**ABSTRACT**

**Introduction** Dental caries is one of the most common non-communicable diseases in children. The disease management of caries relies on both a preventive individual approach (fluoridation, risk evaluation) and the surgical treatment of established carious lesions. Similar to other non-communicable diseases (obesity, mental diseases, etc), health professionals’ negative perceptions of patients have been shown to affect the quality of disease management. Regarding dental caries in children, some data have indicated the presence of discriminating beliefs and behaviours towards these children and their families in the medical setting. However, oral health stigma related to dental care remains a largely unexplored issue.

**Methods and analysis** This study presents an exploratory research protocol focusing on the perceptions and attitudes of health professionals towards children with early childhood caries (ECC) and their parents. Semistructured interviews will be conducted among medical and dental health professionals, and verbatim quotations obtained from audio transcriptions will be analysed to identify health professionals’ perceptions of ECC and the influence of these perceptions on clinical care for these children.

**Ethics and dissemination** The research ethics committee of the Department of Family Medicine at University Lyon 1 approved this protocol. The results will be published in peer-reviewed journals and presented at scientific meetings.

**Trial registration number** NCT05284279.

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**BACKGROUND**

Dental caries is a widespread disease in early childhood. Deciduous teeth with untreated carious lesions are considered one of the most prevalent health conditions, affecting approximately 8% of the general child population in 2017.\(^1\)

In France, the prevalence of untreated caries in deciduous teeth is estimated to be three times greater, reaching 30% of the overall population.\(^2\) In 2002, the prevalence of early childhood caries (ECC) in children under 6 years old was estimated at 37% of the population, with 20% of children affected by 80% of decayed teeth.\(^3\)

These findings are of concern due to the negative consequences of dental caries on children’s health,\(^4\) future oral health,\(^5\)\(^6\) and quality of life.\(^7\)\(^8\)

Dental caries is a slow-progressing, chronic and multifactorial disease related to the inadequate control of oral biofilm\(^9\) due to behaviour, lifestyle and, often, socioeconomic factors. The insufficient removal of oral biofilm and the supply of fermentable carbohydrates result in a modified oral population of microorganisms with an increase in...
acidogenic and cariogenic bacteria, subsequently leading to an imbalance in the demineralisation and remineralisation of dental hard tissues (dentin and enamel) and cavitation.10

Dental caries appears to be a preventable and non-communicable disease that shares numerous risk factors with other chronic non-communicable diseases, such as diabetes or obesity.11

Historically, dental caries management was based on the surgical treatment of carious lesions. Despite the need for concomitant preventive individual evaluations of the patient, the operative approach is still incorrectly considered the main component of caries management in clinical practice.12 13

Updated guidelines14 15 provide a disease management model that fully integrates preventive strategies through fluoride caries risk assessment, varnish application, sealants and counselling. Over the past 20 years, researchers have argued that chairside counselling needs to be reinforced by personalised actions focusing on chronic disease management or behaviour intervention.16 17

Thus, the quality of caries management relies not only on technical skills but also on the practitioner’s ability to use patient-centred communication and allocate sufficient time for the patient.

In the field of care, disease stigmatisation can be encountered, and health professionals’ perceptions of a patient’s condition have been reported to affect the quality of disease management. Moreover, several reviews have reported that individuals with obesity are often considered lazy, gluttonous, weak-willed and undisciplined, even in healthcare settings.18-20 This perception of the patient as an individual incapable of personal behaviour change results in discriminating attitudes, such as shorter consultations, less respectful communication and a less patient-centred approach.19

Regarding dental caries, some studies have suggested that a similar stigmatisation process occurs for children. Tschammler et al21 and Clovis et al22 found that dental professionals (dentists and hygienists) have negative beliefs; for example, children with ECC are considered to have difficult behavioural issues22 and to be less attractive, less pleasant, and less calm than caries-free children.21

Health professionals have also reported that parents of children with ECC lack interest in their child’s oral health,23 24 have failed motivations,24 and shift authority and responsibility for the disease onto their child.25 In a qualitative study regarding health professionals’ attitudes,25 negative and guilt-inducing communication was reported by some parents; conversely, parents of caries-free children would receive more comprehensive information.26

Despite these data suggesting that negative beliefs and behaviours towards children with dental caries and their families occur in the medical or dental setting, oral health-related stigma remains an otherwise poorly investigated field. The present project will conduct an exploratory study focusing on the perceptions and attitudes of health professionals towards children with early childhood caries and their parents. In this study, perceptions will refer to the stereotypes that health professionals relate to these families. We will address the issues of stigmatisation and discrimination with the following questions:

1. What are health professionals’ perceptions of children with ECC and their families?
2. Do these perceptions influence the quality of care among health professionals?

We hypothesise that some practitioners may have negative opinions regarding children with ECC and their parents that affect the quality of their care in oral health prevention.

The aims of this study are to outline health professionals’ perceptions of children with ECC and their influence on clinical practice.

