

Patterns of Parental Information Seeking Behavior on Early Childhood Caries: A Qualitative Exploration

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ABSTRACT **Objectives:** This study aims to explore the information-seeking behavior patterns of parents with children receiving treatment for early childhood caries (ECC). **Materials and Methods:** Semistructured in-depth interviews were conducted with 20 parents of children with ECC. A topic guide was developed, focusing on questions relating to (i) the timing of their seeking information on ECC, (ii) the types of ECC information they seek, and (iii) the resources used to seek information. The interviews were audio-recorded and transcribed verbatim. Thematic analysis was performed, whereby the data were coded and categorized into themes and subthemes. **Results:** Four main themes were identified: the immediacy of seeking information, perceived information need, use of resources, and barriers to seeking information. Parents either sought information immediately after detecting changes to the appearance of their child's teeth, with some being aware of the changes after signs and symptoms developed. The types of information parents usually sought covered the disease, its prevention, and management. Common sources of information were friends, family, the internet, and healthcare professionals. Barriers to seeking information discussed by parents were lack of time as well as insufficiency and inaccuracy of the information they received. **Conclusion:** This study highlighted the need for comprehensive, tailored early education on ECC for parents using reliable information sources. There is also a need to empower other nondental healthcare professionals to provide oral healthcare education for parents.

KEYWORDS: Dental care for children, early childhood caries, information-seeking behavior, parents, qualitative research

INTRODUCTION

Dental caries is a major public health burden affecting both children and adults.^[1] Although easily preventable, the prevalence of the disease remains high, despite numerous studies having examined its risk factors, its impact, and the effectiveness of interventions at both the individual and community levels. Efforts to curb this disease often focus on early childhood interventions, as it has been shown that children with caries in their primary dentition are up to three times more likely to develop caries in their permanent

dentition.^[2] This raises concerns, considering that over 600 million children below 6 years old are affected by early childhood caries (ECC) worldwide.^[1,3]

In Malaysia, various initiatives have been conducted by the Oral Health Division under the Ministry of Health to address this issue, reducing prevalence over recent

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decades.^[4] However, the National Oral Health Preschool Survey carried out in 2015 reported that at least 7 out of 10 children aged 5 years old still experienced caries.^[5] Several studies had found that children were more likely to develop caries when their parental oral health literacy was low.^[6] Since acquiring information can improve knowledge, thus leading to better health literacy levels, it would be beneficial to understand parental health information-seeking behavior (HISB). Furthermore, an individual's health behaviors and use of health services are influenced by the amount of health information they possess.^[7]

Various sources and platforms for disseminating health information have been identified in several studies, but recent research in the field of HISB has focused on the use of technology. However, digital media are not the only sources of information, so parents may use various sources to seek health information, ranging from people and institutions, printed and online materials, authoritative medical information,^[8] healthcare professionals, and family members.^[9] The types and depth of information on their child's health that the parents encounter may be influenced by the choices of resources available and those they prefer. However, little is known about how parents with children affected by ECC seek information about this disease. Thus, this study aimed to explore the parental information-seeking behavior patterns of parents with children receiving treatment for ECC at the Faculty of Dentistry, Universiti Kebangsaan Malaysia (UKM) and UKM Medical Centre (UKMMC). Using a qualitative approach, the study also explored the factors influencing the ways and resources parents use to look for information about ECC.

MATERIALS AND METHODS

This qualitative study is reported in accordance with the Consolidated Criteria for Reporting Qualitative Research.^[10]

Study design, participants, and data collection

This exploratory study employed a semistructured in-depth interview design and was conducted using a topic guide consisting of a series of questions focusing on the study objectives. This study was approved by the Human Research Ethics Committee, Centre for Research and Instrumentation Management, UKM (Reference number UKM PPI/111/6/JEP-2018-585). Written consent was obtained from the parents participating in this study. They thoroughly understood that their participation was entirely voluntary and that they could withdraw from the interviews at any time.

