text articles. There were no discrepancies and a total of 17 articles were included in the review. An iterative screening of reference lists of included articles, identified nine additional articles which met inclusion criteria. The screening and inclusion flow diagram from Figure 1 was adapted from PRISMA (The Preferred Reporting Items for Systematic reviews and Meta-Analyses) 2020 Flow diagram.[40]

Narrowing the focus of data analysis solely to toothbrushing practices resulted in the inclusion of 11 articles in the qualitative meta-synthesis. The studies were published between 2009 and 2022. The studies were conducted in the United States ($n=6$), Australia ($n=3$) and the United Kingdom ($n=2$). The participants in the studies were mainly mothers ($n=5$), parents ($n=3$), mother–child dyads ($n=2$) and carers ($n=1$). The qualitative methodology included interviews ($n=9$) and focus groups ($n=2$). Table 2 outlines the characteristics of the included studies.

The 'social' in social practices was identified as oral health activities that were commonly reported and shared between families and communities. The 'practices' were identified as oral health activities that are routinised, performed regularly (regardless of their frequency), enacted automatically and without conscious deliberation. The term 'carers' will be used collectively for mothers, parents and other carers.

4.1 | Examining toothbrushing as a social practice

In the reviewed literature, toothbrushing was the most clearly and explicitly identified example of a routinised social practice. Using a practice lens, carers can be considered practitioners, or carriers of practices. As carriers of the practice, carers perceived twice-daily

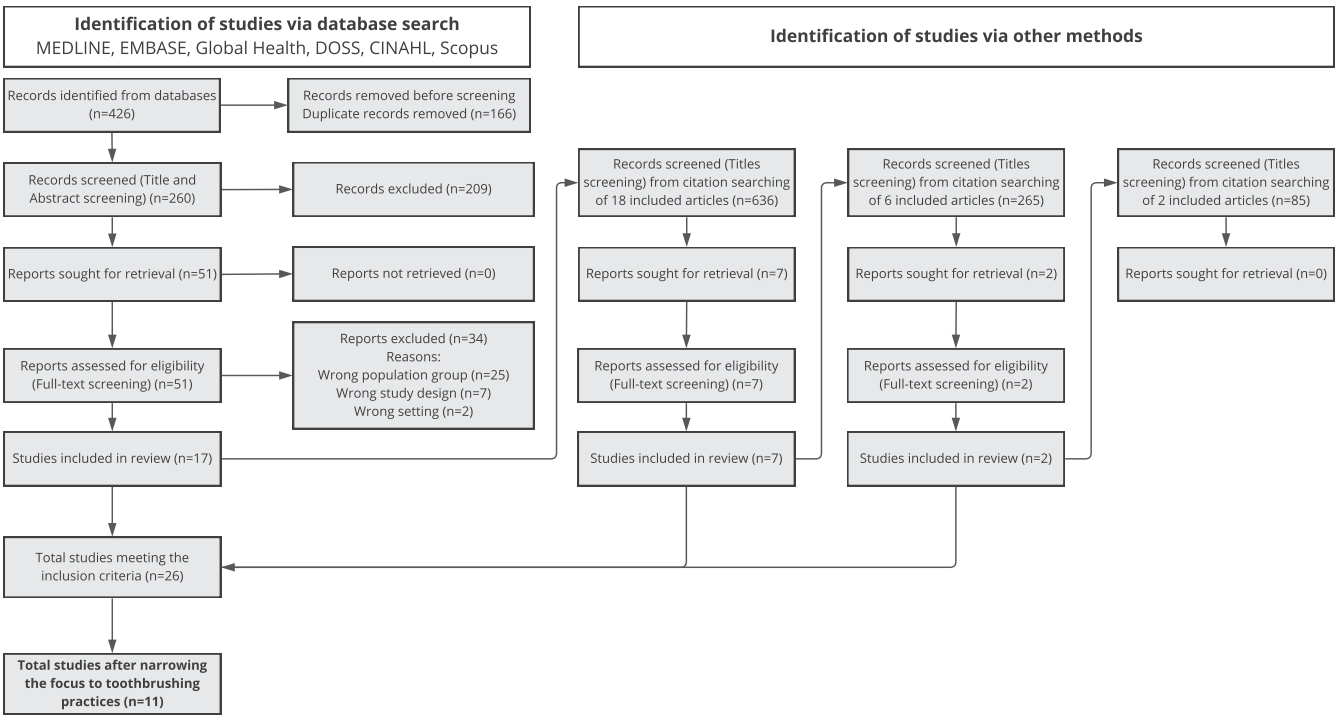

FIGURE 1 Screening and inclusion flow diagram, adapted from PRISMA 2020.[40]