METHOD

Study design

A qualitative study will be conducted based on individual semistructured interviews with health professionals. The professionals will be questioned about their perceptions of patients with ECC and their families. To obtain a full record of their opinions and maintain privacy during the interview, individual interviews will be conducted rather than focus group discussions. Before the research team definitively approved the protocol, the methodology was assessed according to the Consolidated Criteria for Reporting Qualitative Research (COREQ). The 32-item checklist provides a methodological framework for the assessment of qualitative studies.27

Sample recruitment

Several types of health professionals will be interviewed. General practitioners and paediatricians will be considered first. Since these individuals are in charge of the medical follow-up of children younger than 6 years, they are key stakeholders in oral and dental health surveillance and referrals to dental specialists. In addition, dentists will be included. Participants will be included on an equal gender basis and using a maximum variation sampling method with regard to age, years and types of practice (solo, group or interdisciplinary team). To ensure that all viewpoints are collected, we will apply the maximum variation principle to each profession. Respondents’ characteristics will be compiled in a specific table to ensure sample variability. Only practitioners fluent in French will be considered, and interviews will be conducted in French. Participant selection will be conducted according to a purposive sampling strategy. The participants will be chosen directly from the network of the research team members and from regional professional listings of each specialty (general practitioners, paediatricians, dentists) as mentioned in the guidelines.28 Participants will be contacted by phone, email or in person by one of the main investigators of the study (GL) to obtain their consent for participation in the interviews.
Data collection

Data will be collected from the interviews with each health professional. Each interview will be conducted by the main investigators (GL or MC) or a psychologist recruited for the study according to the same plan using a specifically designed guidebook. The guidebook was developed by the main investigators of the study (GL, MC and psychologist) according to the literature review. Particular attention was given to the wording of the questions to prevent bias, such as desirability bias. After the first few interviews, the guide may be adapted based on early feedback. The investigators (GL or MC) or a psychologist will code the first interviews independently before working more collaboratively. Similar codes will then be associated with coherent themes, defined as meaning-based patterns. Theme development in reflexive thematic analysis involves researchers’ subjectivity (knowledge, theoretical assumptions, etc) because their goal is to give an interpretation of the dataset rather than to summarise it. Data saturation will be considered to have been reached when thematic analysis no longer seems to produce new meanings that contribute to answering the research question.

Depending on their occupation (dentists, paediatricians or general practitioners), respondents may have a distinct understanding of ECC as well as a different relationship with children and their parents. To ensure that the analysis is faithful to the participants’ responses, data from each professional group will be analysed separately.

To understand how the results relate to the topic of health-related stigma, the final themes derived from the analyses will be examined with the theoretical stigma and discrimination model developed by Stangl et al in 2019, which provides a comprehensive overview of the stigmatisation process. This process is presented as a combination of different interlinked components. Among these components, drivers and facilitators explain whether a population or individual is stigmatised due to a particular health condition. The manifestations of health-related stigma subsequently influence numerous outcomes among affected populations, organisations and institutions, leading to a broader impact on health and society.

Data protection

The protocol conforms to the regulatory ethical state bodies in charge of personal data protection in France (Commission Nationale de l’Informatique et des Libertés (no. 2222907 v 0)).

The recordings and transcripts will be transcribed into computer files and anonymised. Coding the files will non-verbal communication items (position, attitudes, facial expression, intonation, etc).

Interviews will be conducted according to the thematic saturation principle. Saturation is defined as information redundancy and occurs when the data collected during the interview no longer provide new codes or themes related to the topic under investigation. All interviews will be completely transcribed verbatim and stripped of identifying information. The redacted version will then be sent to participants for review through their professional secure messaging platforms.

Data analyses

Verbatim analyses will be performed using NVivo qualitative analysis software. A reflexive thematic analysis of the data will be conducted using the six-step method of Braun and Clarke. Data coding will be achieved in a data-driven manner. As the analytical process is not based on a theoretical framework, this open-coding technique aims to stay as close as possible to the meaning of the data. The investigators (GL, MC and psychologist) will code the first interviews independently before working more collaboratively. Similar codes will then be associated with coherent themes, defined as meaning-based patterns.

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Box 1 Guidebook

1. Self-introduction of the interviewee
   - ‘To begin with, may I ask you to tell me your age, profession and year of graduation?’

2. Perception of children with severe early childhood caries (ECC) and their parents
   - Defining severe ECC
     - In your practice, how often do you see children with dental caries?
     - How often do you see children with severe dental caries?
     - What does ‘severe’ mean to you?
   - Perception of children with ECC
     - How would you describe children with severe ECC?
     - According to you, how are children with visible dental caries perceived by others? Could you give me some adjectives that immediately come to mind when you identify one of these children?
     - How would you describe the parents of children with severe ECC?
   - Management of children with ECC and their family
     - How do you feel when meeting these children?
     - What about their family?
     - What difficulties do you face when managing these children?
     - What about their family?

3. Health behaviour change
   - ECC is well known to be essentially related to behavioural factors, including inadequate brushing and/or ‘inappropriate’ eating behaviours. What causes these behaviours?
   - What strategies do you implement to help these children and their families change these behaviours?
   - What strategies might be effective in supporting these families?
prevent the direct identification of the participants, and the files will be kept under the sole responsibility and access of one of the main investigators (MC). All generated data will be stored on the secure main server of the University Lyon 1. The audio recordings will be deleted at the end of the research.

