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A qualitative study on the factors influencing oral health care for young children in Belgium

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Abstract

Background Dental caries in young children is a severe public health problem. Children depend on their parents and care professionals for their oral health. The aim of this study is to gain in-depth insight into the factors influencing oral health care for young children.

Methods A qualitative explorative research design, within a constructivist research paradigm, was used. Eight individual and three focus group interviews were conducted with parents of children aged 6 months to 6 years. Particular emphasis was dedicated to the inclusion of parents from minority groups. Individual interviews were conducted with eight professionals from different health and welfare sectors working with young children and families. Data were analysed using reflexive thematic analysis.

Results Several factors influence young children's oral health, including time issues, children's uncooperative behaviour, parents' own oral health habits, family and cultural norms, and lack of knowledge. Parents from minority groups experience more barriers. Non-dental professionals report different barriers for taking responsibility about the topic including lack of time, lack of knowledge, and considering oral health as a taboo subject.

Conclusion Care guidelines for young children and training in initiating conversations regarding oral health with parents are needed for professionals.

Keywords Oral health, Children, Barriers, Facilitators, Parenting, Qualitative research

Introduction

Dental caries in children is a severe public health problem, significantly impacting children's health, well-being, and quality of life [1]. Childhood oral health affects lifelong oral health trajectories [2]. Untreated caries in the primary dentition is the most common chronic childhood disease, affecting approximately 514 million children worldwide [3]. Between 1990 and 2019, the global average prevalence of caries in deciduous teeth among children aged one to nine decreased slightly by 3.3 to 42.7%, with the largest decrease (3.9%) observed in high-income countries (38.3%) [3]. This modest reduction indicates that while many countries have implemented policies and programs to decrease the prevalence of

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untreated caries, further efforts are needed to enhance children's oral health [3].

Facilitators and barriers to toothbrushing practices by parents of young children were examined in the systematic review of Aliakbari et al. [4]. Relevant factors included attitudes towards oral health, perceived capability of the parent, and family functioning. Among the 68 included papers, 56 provided quantitative data, yet the highest-quality studies employed qualitative methods. The authors highlight the importance of listening to parents in order to identify both conscious and subconscious factors shaping this complex behaviour.

Not only toothbrushing but also dental attendance is influenced by familial factors [5]. Open-source government data on Belgian healthcare consumption, collected in the atlas of the Intermutualistic Agency (IMA), shows that in 2023, nearly half of Belgian children under the age of four had never been to the dentist (47.9%). When dichotomised by family income level, this percentage is even higher among children from low-income families (62.3% vs. 44.1%). Yet, a professional dental check-up for these children is fully covered by health insurance [6]. This apparent discrepancy between demand and supply invites a scientifically grounded dialogue with parents in this situation to explore the conscious and unconscious mechanisms underlying this inequality, possibly revealing blind spots in the provision of professional oral healthcare.

The World Health Organization (WHO) advocates for a renewed emphasis on enhancing oral health in young children through the integration of oral health care into primary health care [3]. The WHO proposes a concept of primary oral health care to improve oral health in children, consisting of five service and intervention levels: (1) basic prevention through self-care and risk management, (2) community programs, (3) basic oral health care as the entry point to the health system by midlevel providers and trained non-dental workers, (4) advanced care by dentists, and (5) specialised care for complex cases. The pyramid principle is based on the notion that need and demand are highest at the lower levels and decrease at the higher levels [1, 3].

The aim of this study is to gain an in-depth understanding of the factors influencing oral health care for young children. First, since parents are the primary caregivers responsible for young children's oral health, the study sought to gain a deep understanding of their perspectives. Second, to further understand parent's perspectives and the context of professional care, additional insights were gathered from professionals who regularly work with young children and their families, as they are either directly or indirectly involved in oral health promotion for children [7].

Methods

Design

A qualitative explorative research design, within a constructivist research paradigm, was used. The constructivist approach focuses on how participants perceive and make meaning of their experiences [8] and was selected because of the exploratory nature of this study. The study was conducted by an interdisciplinary team of researchers and practitioners from diverse domains and backgrounds, including health promotion, dentistry, and primary care. This triangulation of investigators allowed for a holistic exploration of interactions between oral and general health, with the combination of researchers and practitioners offering significant added value by integrating scientific knowledge with practical application. Reflexivity was integrated throughout the research process [9]. All authors were mindful of their professional background, and two authors reflected on their personal experiences as parents of young children.

Individual interviews were held with professionals, and both individual and focus group interviews were conducted with parents. None of the interviewers had a connection with the participants prior to study commencement. The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was used as a guideline for reporting this study. The completed checklist is provided in Additional file 1.

Participants

Participants were parents of preschool children, and professionals working with young children and their families in Ghent, a provincial town in Flanders (Belgium).

Parents

Inclusion criteria were: (1) being 18 years or older, (2) having a child between 6 months and 6 years of age, and (3) being able to speak Dutch or English. Parents having a job in health care were excluded. Initially, purposive sampling was used to ensure a diverse sample in terms of age, gender, socioeconomic status, ethnicity, and number and age of participants' children. As the study progressed, theoretical sampling was used.