The flow of the study is illustrated in Figure 1. The key topics in the interview guide were (i) the timing of their seeking information on ECC, (ii) the types of information on ECC they seek, and (iii) the resources used to seek information. The guide was used to direct the conversation; however, the participants were free to express their opinions and views. The interview guide was piloted with two parents and amended prior to further fieldwork. The participants were recruited via the convenient sampling method at the Faculty of Dentistry, UKM and UKMMC. Both locations are in an urban area (Kuala Lumpur) in Malaysia. The participants were recruited while attending their children's dental appointments in both places. The inclusion criteria were parents of children with ECC, while the exclusion criteria were those unable to converse in either Malay or English, as the interviews were conducted in Malay or English or both. Before the interview sessions, written informed consent was obtained from all the participants. The face-to-face interviews were carried out by one researcher (MR, a trainee pediatric dental specialist, female) over seven months from October 2018 to May 2019. The researcher (MR) underwent training in qualitative research and interview skills before the commencement of the study, followed by several practice sessions. The subjects did not know the researchers before the study, and their introduction to the researcher, and clarifications about the study were provided when the subjects were approached. Each interview session lasted for an average of 30 min. All the interviews were recorded, fully transcribed verbatim, and stored as text

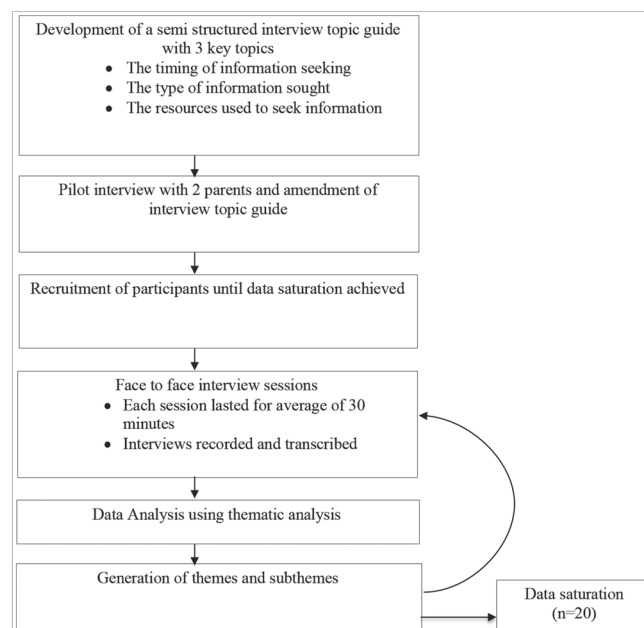


Figure 1: Data collection and analysis process

files. Any grammatical mistakes, linguistic terms, and local slang used by the participants were maintained. The interviews were conducted until data saturation was achieved, and no other new themes emerged from the subsequent interviews.

Data analysis

The data analysis was carried out by the main researcher (MR) and another pediatric dental specialist (EK) using the constant comparative approach with thematic analysis. The main themes and relevant subthemes with similar concepts to their parent theme were constructed using the phases and stages of theme development described by Vaismoradi *et al.*^[11] The analysis was carried out in four phases: initialization, construction, rectification, and finalization. The initialization process involved the researchers reading the interview transcripts to familiarize themselves with the information given by the participants. Important data were extracted from the entire transcripts and coded to identify important data relevant to the research topic. Next, in the construction phase, the extracted codes were categorized into clusters and given labels to enable the development of potential themes. Subsequently, during the rectification phase, a review session was held with the researchers, two pediatric dental specialists (YZ, SNMPS), a dental public health specialist (TI), and a senior academician (AMA) with experience in qualitative studies. The session aimed to determine the final coding consensus tree, achieved before the themes and subthemes were agreed on. The theme refinement involved the themes being split, merged, or eliminated. The finalization phase involved a comprehensive analysis of what the themes contributed to understanding the data, focusing on each theme. Lastly, appropriate informative names for the themes were discussed and finalized, having been agreed on by all the researchers. All six members involved in the data analysis were bilingual (fluent in English and Malay). The quotes used to support each code were translated individually, with the final translation into English established after discussion and agreement among all members. The meaning of the original quotes and local slang, such as “*lah*,” was maintained.