**Patient and public involvement**
This study involves health professionals. Representatives of the different healthcare professions taking part in the study will be consulted on the design of the interview guide before the first interviews.

**Ethical issues and dissemination**
Participants will receive and sign informed consent forms regarding the objectives of the study and the right to deny further participation or withdraw at any time. All participants' signed consent documents will be collected before the interviews. Ethical approval was obtained from the research ethics committee of the Department of Family Medicine at University Lyon 1 (no. 2021-09-09-03). The protocol is registered on ClinicalTrials.gov (no. NCT05284279).

The first interviews should be conducted in April 2023. Data collection and analyses will last 12–18 months. The results will be published in peer-reviewed journals and presented at scientific meetings.

**DISCUSSION**
**Expected results**
A wide range of opinions is expected from the health professionals participating in this study regarding children with ECC and their families. These opinions are expected to range from positive opinions (benevolent and empathic) to negative feelings and stigmatisation.

In the longer term, the results of this exploratory study should contribute to raising awareness among health professionals of different backgrounds involved in the management and follow-up of children with ECC. Detecting possible negative attitudes can lead to the identification of discriminatory behaviours in clinical practice and consequent stigmatisation. Raising awareness is the first step to prevent the stigmatisation of these patients. However, understanding the attitudes and beliefs of health professionals towards these families will help to develop key recommendations for professional organisations and to fight oral health-related stigma.

Dental caries is similar to obesity as a multifactorial non-communicable chronic disease resulting from a combination of genetic, environmental and behavioural factors. Recently, several authors have published recommendations for obesity stigma that would be appropriate for adaptation in the field of oral health stigma:
- The implementation of strong and clear policies to prohibit weight-based discrimination and the inclusion of weight discrimination in professional codes of conduct.
- Better research funding and the recognition and treatment of obesity as a chronic disease.
- Integrating teaching on the causes and mechanisms of obesity into standard curricula of medical students and developing new tools to help health professionals discuss weight, obesity, etc.25-34

This study could also be an opportunity to reconsider the manner in which barriers to and facilitators of oral health prevention in children are addressed. A large part of the interview guide is dedicated to health behaviour change and therefore aims to explore the manner in which dental disease prevention is implemented with these families. In the literature, organisational difficulties, lack of time, lack of training, lack of financial resources, and patient opinions and behaviours35-37 explain the poor delivery of preventive care by health professionals. If the results of this study suggest that the negative opinions of some health professionals towards these children affected the quality of their care (communication, duration of the consultation or patient-centred approach), the perception of patients may also be a significant barrier to oral health prevention.

**Strengths of the study**
Following Stangl et al's theoretical stigma and discrimination model, the results will be presented in a standardised manner using a common model for all researchers in the field. This approach will help to pool and compare data with other researchers working on the topic of oral health-related stigma or other health discrimination.

When more data are collected on oral health-related stigma, the framework will allow the synthesis of varied studies and provide a clear and structured overview for actors involved in the issue (researchers, healthcare workers, decision-makers, intervention implementers). In this way, the results may highlight a lack of data on particular aspects of the topic, which would consequently require further research. Conversely, the data may help to identify areas where sufficient information has been gathered to support the development and implementation of interventions intended to increase the quality of disease management.

**Limitations of the study**
In this study protocol, we chose to define saturation in a rather conventional manner based on the concept of information redundancy.29 In this context, saturation is thought to occur when the dataset no longer provides additional information, codes or themes. Numerous authors refer to data saturation as the gold standard for determining sample size, while qualitative checklists (such as the COREQ checklist) present it as a key criterion for methodological quality. However, this approach to saturation has increasingly been questioned by authors such as Braun and Clarke, who consider it irrelevant in the case of reflexive thematic analysis.28 In this type of analysis, themes result from the interpretative choices of the researcher since theme development
relies on data as well as the researcher’s experience, knowledge and subjectivity. Thus, new interpretations can continually be discovered, which directly contradicts the very principles of saturation. In relation to our study, saturation will be considered critically and with caution. More concretely, the researchers will stop inclusion when the thematic analysis no longer seems to produce new meanings that contribute to answering the research question.

If this qualitative study demonstrates the existence of oral health-related stigma in children, the findings may relate to a larger population of French health professionals. Qualitative studies have been conducted with small samples and have demonstrated a large diversity of opinions and practices on a specific topic but have failed to provide results with numerical representativeness. Further quantitative research must be undertaken to test how negative beliefs and attitudes are represented among a large sample of professionals. This information will enable us to determine whether oral health-related stigma among children with ECC is a common issue.

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Contributors GL, MC, BT-P, PF and A-MS-P participated in the conception of the study and its design. GL was the main author of this manuscript, and MC, BT-P, PF and A-MS-P contributed equally to critically revising the manuscript. GL will be the main researcher responsible for data collection and analysis, while MC will act as the supervisor who oversees the process. All authors have given final approval and agree to be accountable for all aspects of the work.

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