Participants for individual interviews were recruited via (1) a community health centre, (2) an infant welfare clinic of Child and Family Agency, (3) an 'Inloopteam' (i.e., an organisation supplying educational support to families living in precarious situations), and (4) a daycare centre. Responsible staff members from these settings informed eligible parents about the study. Those who expressed interest in participating were contacted by one of the researchers who explained the study in detail. An interview was scheduled if the parent agreed to participate. Participants for focus group interviews were recruited from existing parent-to-parent peer support groups

organised by a community health centre, an 'Inloopteam', and a primary school. The group leaders received information from the research team, then informed the group members and asked about their interest in participating. The focus group interviews were scheduled with the group leader and took place during a peer support group session.

Professionals

Inclusion criteria were: (1) being a professional in the health and welfare sector and (2) having regular professional contact with young children and families. Professionals from a variety of settings and professions, and with varying experience were selected using maximal variation purposive sampling. The health promoter of the community health centre identified potential participants based on a list of all known professionals in the neighbourhood. Identified professionals were contacted directly by email to inform them about the study and to invite them to participate.

Table 1 Parent characteristics of individual and focus group interviews

Characteristic	Individual interviews (*n* = 8)	Focus group interviews (*n* = 22)
Age parent (years)[†]		
20–29	0	1
30–39	6	3
40–49	2	1
Gender		
Female	7	22
Male	1	0
Marital status[†]		
Married / cohabiting	8	Unknown
Divorced / not cohabiting	0	Unknown
Country of birth		
Belgium	5	3
Other country	3	19
Primary language at home		
Dutch	5	3
Other language	3	19
Education[†,‡]		
Low	3	Unknown
High	5	Unknown
Number of children		
1	1	4
2	1	5
3	5	6
4 or more	1	7
Youngest child age (years)		
0	0	2
1	3	5
2	3	1
3	1	7
4	0	3
5	0	0
6	1	4

[†]Data about age, marital status, and education were not systematically collected in the focus group interviews. If participants mentioned these demographics during the interview, it was reported in this table

[‡]Low: primary and/or secondary education; High: higher vocational education, university

Data collection

Parents

Data were collected through individual interviews and focus groups. This approach was chosen to obtain a representative sample. Although efforts were made to recruit a diverse sample in terms of ethnicity and socioeconomic status (SES), participants in individual interviews were mainly parents born in Belgium of higher SES. To also include parents belonging to minority groups, focus group interviews were organised in collaboration with organisations supporting socially vulnerable groups. Moreover, the combination of individual and focus group interviews enhanced data richness [10]. Each method reveals different perspectives of a phenomenon, contributing to a more comprehensive understanding [10, 11].

Individual, semi-structured interviews were conducted between February and July 2021. Eight participants were interviewed at a time and location of their choice: five were interviewed at home and three via online video call due to COVID-19 measures. Four parents initially consented but later declined due to several reasons including lack of time or sickness of their child. Each individual interview lasted on average 44 min. Three focus group interviews were held between May and June 2022. The focus groups consisted of five, four and 13 participants, respectively. Each focus group interview lasted approximately 87 min. The characteristics of the participants are reported in Table 1. Data collection was stopped after the third focus group, when the research team determined that sufficient data had been obtained to achieve meaningful insights.

An interview guide (see Additional file 2) was used to ensure all main topics were discussed. The interview guide was developed based on relevant literature [12] and field experience of the research team, and consisted of three main topics: oral hygiene, dietary habits, and dental visits. Each topic had a short set of open-ended main questions and follow-up questions to ensure all areas of interest were covered. Based on intermediate results, questions on uncooperative behaviour towards toothbrushing, skipping toothbrushing, and differences in siblings' toothbrushing behaviours were added. An additional question was added to explore parents' own childhood experiences with oral hygiene and dental visits. Focus group questions and theorems, shown

in Additional file 3, were developed based on the interview guide for individual interviews and the input of the research team. Each of the three main topics (oral hygiene, dietary habits, dental visits) and interview questions were supported with culturally diverse images to increase comprehension in non-native Dutch speakers. The interview guide was pilot-tested in a focus group with ten parents of preschool children who were not included in the study. Based on intermediate findings and hypotheses, additional follow-up questions were added to explore changes in child behaviour towards toothbrushing over time, and strategies that parents use to facilitate toothbrushing in their children. Two main questions were added to explore the access to dental care for their children. Although an interview guide was used for data collection, a conversational and flexible approach was adopted in each interview to encourage participants to speak freely.

At the end of each topic discussed in the focus group, a dental hygienist provided education on oral hygiene, dietary habits and dental visits, respectively. Participants of the focus groups also received a "dental goody bag" after the interview which included children's toothbrushes, toothpaste, and educational brochures. The individual and focus group interviews were conducted by two trained female researchers (HS: MSc student, and JG: PhD and health promotor).

Table 2 Characteristics of the professionals ($n=8$)

Characteristic	N
Age (years)	
30–39	5
40–49	1
50–59	1
60–69	1
Gender	
Female	8
Male	0
Professional experience (years)	
≤ 10	4
> 10	4
Occupation	
Doctor (general practitioner, paediatrician, dentist)	4
Nurse	1
Middle manager (health promoter, coordinator)	3
Setting	
Primary health care	5
Secondary health care	1
Daycare	2
Having children	
Yes	7
No	1

Professionals

Individual, semi-structured interviews were conducted between February and July 2021. Eight participants were interviewed at a location and time of their choice: two were interviewed at work and six via online video call. One professional initially consented but later declined due to lack of time. Each interview lasted an average of 54 min. Table 2 summarises the characteristics of the interviewed professionals. As the study aimed to explore the context in overarching terms, and professionals provided rich and detailed data, the research team determined that the eight conducted interviews were sufficient to generate meaningful insights.