RESULTS

A total of 20 participants were interviewed [Table 1]. The interviews ranged from 12 to 56 min, with an average duration of 30 min. The average age of the participants was 35.6 years, while all their children were experiencing severe ECC (dmft more than 4). Following thematic

Table 1: Demographics of participants

Variable	Category	Number of cases (%)
Gender	Male	7 (35)
	Female	13 (65)
Age (years)	25–29	1 (5)
	30–34	9 (45)
	35–39	8 (40)
	≥40	2 (10)
Level of education	High school	2 (10)
	Diploma	4 (20)
	Degree or higher	14 (70)

Table 2: Key themes and associated subthemes

Main themes	Subthemes
The immediacy of seeking information	Immediate
	Delayed and nonseeker
Perceived information need	Oral healthcare and prevention
	Risk factors of ECC
	Family and friends
Use of resources	Internet and mass media
	Healthcare professionals
Barriers and challenges	Lack of time
	Inaccurate and insufficient information

analysis, four main themes emerged: the immediacy of seeking information, perceived information need, use of resources, and barriers or challenges. The identified main themes and subthemes are summarized in Table 2.

The findings of the themes that emerged from the interviews may influence the parents' behavior in terms of the ways they seek information, the resources they commonly use, and how they prefer to educate themselves on ECC. Parents looking for information earlier may use more or different sources than those who looked for information much later. When there is a perceived information need, the immediacy of seeking information is likely to increase, and the use of resources tends to depend on convenience. The barriers faced by the parents could also affect their use of resources.

Theme 1: Immediacy of seeking information

Immediate

Among the parents interviewed, there was a mix of those who sought information on ECC and those who did not. Some sought information immediately when changes were noted to the appearance of their child's teeth.

I saw his/her teeth were very thin. Why are his/her teeth like this? So, I searched the internet and asked friends. (Participant 17, female, 33 years old)

Another parent who did not know the child had caries sought information from the dentist while simultaneously seeking dental care as soon as she noticed that the child had mobile teeth and bleeding in the mouth. She intended to prevent any further complications like pain or difficulties in eating.

... I didn't know because his/her teeth were shaking, and then it was bleeding. I immediately brought him/her to the dentist. The dentist mentioned it is caries. I saw that she was not comfortable when eating, and she is very young, so not able to tell me if she is in pain, so it is better to see the specialist (dentist). (Participant 10, female, 28)

Delayed seekers and nonseekers

Other parents sought information at a later stage. They acknowledged that they had been aware of changes to their children's teeth but were only motivated to seek information by signs and symptoms.

Because I see her teeth have started to have one hole, then after a while, it has spread to the front and then to the other side, so both left and right has holes so when she eats, she sometimes complains a bit of toothache, sometimes she cannot eat comfortably ... so I think I have to care about this. (Participant 5, female, 34 years old)

The nonseekers did not look for information and felt the information they had was sufficient; thus, they did not look for further information. They relied on their existing knowledge or assumed caries to be a process that usually occurs in deciduous teeth.

I think the information I already know was sufficient because my 4th child doesn't drink milk and his/her doesn't have problem with teeth, so I know that is the cause. (Participant 12, male, 41 years old)

Another mother felt there was no need to seek information as there had been no disturbances to their child's daily life. Moreover, she preferred the dentist to take care of the child's teeth as looking for information about the disease might upset the parent.

...don't (look for information) because (child) never complains Because if I search, my mind is upset because something may be wrong ... better doctor take care. (Participant 3, female, 38 years old)

Theme 2: Perceived information need

Oral healthcare and prevention of ECC

Education about ECC, consisting of information on the disease itself, with a special focus on its prevention was mentioned by one of the parents of a young child. The parent expressed concern about preserving the deciduous teeth as the child may have issues with eating.

...actually (I) want to know how to care (for oral health) because (the permanent teeth) take a long time to erupt. I think oh no, how he is going to eat. (Participant 19, female, 39)

Information pertaining to changes in the child's habits was deemed necessary by the parents. They felt this was important to improve the child's compliance with positive oral health behaviors.

Just when it comes to a kid, we want to make sure she/he follows that habit (brushing teeth), but it is difficult at night because he/she still wants milk, right? (Participant 2, male, 38 years old)

One father who had a child with a developmental disorder reported his challenges in managing the behavior of his son and indicated that parents require specific and individualized strategies or techniques to manage difficult behavior of their child during tooth brushing.