toothbrushing routines as something 'normal' and 'expected'. The performance of twice-daily toothbrushing was passed on to them in their childhood, influencing their perception of what constituted a 'good' performance of the practice.[41,42] Carers discussed toothbrushing as a family routine and as part of their daily hygiene practices.[41–45] Toothbrushing was most commonly performed as part of a broader morning and/or evening routine[42–45] and carers recognized the importance of embedding twice-a-day toothbrushing routine into their child's life early on.[41,43,45,46] However, even when toothbrushing was established as a daily practice, routines could sometimes be changed or interrupted for a variety of reasons, such as due to child's sickness or competing priorities.[45] Not wanting to wake children up if they have already fallen asleep could also disrupt regular toothbrushing.[41,45] Lack of time in a rushed schedule was another challenge for maintaining regular toothbrushing routine.[44]

> '…parents who reported brushing at least twice a day were more likely to describe it as routine. For them, their children came to understand that brushing was just one of several tasks of the morning and evening.'[44]

> '…now we all brush our teeth together as a family routine.'[43]

Carers that did not have an established toothbrushing routine in their own childhood reported 'trying to do better'[44] by incorporating toothbrushing as 'a structured thing'[42] with an aim to enhance the practice with their own children.

Mothers were often reported as being responsible for brushing their child's teeth[45] with co-parents and grandparents providing support.[41,44] Some carers reported variations in the performance of toothbrushing by different members of the same household.[45]

The findings related to oral hygiene practices of toothbrushing are presented below and in conceptual map (Figure 2). While this meta-synthesis also uncovered primary caregivers' perceptions related to eating and drinking practices, including sugar consumption, the results pertaining to these social practices are outside the scope of this paper.

4.2 | Toothbrushing elements

Practices are constituted by the active integration of three key elements: meanings, competences and materials.

4.2.1 | Toothbrushing—meanings

Some carers reported that preschool children's teeth and caring for them was less important as 'they will fall out anyway'[46] before they can 'start over'[47] and 'move on to the real ones',[43] 'so why care for them?'.[46] Toothbrushing was perceived as a social practice that made a difference to oral health[43] and had an impact across the life-course.[44] The overarching meaning associated with toothbrushing was related to the parenting role and setting children up for life.

> 'You need to brush their teeth; that's really something you need to do for your kids so they don't have bad teeth later in life.'[44]

Carers reported several barriers to performing the practice of toothbrushing. Some carers perceived that establishing a toothbrushing routine was difficult[41,45,48,49] and that 'it takes a lot of work'[49] due to child's resistance,[42,45] child's fussy or moody behaviour[41,43,44] or when a child wants to gain more independence for toothbrushing.[41,43,45] In order to facilitate recruitment of children as practitioners, carers used different strategies which were dependent on their parenting style and sense of authority. Some carers physically restrained their children when brushing their teeth[41,49] or withheld bedtime stories.[49] Other carers used 'bribery', 'corruption' or rewards, such as bedtime stories, stickers, colouring charts, or positive affirmation with their children.[42,43,49] When there were no effective solutions to overcome barriers to performance, the practice was abandoned for later in the same day or to another day when the child was more cooperative.[45]

In contrast, some carers reported that their children loved brushing their own teeth.[44] Carers used different strategies to make toothbrushing an engaging and fun activity for their children by playing games,[42] singing songs,[41,44,45] storytelling,[45] watching photos and videos on their phone or television,[45] using stickers[43] and child-oriented toothbrushing supplies.[44] Carers believed that making toothbrushing fun could prevent children from perceiving it as a chore.[42]

> 'I try and make it a fun thing, not a chore for them because I know some kids it is a chore'.[42]

4.2.2 | Toothbrushing—competences

Two main themes relating to competence were identified; carers wanting to do oral health the right way and a focus on passing on improved performances of practice. Carers acknowledged the importance of having confidence in establishing toothbrushing routines.[41] However, there was some uncertainty about the appropriate age for independent brushing among pre-schoolers,[45] the 'rules' for toothbrushing or when toothpaste should be introduced[50] and the need for supervision based on child's ability or inability to effectively brush their own teeth.[43,44] Some carers expressed reluctance for brushing their child's teeth due to their lack of skills and fear of hurting their baby's mouth.[44]

> 'Most parents expected children to brush independently at 5 years old, but some mothers didn't know there was any recommended age or the 'right' age…'[45]

TABLE 2 Characteristics of included studies.