A conversational approach was used during the interviews to encourage open communication between the female interviewer (DV, MSc student) and the participant. Each interview started by asking the professional to explain their function in their organisation. The main topics discussed were the role of the organisation and the professional in children's oral health, collaboration with partners, and barriers/facilitators in oral health for children. Based on intermediate results, three questions to explore collaboration with partners, and their role and referral function for children with oral health problems were added. The key questions are shown in Additional file 4.

Demographic data were collected at the end of each interview. Field notes were taken during and immediately following the interviews. All interviews were audio recorded and transcribed verbatim. All data were pseudonymised. The transcripts were not returned to participants for feedback or revisions.

Data analysis

Data were analysed using reflexive thematic analysis, following Braun and Clarke's six-step process [9]. The analysis began with familiarisation of the data, where two authors (JG and IP) read and re-read all transcripts. Initial codes were generated inductively in the second phase. Three authors (JG, LP and DV) and a research assistant independently generated initial codes for the first two transcripts of individual interviews with parents and professionals using the 'comments' function in Microsoft Word. During a research meeting, the coders discussed the coded transcripts in a reflective manner to sense-check ideas and explore multiple interpretations of meaning. The same procedure was followed after the sixth and seventh interview with parents and professionals, respectively. A similar approach was used for coding the focus group interviews. Each focus group interview was coded independently and discussed collectively by the research team members (JG, IP, LP, ML, IH). In the third phase, initial codes were reviewed, refined, and sorted into potential themes and subthemes. These

themes were then reviewed and defined in phases four and five by JG and IP. In phase 6, the analysis was refined based on feedback from the research team and review process, leading to six final themes and no subthemes. As data were collected in collaboration with organisations supporting socially vulnerable groups, it was not feasible to obtain participants' feedback on the data.

Ethical considerations

The Ethical Commission of Ghent University Hospital approved the study (Belgian registration number B6702020000877 and B6702020000878). All participants received oral and written information about the study, voluntary participation and confidentiality before giving written informed consent.

Results

The results section is structured according to the themes identified during the analysis of the interviews. Illustrative quotes are provided in Table 3.

Parents face competing priorities as barriers to adherence to toothbrushing norms

Most of the parents referred to the toothbrushing 'norm' of brushing twice a day for two minutes but indicated that this norm was often not reached. Many parents expressed that in the mornings their child's teeth are not brushed or brushed in a hurry due to timing issues. Some parents described the mornings as hectic, where multiple care tasks need to be done in a limited amount of time, especially when there are multiple children in the family. Those parents mentioned that they are forced to prioritise, and, therefore, set lower priority on toothbrushing because the short-term consequences were more limited and less visible than with other aspects of the morning routine (Table 3, Quote 1).

Children's uncooperative behaviour and parenting strategies

Throughout all interviews with parents, almost every parent reported difficulties in toothbrushing due to the uncooperative behaviour of their child. Parents described uncooperative behaviour as protesting, refusing to open the mouth or turning the head away. Also, the child's willingness to brush the teeth independently was perceived as uncooperative behaviour. This behaviour was often associated with the toddler stage and the young child's growing desire for independence, which was also noticed in other behaviours like refusing to brush hair or put on shoes. Parents also reported that uncooperative behaviour was more present when children were tired.

Parents described four different ways to deal with uncooperative behaviour. The first way was making toothbrushing a fun experience, by using strategies like distraction or playing games. Nearly all parents mentioned the need to constantly reinvent their distraction techniques because their child lost interest. The second way was by adopting a more imperative approach. These parents reported that they did not always tolerate resistance, chose a more strict strategy, and forced the child to open the mouth. The third way was by getting angry, threatening their child with an authority person (e.g. father or dentist), or trying to bribe their child with an incentive like a present or candy (Table 3, Quote 2). For some children, this approach worked, but it was always described as a short-term solution. The fourth way was by reminding their child to brush their teeth, hoping that their child brushes on its own initiative. These parents tended to explain bad oral hygiene, and consequently dental problems, as a result of the child's difficult temperament (Table 3, Quote 3). The same pattern was seen in parents who blame their child for high sugar intake to explain their dental issues.

Mainly in the focus group interviews with parents from minority groups, some parents mentioned that they struggle to manage uncooperative behaviour during toothbrushing. These parents explained that they keep trying different strategies like distraction techniques, but fail to overcome brushing barriers, leading to feelings of powerlessness and helplessness (Table 3, Quote 4). Other parents explained that overcoming uncooperative behaviour is a matter of persistence. They described the process of pushing through until toothbrushing fits into the child's overall routine. Parents reported less uncooperative behaviour when their child was used to the routine of toothbrushing (Table 3, Quote 5).