...care is hard ... my son has autism ... so he is very active until now. Maybe his mom cannot cope...my maid also cannot cope. So anytime they need to hold him, they wait for me ... so they have to wait for me to be around to brush his teeth because he always struggles. (Participant 8, male, 47 years old)

Risk factors of ECC

As ECC is a multifactorial disease, some parents were keen to know the risk factors. One parent highlighted that some parents might think that caries occurs only due to one particular factor but be unaware of other causative factors.

Usually when people tell baby teeth decay quickly because of milk in the bottle right. That is the cause. But she doesn't drink milk in a bottle. So, I want to know the cause of how it became like that. (Participant 16, female, 33 years old)

Theme 3: Use of resources

Friends and family members

The parents used various sources to search for information, including family and friends, healthcare professionals, and digital resources. Friends and family were often approached first by the parents due

to convenience and the previous experiences of their friends and family members.

From family members. Family members with young children too – older brother and sister – they know a lot about this. (Participant 1, female, 34 years old)

Internet and mass media

Parents often used multiple digital resources, such as search engines, mass media, and social media, as they found these forms beneficial in different ways.

...I look for information through three mediums ... Google, Facebook and YouTube Just that sometimes it is not interactive. Like Facebook is more interactive, you can ask questions ... websites can be linked as well (Participant 2, male, 38 years old)

The use of Google as an important medium to find sources of information was evident, with multiple parents also utilizing it. One of them found this search engine was convenient as it is readily available on smartphones.

... I use the phone. When you want to ask anything and nobody else knows (the answer). Instead, people will just ask you to Google. (Participant 8, male, 47 years old)

One parent revealed that he had used the Google search engine as an adjunct resource before seeking consultation from a dental healthcare professional to learn more about the symptoms experienced by their child.

First, I Google. So I can understand why the problem occurs. Then I try to relate to the relevant symptoms. So, once we seek consultation with the doctor, we can get more information. (Participant 2, male, 38 years old)

Some parents highlighted the importance of delivering information on ECC to children through suitable mediums. For example, one parent mentioned YouTube as a platform for children to receive information about ECC.

...Mostly kids nowadays always watch YouTube. Maybe it is one of the effective platforms for kids because they can just learn by watching compared to other platforms that require them to read. (Participant 2, male, 38 years old)

Mass media was also a medium the parents mentioned as a preferred source from which to receive information on ECC.

... Because I like to watch TV, so I pick TV. (Participant 11, female, 37 years old)

“...after we see an advertisement, we will possibly look more into the disease (ECC)... (Participant 5, female, 34 years old)

One parent also felt that television advertisements should not focus only on parents as the target audience but also include children. Therefore, the information portrayed in advertisements should be suitable for both groups.

...for example, if advertisements are made for parents, maybe the children will not be interested in it. I think advertisements which are attractive to both parents and children at once are better. (Participant 5, female, 34 years old)

Healthcare professionals

Another preferred source was the dentist. Some parents relied solely on information from dentists as they felt it was more reliable.

...better we (seek information from the dentist) ... the doctor who takes care (of their teeth). (Participant 3, female, 38 years old)

However, parents may not be aware of the right time to bring their child to a dentist, so they also felt that the involvement of healthcare professionals is necessary at the initial stages. Parents often expected such individuals to provide them with appropriate information on dental care. One parent thought a child's vaccination appointment was a suitable time to educate the parents on oral health.

...usually the doctor will mention about, vaccination appointments. So, they should talk about dental care as well.... Because we won't miss vaccination appointments, so, when getting the vaccine ... they can give the information (on ECC) and check his teeth. (Participant 14, female, 34 years old)

Theme 3: barriers or challenges

Lack of time

Parents' busy schedules were discussed as a factor that hindered parents from educating themselves about ECC. One parent regarded the disease as unimportant due to the time factor.