Study	Title	Country	Methods	Analysis	Participants
Arora 2021	How do mothers living in socially deprived communities perceive oral health of young children? A qualitative study	Australia	In-depth semi-structured interviews ($n=45$)	The five steps of thematic analysis included: familiarization with the data, generating initial codes, searching for themes, reviewing themes, and defining and naming themes. Data analysis involved three stages. First, the principal researcher reviewed and completed initial coding of. Second, coding was independently compared and reviewed by three researchers who identified underlying concepts and completed manual coding. Finally, all four researchers reviewed and compared the results and came to a consensus on discrepancies in categorisation.	Mother–child dyads Age group (children): 2–3 years Age group (mothers): 20–40+ years Sample size: 45 dyads
Arora 2012	'I can't relate it to teeth': a qualitative approach to evaluate oral health education materials for preschool children in New South Wales, Australia	Australia	In-depth interviews ($n=24$)	Three researchers were involved in data analysis and coded the interviews independently. The principal researcher conducted thematic coding, and the other two researchers used manual thematic coding independently (triangulation approach).	Mother-infant dyads Age group (children): 6–18 months Age group (mothers): No details Sample size: 24 dyads
Burgette 2022	Mothers' Sources of Child Fluoride Information and Misinformation From Social Connections	USA	Semi-structured qualitative interviews ($n=126$)	Three female interviewers met as a team with the principal investigator bimonthly to review data, identify preliminary themes emerging from the interviews, and discuss additional domains to clarify in subsequent interviews. Template analysis was completed using deductive and inductive coding.	Mothers Age group (children): 3–5 years Age group (mothers): No details Sample size: 126 mothers
Daly 2010	Child oral health concerns among parents and primary care givers in a Sure Start Local Programme	UK	Focus groups ($n=4$)	Transcripts were reviewed by two researchers before being analysed using a framework analysis. Researchers collaboratively categorized data into themes and reached consensus on the final analytical framework.	Carers- women with parental or primary childcare responsibilities Age group (children): preschool children (no details) Age group (women): 19–60 years Sample size: 20 women (19 parents and one primary carer of a preschool child).

TABLE 2 (Continued)

Study	Title	Country	Methods	Analysis	Participants
Elison 2014	Maternally perceived barriers to and facilitators of establishing and maintaining tooth-brushing routines with infants and preschoolers	UK	Interviews ($n=16$)	Transcripts were analysed thematically and checked by multiple members of the research team until data saturation was reached and no new codes emerged from data. Bronfenbrenner's ecological model guided data analysis and was used to identify themes at each of the four main levels of the model (microsystem, mesosystem, exosystem, chronosystem).	Mothers Age group (children): 24–30 months Age group (mothers): 22.83–35 years Sample size: 16 mothers
Finlayson 2019	A qualitative study of the multi-level influences on oral hygiene practices for young children in an Early Head Start program	USA	Semi-structured interviews ($n=24$) and telephone survey ($n=22$ with three surveys missing) for demographic data	Transcripts were reviewed in an iterative fashion and accompanied by analytic memoing. A codebook was developed based on memos and transcript reviews. Thematic analysis was then used to develop preliminary themes and further analysis was guided by the conceptual framework developed by Fisher-Owens et al.	Mothers Age group (children): under 4 years Age group (mothers): 20–49 years Sample size: 24 mothers
Lozoya 2019	Influence of a Smartphone Application on the Oral Health Practices and Behaviours of Parents of Preschool Children	USA	Phase one: Pre- and post- intervention questionnaire with phone app Phase two: Semi-structured interviews (virtual) ($n=11$)	Phase one: Statistical analyses were conducted to investigate differences in behavioural outcomes additional variables of interest. Phase two: Interviews were transcribed and then coded thematically until no new themes emerged. Identified themes were then listed according to the Theory of Planned Behaviour constructs.	Parents Age group (children): The mean age was 3.48 years Age group (parents): No details Sample size: 11 parents
Mofidi 2009	Oral health of early head start children: a qualitative study of staff, parents, and pregnant women	USA	Focus groups with mothers ($n=3$) Additional: Focus groups with pregnant people ($n=2$) Focus groups with staff of program ($n=4$)	One investigator conducted a systematic examination of each transcript code primary themes and sub themes. Codes were assigned in an iterative, comparative, process. Content analysis continued until researchers were certain that all common and important themes and subcategories had been identified.	Mothers, staff, and women who were pregnant Age group (children): under 3 years Age group (parents): mean age 26.6 years Sample size: 22 parents
Huebner 2010	Behavioural determinants of brushing young children's teeth: implications for anticipatory guidance	USA	Qualitative interviews ($n=45$)	The coding used a mixed-method, qualitative approach using and iterative process. Concepts were then mapped to behavioural determinants.	Parents (44 mothers and 1 father) Age group (children): up to 5 years Age group (parents): 14 of the 44 parents (32%) were younger than 21-years-old. No other details Sample size: 45 parents (44 mothers and 1 father)