Parent's own oral health behaviours shaping children's dental habits

Parents frequently referred to their own oral health behaviours when they were asked about their children's toothbrushing behaviour and dental visits. Not only in terms of the frequency and duration of toothbrushing but also regarding the type of toothbrush (electric or manual) and toothpaste (Table 3, Quote 6). For example, a few parents brushed their child's teeth with toothpaste without fluoride because they had concerns about the safety of fluoride and explained that fluoridated toothpaste was not bought in their household.

Parents who had regular preventive dental visits for themselves mentioned that they took or would take their child with them on a dental visit for a preventive check-up and to get acquainted with the dentist. In this sense, parents felt that their child could associate a dental visit with a pleasant experience if no treatment would be necessary.

Table 3 The participants' quotes

Quote number	Quote
Quote 1 Individual interview 4	"It's quite a job to get those three dressed and ready in the morning and then sometimes I realise 'I'm late already'. At that moment, of course, you skip toothbrushing. You're not going to send them to school without a coat or without shoes. Of course you can't do that (laughs). So then you skip [toothbrushing] because it takes time."
Quote 2 Focus group interview 1	**Interviewer**: "What do you do when she [daughter] says: 'I don't want to brush my teeth'" **Participant 4**: "I call her father (laughs). I try all uhm [things]: we sing, we dance, we move… and when she says 'no no', I call papa." **Participant 1**: "Or I give the advice to my children, 'If you don't [brush], you will get caries and pain, and will have to go to the doctor'."
Quote 3 Focus group interview 3	**Participant 4**: "I have three kids who are difficult to brush their teeth. My oldest son is very difficult, I always uhm ask if I should help him to brush his teeth, but he says 'no'. I find that very difficult, he is eleven years old. (…) His teeth [are] also not good. (…) Yes, everything hurts, everything [is] broken, two teeth [are] gone (…) I always repeat, but [he does] not listen (…) With my second daughter that [was] also difficult and uhm [my] third also. With my third and uhm second child that is a little better [now]. But my first [child], [is] very difficult." **Interviewer**: "Was it already difficult [to brush] when he was little?" **Participant 4**: "Yes, my first [child] does not like swimming as well. The teacher says: 'that is not good'. With tooth brushing, it is also difficult."
Quote 4 Focus group interview 3	**Participant 5**: "My one year old child is very difficult to brush her teeth. I do try, but, uhm, it is difficult (…)" **Interviewer**: "And what do you do [Participant 5]? How exactly does it go with brushing the teeth? Where do you start?" **Participant 5**: "Yes I take my toothbrush and ask her: 'Do you want to brush together with mommy?' But then she walks away and I try, but it really does not work."
Quote 5 Individual interview 3	"With the oldest, it actually goes well. He brushes twice a day, in the morning and in the evening (…) When he was younger, he protested more often. Our second son is four years old, and he protests more often. That is why we still brush his teeth. With the youngest, it is of course different. He turns away and doesn't open his mouth (laughs). (…) Uhm, but yes, we try to do that and make it a habit, but of course it's not always as easy or as thorough as with the others [sons]. (…) They are used to it and they also know that it is coming and that it is part of the evening ritual and in the morning as well, so uhm… yes, it goes well."
Quote 6 Individual interview 2	"Uhm, so why only once a day [before going to bed]? I think it's because of our own brushing habits (…) I started brushing when I met my husband. That was when I was 16 years old. Because he brushed his teeth every morning then, but that changed to every night for the both of us. (…) We brush, yes, now and then using toothpaste with fluoride but generally we try to use organic toothpaste and sometimes we make our own, but it's been a while since we've done that. Uhm, that does motivate them to brush their teeth when they make their own toothpaste. Actually the toothpaste with fluoride that we have, is usually toothpaste we've been given or sometimes we get misled in the store and the kids see a tube with uhm…[fluoride]"
Quote 7 Individual interview 3	"I think in terms of nutrition [habits] anyway. (…) And in terms of oral hygiene I feel like that's the same as when I was little. I feel like… that was because I knew it and still know now. That's the only thing I know, that I can pass on and yes she… (…) Yes, it's pretty much the same habits and that's what I'm going to try to teach her."
Quote 8 Individual interview 2	"I remember when I was in the 5th or 6th grade of middle school, a big mobile dental van came to school and we all had to take turns brushing our teeth together. We also had to take turns having our teeth examined and I was always the model child in the class. Especially always getting the best scores and doing my best. And I remember the teacher saying afterwards: 'Wow! It's the ones you don't expect, who don't brush their teeth properly'. I felt myself turning red. I knew very well that he meant me. I think my children's teeth would look brushed should there be a mobile dental van checking them. Yes, it is not twice a day, but they do brush well in the evening."
Quote 9 Individual interview 7	**Interviewer**: "When you were little, did you go to the dentist?" **Parent**: "Yes. Once a year. I did not brush often. He [husband] was in Spain, [there they brush] a lot. But I [come from] Morocco [there they do] not [brush] much. [Only] When [you have] a problem (laughs). In Morocco [there is] no check-up. If you want, [you can] go. Not obligated. Yes, In Spain [it is the] same as here, but in Morocco not. If you have pain, you go. But [it is] different. Private and expensive. (…) In Morocco you don't have [a] dentist for free, or health insurance. Spain [is] also expensive. Spain has no insurance. No, everything needs to be paid for in the hospital. Yes, everything is free, but not the dentist. [It is] Not the same as here, if you go to hospital, you have to pay 3 euros. In Spain not, everything [is] free. A consultation with the family doctor is free. Only dentist not, [it] is expensive."
Quote 10 Focus group interview 1	"He also has 'kaasmolaren' [Molar Incisor Hypomineralisation], a condition in his mouth. And since it's become so bad, we've definitely started brushing twice even though it's hard to make time in the morning and everything has to go fast fast fast. But we believe it's necessary, because in the meantime he has lost a molar. It happens very fast."
Quote 11 Individual interview 5	**Participant: "**So my oldest child, that's a bit of a problem. Uhm so he has had surgery twice, three times at the University Hospital. She had caries involving the nerve. Her primary teeth are gone because they were broken. My other child, my second child, also has problems. (…) At the age of three, the teeth were broken. Normally, we plan a dental check-up every year, but my child had to go through surgery and the primary teeth were removed. The permanent teeth in the back were erupting, but they were decayed. The teeth in the back, the molars, have been extracted." **Interviewer**: "Ah, when was that?" **Participant: "**That was a long time ago, maybe three years [ago]. So [they had] surgery. My kids were scared the first time because they gave anaesthesia. Now their gums are bleeding. There is a lot of blood, and so I think that's a gum infection."