...when we come back from work and are busy with the children, sometimes it's hard to spend time looking for information ... insufficient time. We feel this is not so important so we sort of neglect it. (Participant 4, female, 36 years old)

Another father claimed that parents might not be able to take their children to a dentist due to their

busy schedule, suggesting that, instead, healthcare professionals could go to the places where the parents were, such as their workplaces, and deliver such information through talks,

It's like this ... if they (dentist) go to offices...give a briefing on information from hospital on caries ... because nowadays many parents have this problem It's just if we want to go see the dentist, it's about the time. So when doctors go for a talk, for a speech for half an hour about the ways to do this... what is it all about. That's probably okay too. Whether parents want to go to the dentist ... because parents will go to the dentist only when his child's teeth hurt. (Participant 7, Male, 38)

Insufficient and inaccurate information

Several parents discussed the barriers and challenges they faced when they did intend to seek information on ECC. One of the barriers highlighted was the insufficient information they had received, leading to incomprehension about the depth of the issue. A parent expressed the opinion that the information given to parents was often superficial and revealed doubts about the information she had received, especially from sources who were not dental healthcare professionals.

...not enough (information), just basic only lah ... inaccurate information, information given by other people (non dental healthcare professionals), we do not know the truth in it. (Participant 4, female, 36 years old)

The same parent found that it was easy to seek information on the internet using the Google search engine; however, it was a challenge to find reliable information with which parents could educate themselves about ECC.

...it's easy to find information, but accurate information for parents to know about children's caries err ... because when we Google, a lot of information are there, but to get accurate information is difficult. (Participant 4, female, 36 years old)

Another parent also agreed that although the volume of information found was high, its reliability could not be assessed. This may be another issue, as she found that a lot of sites obtained through Google searches came from another country.

Sometimes a lot (websites) we open, same things which they say. We don't know correct or not, right? Anyway in Google, there are a lot of Indonesian language ones, right? ... I just read lah. (Participant 9, female, 37 years old)

DISCUSSION

This exploration of parents' behavior when seeking information on ECC, obtained via a qualitative approach, has enabled better insights to be obtained into the information needs and search habits of parents, including the barriers, faced when seeking information on ECC. The study found that some parents had sought information as soon as they noticed changes to their child's teeth. Meanwhile, the motivating factors for parents to actively seek information on ECC include esthetic concerns or disruptions to daily activity. Those who did not seek information knew that ECC existed but chose to ignore it, considering their preexisting information to be sufficient, although the problem persisted.^[11] This may reflect their low level of awareness about the disease and the consequences of ECC. A low level of health literacy has been associated with information avoidance resulting in those who do not seek information neglecting important preventive behaviors.^[12]

Among the parents in this study, the perceived information they needed mainly concerned the prevention of the disease and oral care for their children. Some parents were aware that habit changes were vital for the prevention of the disease, with a focus on prolonged and night-time bottle-feeding habits. Several parents admitted that the cessation of bottle-feeding was difficult for their child, so detailed recommendations on the effective ways to achieve this are required. Early anticipatory guidance aimed at parents would be beneficial for parents to overcome such problems. Early education on ECC should be provided to increase awareness, but those parents who need further management should be immediately referred to a dental practitioner. Several parents felt they had the basic knowledge required but lacked specific strategies to manage the risk factors. Thus, patient-centered counseling should be employed in the form of motivational interviewing, whereby the counseling should be tailored to the individual's readiness to change by taking steps to enact healthy behaviors. This could include the provision of specific behavioral techniques to manage the child. Studies suggest that motivational interviewing represents one of the more effective behavioral strategies for caries prevention^[13] as does changing oral health behaviors by targeting families to adopt protective behaviors while reducing risk-causing behaviors.^[14]

Parents who did seek information on ECC used the internet or friends and family members as sources due to the convenience and easy accessibility of these methods. The approach of seeking health-related information from family and friends is a form of social