(Continues)

TABLE 2 (Continued)

Study	Title	Country	Methods	Analysis	Participants
Virgo-Milton 2016	An exploration of the views of Australian mothers on promoting child oral health	Australia	Semi-structured interviews ($n = 32$)	Inductive thematic content analysis was performed by three researchers who also completed interviews with participants. Analysis was described using a three-step process leading to generation of themes.	Mothers Age group (children): 4–12 months Age group (mothers): 19–42 years Sample size: 32 mothers
Isong 2012	Parental Perspectives of Early Childhood Caries	USA	Semi-structured telephone interviews ($n = 25$)	Thematic, iterative data analysis approach involving three researchers. Process resulted in a hierarchical map of codes and higher codes and key themes were used to refine conceptual framework.	Mothers Age group (children): 2–5 years Age group (mothers): 25–59 years Sample size: 25 mothers

Carers also reported they learned how to establish toothbrushing practice from different sources. These included friends, family, relatives, co-parents, professionals,[41] paediatricians, dentists and playgroups.[45] In the lack of such social support, some carers also noted that they 'work out on their own' how to brush their child's teeth.[44] Competence was also developed through family members,[44,45] older siblings[44,45] and parents[41,45] serving as role models to children who then learned how to brush their teeth through modelling behaviour.[41,44,45] Information carers received could be conflicting, which lead to confusion and uncertainty about the benefits and potential negative effects of fluoride use for their children.[51]

> 'Some paediatricians and dentists occasionally gave conflicting information about when to begin fluoride toothpaste …'[51]

4.2.3 | Toothbrushing—materials

Studies included in our meta-synthesis lacked detailed information about material elements of toothbrushing. Within the included studies, essential toothbrushing materials and more child-centric materials were identified. Essential materials included toothbrushes and toothpastes, including fluoride toothpaste,[43] which are associated with broader practice for practitioners of all ages. Child-centric materials were those aimed at recruiting children to participate in practice and in associating meanings of fun and enjoyment with the practice. Carers reported using child-centric toothbrushing tools, such as cartoon-character toothbrushes and flavoured toothpastes.[44] Toothpastes perceived as having an unpleasant taste could limit performance of toothbrushing in young children.[41] Some other materials used during toothbrushing to make it fun included phone, television[45] and stickers.[43]

> 'Several noted that child-oriented supplies such as cartoon-character toothbrushes and flavoured toothpastes were an effective enticement.'[44]

4.3 | Spatial and temporal aspects of toothbrushing practices

Spatial and temporal aspects of toothbrushing practice were not explored in detail in the current literature but were reflected with reports of time scarcity and changes to daily routines. Carers reported that flexible locations, such as brushing teeth in the bath, while the child watches a video, or in the car were helpful for maintaining toothbrushing performance.[44] Some of the temporal aspects related to lack of time in the rushed schedule[44] or carers not wanting to be late to work due to the child's non-compliant behaviour.[43] Another temporal aspect noted in the literature related to the structure of the day, with weekdays being more routinised in contrast to more