Table 3 (continued)

Quote number	Quote
Quote 12 Focus group interview 2	**Participant 1**: "I don't know it (…) at what age we will start to brush the teeth. For example, my daughter. Is it okay to start it now or do I have to start it before? (…) Because my daughter now doesn't have all the teeth. I think she has two more teeth to complete (…) I bought a toothbrush for my daughter with a little bit uhm… in French: poils [bristles]. Can she use it? Because when I brush, perhaps I am afraid that I hurt her gum." **Participant 2**: "And is water sufficient for the first teeth? She will drink water before sleeping, is it sufficient or not?"
Quote 13 Focus group interview 2	**Participant**: "She was uhm three years and a half I think and it was okay. He said 'she is good', it was okay." **Interviewer**: "And what was the reason that you went to the dentist?" **Participant**: "Just for a check" **Interviewer**: "Okay, just for a check, there were no problems or anything?" **Participant**: "No. No problems but uhm, last year, when she was in nursery school, she had a report [from Student Guidance Centre] and it was written 'we don't know the last time when your child went to the dentist'. She never went to the dentist, because she had no problems and I brushed regularly so uhm it was okay. I didn't find that it was necessary that she goes to the dentist. When I read this report, I said 'no, I have to take her' and the dentist said 'it's good, no problems.'"
Quote 14 Individual interview paediatrician	"Brushing your teeth, that's of course an important topic… I think Child and Family always addresses this theme well. I mean, it's not the first thing, but when I notice something, I ask them [the parents]. Or if I see some debris on the teeth or… Or with the use of antibiotics or something like that, I also say it's extra important to brush your teeth. For example, also when using inhalers, especially those containing cortisone."
Quote 15 Individual interview nurse	"We are a preventive organisation, so we are very limited in terms of time and resources to devote a lot of extra time to [oral health]. So, it's not always easy to know how they [socially vulnerable parents] can get the right kind of help. We do have a very good collaboration with the community health centre, which is very accessible. So yes, the general practitioners, and the community health centre is a partner we refer a lot to for all kinds of medical concerns in a family. Also, regarding oral health, if you can't go to the dentist, we refer [parents] there or we say 'make an appointment with the general practitioner there.'"
Quote 16 Individual interview general practitioner	**Participant: "**The fact that we, for example, can offer oral hygiene kits, or that we can organise a 'month of the tooth' makes it a lot easier to start talking about the topic instead of for example in a doctor's office where a mom comes over with her child because of the flu and seeing 'that child's oral health is problematic'. In that case, there's a barrier [to bring up oral health]. So having certain materials makes it easier for health care professionals to discuss the topic. And having a 'month of the tooth' can help to avoid people feeling offended, because you suspect that everyone will be addressed about it." **Interviewer: "**Can you tell me more about the threshold for bringing up the subject as a health care professional?" **Participant**: "Yes. I think this is the same as for example suddenly bringing up the topic sexuality. This is also a theme that uhm… I also hear colleagues mention things like 'we see parents fill feeding bottles with fruit juice or something, should we talk to them about it or not?' So I suspect that, rather often than never, it doesn't happen. On the one hand there's a lack of time, you only get fifteen minutes per patient, and on the other hand it feels a bit awkward to bring up the topic because people might feel judged."
Quote 17 Individual interview nurse	"We only have 15 minutes per consultation and a lot has to be discussed in that time. We also have to vaccinate and look at the child's development, so we don't have a lot of time to explain everything."
Quote 18 Individual interview general practitioner	"I think that as a general practitioner, we are not always aware of, um, dentistry, all the techniques that exist, the prices of different things. I think those are questions patients worry about: 'How much will it cost?' Uhm, And I think health insurance services very often don't reimburse…"
Quote 19 Individual interview paediatrician	"It's [oral hygiene] not the first thing I always ask. You have to discuss so many things with people at a consultation. I don't think that… If they ask me, yes, I will say that when a few teeth appear in the mouth, you can brush them with a pocket brush without toothpaste until the age of 2 so that they are used to it and participate a little bit and that they can join the others… Show them how to do it and they can do it when they are older and then help a little bit when they have a lot of teeth. But if they have two teeth, I wouldn't do too much [oral hygiene] anyway, let's just say that they don't always like that, but that differs between children."
Quote 20 Focus group interview 2	**Participant**: "I found it [dental visit] expensive, compared to Tunisia, it's expensive and for my daughter it was free." **Interviewer**: "Okay, you didn't pay anything?" **Participant**: "Yes, we went together, for my [tartar removal] uhm for cleaning, yes it was 2 euro. I paid 52 euro, but my health insurance reimbursed most of it. But in Tunisia it's cheaper. We have so many dentists in Tunisia and it's not as expensive. When I go to Tunisia it's cheaper even without health insurance and the service is the same" **Interviewer**: "Is it the same?" **Participant**: "It's even better" (…) **Participant**: "Yes I think in French we say 'le tiers-payant'. You pay a third of the price I think?" **Interviewer**: "No, not a third. It's about the three parties: it's me, the dentist and the health insurance."