support.^[15] A similar support mechanism is available in interactive digital media such as chat groups, blogs, and forums, so it is understandable why parents preferred these mediums as sources of information. Undeniably, technology plays a significant part in the quest for information as the World Wide Web provides easy access to health information.^[16,17] However, some parents still preferred a direct approach to oral healthcare personnel as they viewed these individuals as more trustworthy sources. This may be a better option because those seeking information online might have limited ability to evaluate the credibility of information, resulting in misinformation.^[18] The active participation of non-oral health professionals, such as pediatricians and nurses, is vital in providing parents with timely information on ECC, as the former routinely see children and their parents far earlier than oral healthcare professionals.^[19] Mothers were also keen to obtain information regarding ECC as early as possible. Pregnancy is an ideal time to advocate prevention strategies since maternal oral health habits are said to affect their children's oral health significantly.^[20] Though this is contentious, prenatal dental education should be strongly encouraged. These findings are consistent with the International Association of Paediatric Dentistry Bangkok Declaration, which highlighted that effective ECC prevention should incorporate actions from multiple parties. ECC awareness should come from not only oral health personnel but also other health professionals because the earliest contact is often with pediatricians and nurses.^[3] Although studies have shown that trained primary care professionals can correctly recognize cavities in children, as well as those needing referral, no studies have yet evaluated the effectiveness of this ability in reducing caries prevalence.^[21] It has been recommended that preventive guidance be given to parents within the first year of life by incorporating it into existing programs, such as vaccinations and routine health follow-ups.^[22]

The plethora of information on the Internet can be overwhelming for parents when they attempt to educate themselves on conditions that affect their children. Parents may not be able to assess the quality of information, which can lead to misinformation and affect the oral health care they provide to their children. The parents in this study expressed concerns regarding sources of information, which in turn could reflect the trustworthiness of the information. A study by Sun *et al.*^[23] found that users' evaluations of online health information were influenced mainly by criteria such as the trustworthiness of the information, the expertise of the source and author, as well as whether the information

or source presented facts that were free from the influence of personal feelings or commercial interests. Reliable online sources and information are crucial to enabling users to take control of their health and healthcare.^[24]

There were a few limitations to this study. First, as it was an interview-based qualitative study, the responses may have been influenced by the Hawthorne effect. Parents may have assumed they should have already possessed the required knowledge to prevent this disease in their children. Hence, they may not have communicated the challenges they faced in obtaining the relevant information. To overcome this, part of the informed consent mentioned the absence of correct or wrong answers, while the only purpose of the study was to elicit information and views. Another limitation was the sample population included in this study. This was limited to those already seeking dental treatment for their child, so it does not represent the information seeking behavior among parents of children with ECC who may be unaware of the need for treatment.

CONCLUSION

In conclusion, most parents did look for information on ECC but not necessarily early enough when prevention alone would have sufficed. Parents wanted more comprehensive, detailed, and targeted information on ECC such as proper dietary control and milk bottle feeding habits. Involvement of nondental health professionals in early oral health education for parents on ECC was highlighted. Reliable sources of information to ensure the accuracy of information was also important for the parents. The implication of this study suggests that in order to effectively deliver information on ECC to parents, it should be tailored to their needs and preferences. This can serve as a valuable guide for oral health care professionals in developing effective information provision strategies for parents.

Future study recommendation

In future research, a similar study designed to explore information-seeking behavior among parents with caries-free children should be performed to compare the differences or similarities between these parents. A multicenter study or one involving the general population as part of a quantitative design could eliminate bias in the sample population, while such studies may also more effectively consider confounding factors such as levels of education, socioeconomic background, and access to healthcare facilities.

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Conflicts of interest

There are no conflicts of interest.

Authors' contribution

MDR and EK conceived and designed the study, analyzed data, translated quotes, prepared the manuscript, and reviewed drafts of the paper. TIR and AMA reviewed the study design, analyzed data, translated quotes, and reviewed drafts of manuscripts. FY and SNMPS reviewed data analysis, translation of the quotes, and reviewed the manuscript. AA and ASSB were involved in preparation, writing, and reviewing of the manuscript.

Ethical policy and institutional review board

This study was approved by the Human Research Ethics Committee, Centre for Research and Instrumentation Management, UKM (Reference number UKM PPI/111/6/JEP-2018-585).

Patient declaration of consent

Written consent was obtained from the parents participating in this study. They fully understood that their participation was entirely voluntary and that they could withdraw from the interviews at any time.

Data availability statement

The data set is available on request and with the agreement of Elavarasi Kuppusamy, Department of Family Oral Health, Faculty of Dentistry, Universiti Kebangsaan Malaysia.

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