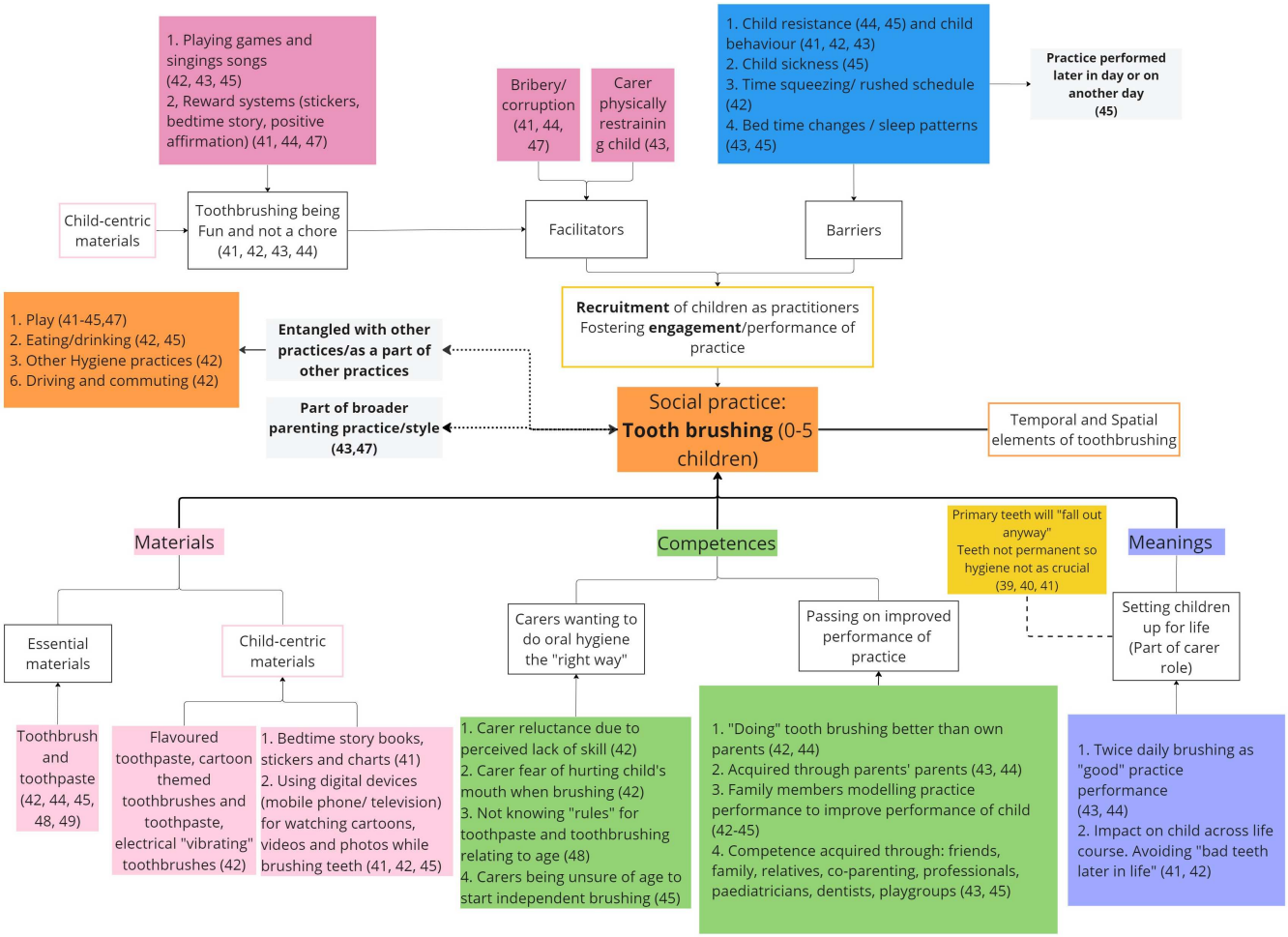

FIGURE 2 Conceptual map of social practice of toothbrushing.