Family and cultural habits determine parental norms and values about oral health

Parents described that their own oral health norms and attitudes were influenced by their own childhood oral health experiences. The parents who perceived their oral health behaviours in their childhood as positive, mentioned that they adopted these good habits for themselves and for their children (Table 3, Quote 7). However,

negative experiences could also contribute. Some parents reported that they wanted to break away from unhealthy behavioural patterns they had experienced as a child to protect their children from negative consequences such as infections, pain, extensive dental treatments, or feelings of shame in the future (Table 3, Quote 8). If familial norms and values varied between two partners and a confrontation between positive and negative oral health behaviours occurred within the family, parents tended to choose the healthy behaviour in the education for their children.

Some parents with migratory backgrounds reported less preventive oral health behaviours due to cultural norms and the organisation of healthcare in their country of origin. A number of parents mentioned that before they came to Belgium, they were not familiar with daily toothbrushing and only consulted the dentists in case of pain (Table 3, Quote 9).

Dental issues as a cue for parental action in children's oral care

Some parents described that severe dental problems and/or visible abnormalities in the teeth (e.g. yellow, crooked, or unusually large teeth), motivated them to improve oral hygiene practices among their children. They indicated that these issues did not only make them more aware of the oral health of their child but also made them increase the frequency of toothbrushing (Table 3, Quote 10).

Some parents mentioned that visible dental problems or complaints about oral pain were the reason for their child's first dental visit. This was more frequently reported in the interviews with parents from minority groups. In case of pain or dental problems, parents were more often referred to hospital settings where treatment under general anaesthesia could take place. These parents often mentioned that their child had negative associations with dental visits (e.g., fear and/or pain)(Table 3, Quote 11).

Parents have doubts and questions about oral health in young children

Most parents indicated that they started to brush their children's teeth when the first tooth erupted. Other parents reported that they initiated toothbrushing and using toothpaste at the age of one or two years, after several primary teeth had erupted. First-time parents, especially parents from minority groups, expressed a lot of doubts and questions about oral hygiene. Many parents indicated that they did not know when to start toothbrushing, what kind of toothbrush they needed to use, or were afraid to use toothpaste in young children because they had concerns about the safety of swallowing toothpaste (Table 3, Quote 12). Similarly, several parents, especially first-time parents, were not sure when to start taking their child to the dentist. They mentioned different reasons for their child's first dental visit. While some parents made a preventive dental appointment for their child on their own initiative, especially if they place a high value on preventive (oral) health care, others mentioned that a healthcare provider referred them for a first dental visit (i.e., a nurse of the "Child and Family Agency", a doctor of the "Student Guidance Centre", or their own dentist) (Table 3, Quote 13).

The organisation of oral health care in young children: Everyone's role, no one's responsibility

Non-dental health care professionals reported a non-structural or structural role to improving oral health in young children. The family doctor and paediatrician indicated that they would start a conversation about oral health and/or refer to a dentist, only if parents had questions about oral health or if they noticed problems in the mouth of a child (Table 3, Quote 14). The participants of two preventive health agencies for children, "Child and Family Agency" and "Student Guidance Centre", indicated having a structural role in informing, raising awareness, and referral to other health professionals in terms of oral health in children.

Most of the parents referred to a professional health care provider for sources of oral health advice, with "Child and Family Agency" as the main source of information for questions about oral health in young children. Also multiple professionals considered the "Child and Family Agency" as the most important agency since they have contact with almost all preschool children and their parents. However, all interviewed non-dental health care professionals, including the participating nurse of the "Child and Family Agency", perceived their role in improving oral health of young children as rather limited. Almost every professional pointed out another professional or organisation as a more relevant actor in children's oral health (Table 3, Quote 15).

The interviewed professionals experienced different barriers in improving the oral health of young children. Some professionals considered oral health to be an intimate, personal, and delicate theme to talk about. They did not know how to deal with this taboo subject, particularly when parents did not pose questions about it. Oral health promoting actions (for example "month of the tooth") were considered helpful in making oral health more open for discussion and served as reminders for promoting oral health (Table 3, Quote 16). However, most of the professionals indicated that the effect of these oral health cues diminished with time. Attention to oral health was not structurally embedded in the organisations of most of them.