flexible weekends when there was less control.[45] The duration of toothbrushing varied from being performed 'dead quick' if child was resistant, to taking as much as 10 minutes, especially when the child performed it themselves.[41]

> 'I feel like the weekdays are easier because we're following a routine. (...) On the weekends, we're more relaxed. (...) There's less control on the weekends.'[45]

5 | DISCUSSION

This study synthesized qualitative research on carer perceptions of preschool children's oral hygiene to gain a better understanding of toothbrushing as a social practice. The exploration of family-level factors, such as the conditions and features of the family environment, as well as carers' oral hygiene behaviours, attitudes, knowledge and beliefs, is crucial as these factors significantly influence oral health outcomes. The findings highlighted the routinised nature of toothbrushing practices, as they were described as regularly performed actions, widely accepted within the community, and accompanied by shared beliefs. Therefore, toothbrushing can be understood as a social practice, representing activities with shared meanings embedded in a broader social framework.

The studies included in this meta-synthesis have provided insights into the meanings and competences related to the practices of toothbrushing. However, the information concerning the material components of these practices was somewhat limited. This finding is not unexpected, as these studies did not employ social practice theory as their theoretical framework. What distinguishes social practice theories from other social theories is their emphasis on the significance of material components.[21] This recognition of the material components in social practice theory acknowledges that physical objects, tools and resources play a crucial role as active and influential forces that shape and are shaped by social practices. In accordance with Fisher-Owens et al.'s[11] conceptual model on multiple-level influences on oral health, this study examined family-level practices and the associated meanings at both the family and community levels regarding the oral hygiene and toothbrushing in preschool children. In future research, incorporating social practice theory as a theoretical framework from the onset would enable exploration of the role of physical objects, tools and resources in these practices, thereby enhancing our understanding of all three elements of social practices and the

complex interplay between meanings, competences, and materials in oral hygiene.

One of the key elements of social practices are meanings about how and why things are done, encompassing cultural conventions, expectations and socially shared meanings.[22] Studies included in this meta-synthesis revealed some of the meanings related to primary teeth of preschool children and social practices of toothbrushing, as shown in the concept map (Figure 2). Some carers expressed the belief that primary teeth and their care were considered less important because they are expected to eventually fall out and be replaced by permanent teeth.[43,46,47] As highlighted by Shove et al.,[21] meanings represent the social and symbolic significance of participation in a particular practice in any given moment. Consequently, carers' perspectives on primary teeth served as modifiers to other meanings identified within the practice. If perceived to be important to the health of child, oral hygiene practices were initiated early on, with an aim to prevent adverse effects throughout the child's life. Conversely, if primary teeth were perceived as temporary, there was more flexibility in approaching oral hygiene practices.

Toothbrushing is widely recognized as an important social practice for safeguarding children's oral health and preventing future dental issues.[43,44] However, despite its significance, some carers have expressed difficulties in establishing a consistent toothbrushing routine, primarily due to children's resistance.[41–45,48,49] In response to these challenges, carers have employed various strategies to address the resistance. These strategies, based on the type of parenting style, involved restraining children, using incentives or rewards, negotiating with children, delaying toothbrushing for a later time, or efforts to transform the activity into an enjoyable and fun experience.[41–45,49] Although studies provided limited detail, the concept map (Figure 2) shows potential ways material elements are linked to meanings being fostered around toothbrushing. This includes the prospect of framing toothbrushing as an enjoyable activity rather than a chore or a dreaded task. Child-centric materials, used for making toothbrushing fun, can also be tied to the recruitment of children as novice practitioners and serve as an enticing means of engaging children and fostering their ongoing participation in the practice.

Competences, know-hows or techniques are essential elements of social practices, and they can exist as both tacit and explicit knowledge and embodied skills.[21,22] Studies included in this meta-synthesis provided some information about knowledge, skills, and competences relevant to social practices of toothbrushing and the confusion about 'the right way' of performing toothbrushing practice. Carers recognized the significance of having confidence in establishing toothbrushing routines.[41] They expressed a lack of knowledge that young children could experience caries,[47] a lack of skills for brushing their child's teeth,[44] uncertainty about the child's appropriate age for independent toothbrushing,[45] the use of toothpaste.[50] Carers also expressed different viewpoints regarding their children's ability to brush their teeth. While some reported that their preschoolers could brush their teeth independently,[44] others believed that children required supervision.[43,44]

Gaining competence in oral hygiene practices involved the passing on of skills and knowledge through interactions with friends, family, relatives, co-parents, professionals, paediatricians, dentists and playgroups.[41,45] Parents, siblings and other family members acted as role models for children learning to brush their teeth.[41,44,45] Due to receiving information from multiple sources, carers often encountered conflicting information, leading to confusion and uncertainty around the appropriate oral hygiene practices and when to begin using fluoride toothpaste for their preschool children.[51] As competences are one of the essential elements that play a crucial role in shaping social practices, further exploration of the competences of carers and children can provide a deeper understanding of oral hygiene practices in preschool children.

The significance of materials, such as objects, tools and infrastructures as fundamental elements is evident in the formation and evolution of social practices.[21,22,26,52] However, the studies included in this meta-synthesis had limited information about materials related to practices of toothbrushing. Studies identified some materials involved in toothbrushing as; cartoon-character toothbrushes, flavoured toothpastes,[44] toothpastes with an unpleasant taste,[41] training toothpaste, children's toothpaste, fluoride-free charcoal toothpaste.[51] Additionally, some materials that were not directly related to oral health but enhanced the engagement of children in oral health practices included the use of phone, television[45] and stickers[43] when brushing teeth.

Child-centric materials within the practice fostered meanings of fun and leisure. Certain materials, such as reward charts, stickers and phone, were also utilized in relation to toothbrushing, presenting opportunities for future investigation. Furthermore, considering the emerging role of phones and digital technology in health practices, extending recent research on the phone as a shared element in diverse parenting practices[53,54] would be beneficial for further understanding. The material dimension adds depth and richness to our understanding of practices, highlighting the interplay between human actions and the physical world in which they occur. By focusing on the material dimension, future research can contribute to a more comprehensive understanding of oral hygiene practices in preschool children and inform the development of effective interventions and supportive physical contexts.

5.1 | Temporal and spatial aspects of toothbrushing

Studying the different temporal elements of practice is crucial to a comprehensive understanding of the dynamic nature and complexities of social practices.[18,21] Time serves multiple functions within social practices, and its expressions encompass various dimensions such as periodicity, tempo, timing, sequence and duration.[55] The studies included in this qualitative meta-synthesis offered some insights into different dimensions of time. Specifically, the concept of periodicity emerged, highlighting the frequency and repetition of toothbrushing social practices. For instance, toothbrushing was described as a social practice that is repeated on a daily basis,

with a frequency of twice-a-day. The timing of toothbrushing was discussed, with it commonly being mentioned as one of the regular activities incorporated into morning and evening routines. The sequence, or the ordering of toothbrushing in relation to other activities, was also discussed in the studies and reflects how practices are temporally and spatially mediated.[56] It was observed that toothbrushing was performed either before or after breakfast in the morning, and as one of the last activities before going to bed in the evening. The duration of toothbrushing depended on the circumstances and varied from being a very quick activity, if children were uncooperative, to taking as long as 10 minutes if a child wanted to brush their teeth on their own.[41]

Southerton[57] argued that people feeling more harried, and the notion of 'time squeeze' is experienced by individuals when they feel the need to allocate practices within temporal 'hotspots' (such as before or after a meal, or before or after work) during the day. Although individual responses to time squeezing, such as scheduling, centres the individual, it can also be seen a response to broader temporal rhythms. Collective temporal rhythms are shared by a group or society, evident in patterns such as transportation usage, meal times, and working hours.[18] Time is considered a valuable resource for which different social practices compete,[21] the lack of sufficient time within a busy schedule was identified as one of the challenges carers had in maintaining a consistent toothbrushing routine. One way carers attempted to 'squeeze' time and reduce competition between practices was by performing toothbrushing in flexible locations (car) or combining it with another hygiene practice, such as during bath time.[44]

Space, like time, plays an important role in Social Practice Theory.[21] Social practices require specific spaces where they can be performed, and spaces can act as finite resources for which social practices compete.[28] In the context of social practices, space also refers to the geographical location where social practices occur, where they move and in which they can be co-located.[58] However, the studies in this qualitative meta-synthesis did not explore the concept of space in great detail in relation to toothbrushing, except for mentioning flexibility in location.[44]