Lack of time was also mentioned in different interviews. Professionals indicated that they do not have

enough time in consultations to discuss additional topics such as oral health (Table 3, Quote 17). Moreover, timing was very strict when COVID-19 measurements were present. Lack of knowledge was another barrier. Professionals experienced confusion about oral health care practices and guidelines, and reported having too little information about dental care to sufficiently explain the reimbursement system to parents (Table 3, Quote 18). Moreover, the information some health care professionals gave to parents was incorrect according to the national guidelines for oral health in children (Table 3, Quote 19). Most of the professionals believed that financial thresholds, as well as the low accessibility and availability of dentists, were important barriers to dental visits in children. Yet, most parents were aware that almost all dental care in children was reimbursed, so financial barriers for dental treatments in their children were hardly mentioned. However, parents considered the Belgian health insurance services for dental care as complicated. They expressed considerable confusion about the meaning of third-party payer, and the system of the reimbursement level of dental care depending on the tariff agreement with the Belgian health insurance system (Table 3, Quote 20). Although low accessibility and little availability of dentists were also reported by parents, it was not considered a barrier to making a dental appointment for their child.

Discussion

This study aimed to gain in-depth insight into the factors influencing oral health care for young children by incorporating the perspectives of both parents and dental and non-dental professionals. A key strength is the inclusion of a diverse sample of parents in terms of ethnicity and SES, providing a broader understanding of oral health challenges across different parent populations, including those from minority backgrounds. Furthermore, this study adds valuable insights into how parental oral health norms evolve and the role non-dental professionals play in oral health promotion. Based on the findings in comparison with other similar work, reflections and suggestions are made for an intervention that could more effectively address the diverse factors influencing oral health care for young children.

Our study found that young children's daily oral hygiene and dental visits are mainly influenced by their parents' oral health attitudes and habits. These findings support the evidence of the intergenerational effect in oral health, which can be described as the effect of the (oral) health status of one generation on that of the next [13]. The mechanisms underlying the intergenerational effect remain unclear and are complex, with different potential pathways including biological, genetical, behavioural, psychological, social and environmental mechanisms [2]. We found that parents want to serve as role models and transfer the family norm of good oral health to their children, which is consistent with similar studies [4]. Interestingly, we also found that the intergenerational effect in oral health is amenable to change. Our study showed that parents' own oral health norms can evolve in a positive way when (1) they are confronted with the healthy habits of the other parent, (2) they are exposed to health practices that differ from their own, or (3) they have had negative oral health experiences in their childhood. These findings suggest that oral health promotion should focus on the family and social context rather than solely on the child to improve children's oral health.

Consistent with previous research [4, 14], the current study found that although most parents were aware of the oral health norms, many of them failed to put this into practice due to competing priorities with immediately visible consequences. However, dental problems or visible abnormalities in their child, which were perceived as 'abnormal' or 'ugly', motivated parents to improve oral hygiene practices in their children. Only a few studies also acknowledged the importance of dental aesthetics. For example, parents used dolls with white, beautiful teeth to engage their child [15] or parents were driven by short-term cosmetic factors like "clean teeth" or "fresh breath" to brush their children's teeth [16]. It is recommended to further explore whether the aesthetic element of teeth can trigger oral health promotion in children.

Non-dental professionals were considered by parents as the most important source for oral health information. However, our participating non-dental professionals perceived their role in oral health care as rather limited and tended to refer to other professionals. Professionals might be less likely to take action because they suppose that others are either responsible for taking action or have already done so, a pattern that was also observed in the study of Balasooriyan et al. (2022). They found that professionals finger-pointed to other professionals when it came to addressing children's oral health [7]. This perception can lead to a diffusion of responsibility, a phenomenon that has already been described in a number of fields [17]. Although understudied, fragmentation of care can be seen as a manifestation of diffusion of responsibility and is associated with adverse health outcomes [18].

Our non-dental professionals reported different barriers to taking responsibility about the topic (e.g. lack of time, lack of knowledge, or considering oral health as a taboo subject). The family doctor and paediatrician only gave information if parents consulted them with oral health questions or problems, or when there were oral health actions (e.g. "month of the tooth") within their organisations. The study of Flocke et al. (2009) in family physicians supports the role of these rather opportunistic strategies, which involve a trigger or cue to start a health

behaviour conversation [19]. This was also observed in the study by Owen et al. (2022). They developed an oral health intervention (HABIT) to support health visitors in having oral health conversations with parents during the 9–12-month universal developmental home visit. Handing out a dental pack consisting of a toothbrush, toothpaste, and a leaflet was the first step in starting a conversation about oral health [20].

Remarkably, some professionals gave incorrect oral health care information. Receiving conflicting oral health messages from various health professionals results in parents feeling confused, feeling the recommendations are unrealistic, and setting them up for failure [4, 21]. This also emphasises the need for clear oral health guidelines for non-dental professionals.

Almost every parent reported uncooperative behaviour of their child as a barrier for toothbrushing. Many parents indicated that overcoming uncooperative behaviour and creating a preventive routine was a matter of persistence, which is consistent with the systematic review conducted by Aliakbari et al. (2021), who identified barriers and facilitators to parental supervised toothbrushing [4]. However, some parents from minority groups did not manage to cope with uncooperative behaviour of their child and, after trying different strategies, they finally considered toothbrushing behaviour as something out of their control, perceiving it as a responsibility of their child. The same parents also more frequently mentioned that they had a first dental visit with their child with dental problems or pain, and that their child had negative associations with dental visits. These findings confirmed the participating health professionals' opinion considering that parents from minority groups experienced more barriers for oral health care in their young children, which is consistent with other studies [4, 5].