'Squeezing' time by co-locating toothbrushing with other personal hygiene practices or relocating them to the car while driving and commuting highlights that space and time are not merely neutral backdrops but actively shape and influence social practices. Therefore, further exploration and understanding of the temporal and spatial aspects can contribute to a more comprehensive understanding of oral hygiene practices in preschool children. Entanglement with other practices influences meanings around toothbrushing, shifting it from a bathroom-based practice to one that is portable and flexible. As toothbrushing becomes spatially and temporally entangled with other practices, its relationship with other practices (play, eating and drinking, other hygiene practices, driving and commuting) merits further investigation. For example, the commute itself may involve pulling over to perform toothbrushing, or another practitioner being in the car to support performance.

5.2 | Dynamic nature of toothbrushing

As elements of social practices have a dynamic nature, they undergo changes when social practice elements are reconfigured.[15] These changes emerge as people who perform them adapt, improvise and experiment with doings and sayings in new situations.[31] Hence, within each domain of social practice there is significant flexibility in its performances. Different adaptation strategies in response to a child's resistance suggest the existence of various performances of toothbrushing practice among preschool children. For instance, parents relocated the practice of toothbrushing to the bath, the lounge whilst watching television, or to the car in order to maintain performance. Parents perceived this as sometimes providing a more conducive environment for successful practice accomplishments. This illustrates that practices were not always consistently and uniformly performed. The differences in performances can illuminate how elements of practices can change and be modified, revealing potential integrations and connections between practices. Changes in performance over time also accounts for how practices historically evolve, develop or become extinct.

6 | LIMITATIONS

This study has several limitations. Firstly, the included publications were limited to qualitative studies from developed countries, published in the English language in peer-reviewed journals, and the search terms included the 'NOT' Boolean operator. This may have resulted in the omission of some other relevant qualitative studies. Secondly, the protocol did not incorporate a critical appraisal of the quality of the included studies, as it did not evaluate the transparency and clarity of the research process as well as whether credibility and trustworthiness were addressed. This could have impacted the overall validity of the synthesized findings. However, it is important to note that despite these limitations, many studies were published in highly ranked journals and had consistent findings, which enabled gaining a deeper understanding of the social nature of oral hygiene practices. Thirdly, applying a practice theoretical lens retroactively to already existing data implies that certain components of the practice may not have been thoroughly investigated. Concepts identified within the meta-synthesis could be expanded through additional research.

7 | CONCLUSION

Within the scope of this meta-synthesis, we employed a practice theory lens to analyse existing research from developed countries focused on preschool children and their toothbrushing practices as part of oral hygiene. This approach provided insights into family-level social practices concerning toothbrushing of preschool children, including shared meanings and competences related to toothbrushing, as perceived by primary caregivers. This meta-synthesis highlighted the need for a more comprehensive exploration of the material components,

including commonly used materials such as oral hygiene care products and other tools utilized to facilitate toothbrushing, along with considerations of their cost and affordability. Moreover, a more comprehensive exploration of toothbrushing, considering related social practices like eating and drinking (especially sugar consumption), competing social practices, and those forming entanglements with toothbrushing (such as showering and getting ready for school/work), would offer a more holistic understanding of the factors influencing oral health. This approach takes into account how the practice of toothbrushing is temporally and spatially mediated.

Integrating social practice theory as a theoretical framework in the design of future research holds the potential to provide a more comprehensive understanding of the broader context and interconnections between oral hygiene and other social practices. Shifting the focus of research to explore the practice, rather than focusing on individuals, holds the potential to enhance our understanding of toothbrushing practice. This change necessitates a shift in research methods, moving beyond individual-centric data and encompassing broader considerations of material, temporal, and spatial dimensions. This approach can help identify new avenues for the design of interventions and policies that can make a lasting impact on improving the oral health of young children.

AUTHOR CONTRIBUTIONS

LSS, AD, PW, HC, SRB—conception of original study; IMG, LSS, AD, SL, PW—development of this study concept; IMG, LSS, AD, CM, SL, PW, HC, SRB—contribution to this paper.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

This study does not require a separate ethics approval as meta-synthesis methodologies consist of reviewing de-identified data from publicly available information in published articles.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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