Another interesting finding is the difference in perception of access to oral health care between professionals and parents. Many professionals identified lack of access to oral health care as an important barrier for dental visits in young children, which contrasted with the parents' perceptions. Parents hardly mentioned financial barriers for dental care in children, and although they reported low accessibility and little availability of dentists, they did not consider it as a barrier to make a dental appointment for their child. This contrast between parents' and professional's perceptions provides a useful insight into the communication between the two. It demonstrates that health care professionals need to listen to parents and allow them to describe the challenges they face. This underlines the need for an approach supporting meaningful, non-judgemental and supportive oral health conversation whereby professionals and parents work together to explore and overcome barriers to children's oral health [4, 22].

This study has important strengths and limitations. First, we were able to include the perception of parents in vulnerable situations, which is often a hard-to-reach group for research purposes [23]. This was achieved by organising both individual and focus group interviews, by closely collaborating with partners in the field, and by providing an immediate benefit to focus group participation (i.e., an oral health related educational session). However, the use of focus groups in parents of minority groups may have led to differences in responses as a result of the data collection method. We also acknowledge that we were unable to return the transcripts to participants for revisions, nor did we obtain participants' feedback on the findings. Second, to our knowledge, this is the first study assessing perceptions of professionals from a broad variety of settings and professions regarding young children's oral health. By including a diverse group of professionals, we were able to identify common barriers. Third, we provided a rich description of the context of our study to enable the reader to judge the applicability of our findings to their own context. This enhanced transferability of our findings. Fourth, fathers were underrepresented in our study. This is an often-encountered phenomenon in research on parenting [24]. Fathers were sometimes described as an authoritative figure that could be called upon when children showed resistance for toothbrushing. However, we were not able to assess fathers' perceptions regarding this role. Future research should aim to include the views of fathers.

The WHO recommends a reorientation on primary oral health care to prevent and control early childhood caries [1, 3]. Our study provides interesting insights and recommendations to help shape this concept. The cornerstone of this model is prevention, which includes maintaining oral hygiene, using fluoride toothpaste, and avoiding risk factors. Our study found that young children's oral habits are mainly influenced by their parents' oral health attitudes and habits. Therefore, interventions targeting the whole family rather than only the child could result in synergistic effects.

The second focus of the primary oral health care model is on informal community care, including self-help groups and community health programmes. Our findings strongly support this approach. We found that although first-time parents had doubts and questions, in general, all parents are knowledgeable about young children's oral health care. They mainly lack the skills to translate this knowledge into practice in challenging situations (e.g., dealing with uncooperative behaviour). Consequently, current interventions targeting parental knowledge regarding oral health are inadequate in altering parents' behaviour. Instead, interventions should also focus on parenting skills, such as behaviour management. These skills are transferable for promoting other health

behaviours, such as limiting screen time. Hence, interventions aiming to improve young children's oral health could be delivered through an overarching intervention focused on parent empowerment. These interventions should not only focus on a one-to-one basis because there is a growing evidence base supporting the effectiveness of group care for parents, especially in minority groups [25, 26]. Exploring the group care model in parents of young children with a focus on health promotion and parent empowerment would be beneficial.

The third important element of the primary oral health care model is the provision of basic oral health care by non-dental professionals in low-resource settings. Interestingly, our study reveals that parents consider non-dental professionals to be the most important source for oral health information, aligning with the vision of the WHO. However, the participating non-dental professionals themselves perceive their role in oral health care as rather limited, often referring to others when it comes to oral health care. Our results also show that care professionals currently lack knowledge regarding dental care guidelines for young children and need training in initiating conversations regarding oral health with parents. Developing a structured protocol with training and supporting resources to guide oral health conversations could be beneficial, as seen in the study by Owen et al. (2022), which supported health visitors in discussing oral health with parents of infants [20]. Expanding this approach to include young children beyond infancy and in broader healthcare settings warrants further exploration. More generally, a clear need for time and resources to structurally integrate oral health prevention for young children in different settings was identified. This integration could be facilitated by dental hygienists, as these health care professionals focus on preventive oral care. Additionally, our study supports the effectiveness of opportunistic oral health actions, such as "month of the tooth" campaigns within organisations, as triggers for initiating health behaviour conversations, thereby helping to reduce stigma.

Abbreviations

COREQ	The Consolidated Criteria for Reporting Qualitative Research
SES	Socioeconomic Status
WHO	World Health Organization

Supplementary Information

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Supplementary Material 1

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Author contributions

L.P. and J.G. conceived the ideas; J.G. and D.V. collected the data; J.G., L.P., M.L., D.V. and I.P. analysed the data; and I.P. and J.G. led the writing. All authors reviewed the manuscript.

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Data availability

Data is provided within the manuscript.The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the relevant guidelines and regulations. The Ethical Commission of Ghent University Hospital approved the study (Belgian registration number B6702020000877 and B6702020000878). All participants received oral and written information about the study, voluntary participation and confidentiality before giving written informed consent.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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