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RESEARCH ARTICLE (ORIGINAL)

Oral Health Literacy of Legal Parents of Elementary School Children

Literacia em Saúde Oral de Encarregados de Educação de Crianças nos Primeiros Anos do Ensino Básico

Alfabetización en Salud Bucodental Entre los Tutores de Niños de Escuela Primaria

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Abstract

Background: Oral health is a global public health problem. In Portugal, 6.4 % of children do not have their needs met in this area.
Objectives: To characterize the oral health literacy of legal parents of children in 1st and 2nd grade and assess their perception of their oral health literacy level.
Methodology: An observational, cross-sectional, descriptive study was conducted with a non-probability sample of 84 legal parents. Data were collected using an online questionnaire administered by the research team and validated by experts.
Results: Most of the participants were mothers (89.3%), considered themselves to have a sufficient level of oral health literacy (91.7%), and less than half (46.4%) had received oral health education or information (47.6%). All the children brushed their teeth. The majority had never had an oral health problem (72.6%) and had sought medical care (81%). However, the study revealed some shortcomings in terms of oral hygiene and tooth brushing.
Conclusion: While parents perceive themselves as having oral health literacy, gaps remain in some areas.

Keywords: children; literacy; oral health; parenting; public health; community health nursing

Resumo

Enquadramento: A saúde oral representa um problema de saúde pública mundial. Em Portugal 6,4% das crianças têm necessidades insatisfeitas nesta área.
Objetivos: Caraterizar a literacia em saúde oral de encarregados de educação (EE) de crianças que frequentam o 1º e 2.º anos do ensino básico e avaliar a sua perceção acerca do seu nível de literacia em saúde oral.
Metodologia: Estudo observacional, transversal, descritivo com uma amostra não probabilística de 84 EE, através de questionário *online* realizado pela equipa de investigação e validado por peritos.
Resultados: A maioria dos participantes eram mães (89,3%), consideravam ter nível suficiente de literacia em saúde oral (91,7%) e menos de metade (46,4%) tinha formação ou informação na mesma (47,6%). A totalidade das crianças escovava os dentes. A maioria nunca apresentou problemas de saúde oral (72,6%) e foi a consulta (81%). Porém o estudo reflete algumas lacunas ao nível da higienização da cavidade oral e da escova de dentes.
Conclusão: Os EE percecionam ter literacia em saúde oral, contudo apresentam lacunas em algumas áreas.

Palavras-chave: crianças; alfabetização; saúde bucal; poder familiar; saúde pública, enfermagem em saúde comunitária

Resumen

Marco contextual: La salud bucodental es un problema de salud pública mundial. En Portugal, el 6,4% de los niños tienen necesidades no satisfechas en este ámbito.
Objetivos: Caracterizar la alfabetización en salud bucodental de los padres de niños que cursan 1.º y 2.º de primaria y evaluar su percepción del nivel de alfabetización en salud bucodental.
Metodología: Estudio observacional, transversal y descriptivo con una muestra no probabilística de 84 EE, mediante un cuestionario en línea realizado por el equipo de investigación y validado por expertos.
Resultados: La mayoría de las participantes eran madres (89,3%), consideraban tener un nivel suficiente de conocimientos sobre salud bucodental (91,7%) y menos de la mitad (46,4%) tenían formación o información sobre salud bucodental (47,6%). Todos los niños se cepillaban los dientes. La mayoría nunca había tenido un problema de salud bucodental (72,6%) y había acudido a una consulta (81%). Sin embargo, el estudio refleja algunas deficiencias en cuanto a la higiene de la cavidad bucal y el cepillado de los dientes.
Conclusión: Los EE perciben que tienen conocimientos sobre salud bucodental, pero presentan lagunas en algunas áreas.

Palabras clave: niños; alfabetización; salud bucodental; poder familiar; salud pública, enfermería de salud comunitaria

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Introduction

Oral diseases are a major public health problem and a priority area, affecting almost 3.5 billion people, with consequences such as physical symptoms, functional limitations, and detrimental impact on emotional, mental, and social well-being (World Health Organization [WHO], 2022).
Dental caries is the most common noncommunicable oral disease worldwide and is often left untreated (Silva et al., 2022). Risk factors in children include poor oral hygiene, unhealthy dietary habits, and poor oral health behaviors by parents and educators (Silva et al., 2022).
Caregivers have the primary responsibility for providing care to children. Parents' knowledge of oral health in early childhood is extremely important, as behaviors in this area depend solely on them in the early years of life (WHO, 2022; Sowmya et al., 2021).
School health teams play a crucial role in training parents and educators (Silva et al., 2022). Community and public health nurses are responsible for empowering groups and communities, spearheading community-based interventions and health projects (Ramos et al., 2019).
Therefore, this study aims to characterize the oral health literacy of parents of children in 1st and 2nd grades of elementary school and assess their self-perceived level of oral health literacy.

Background

Oral health is defined as the state of the mouth, teeth, and orofacial structures that enables essential functions, such as breathing, eating, speaking, smiling, and socializing. Oral health is integral to general health and follows the life course, impacting well-being and quality of life and reflecting general health (World Dental Federation [FDI], 2020; WHO, 2021). Dental caries is a chronic pathology and the most common in children and adolescents, and it tends to increase with age (Silva et al., 2022).
In the European Union, 4.4% of children living in households with children did not receive the dental care they needed, with the highest rate (7.1%) for children living in single-parent families. Portugal was the fifth country in the European Union with the highest percentage of children with unmet oral health needs at 6.4% (Eurostat, 2023).
Portugal has developed several programs aimed at reducing oral diseases and promoting oral health and oral health literacy (Direção-Geral da Saúde, 2021).
Oral health literacy encompasses the ability to obtain, process, and understand basic health information and services necessary to make appropriate decisions on oral health while maintaining and promoting good health and well-being (American Dental Association [ADA] 2022a; WHO, 2021). Health literacy encompasses the knowledge, skills, and motivation needed to make informed decisions about one's own health and the health of those under one's care, with a focus on disease prevention and health promotion that contributes to maintaining or improving quality of life (Sørensen, 2019).
The majority of the population has inadequate or problematic oral health literacy. Despite having oral health skills, particularly with regard to oral hygiene behaviors such as tooth brushing, people have difficulty understanding, communicating, or critically practicing oral health, which translates into low rates of adherence to other health-promoting behaviors such as disease prevention, self-care, and decision-making (Ordem dos Médicos Dentistas [OMD], 2022; Veladas, 2022).

Research question

What are the characteristics of the oral health literacy level of parents of children in 1st and 2nd grade? How do parents of children in 1st and 2nd grade perceive their level of oral health literacy?

Methodology

An observational, cross-sectional, descriptive study was conducted. The target population was the parents of children in 1st and 2nd grade belonging to a school group in central Portugal, with approximately 500 potentially eligible participants. A non-probability convenience sample was used, with inclusion criteria of consenting to participate in the project, being a volunteer in the project, being a parent of a child in 1st and/or 2nd grade, and understanding and being able to read and write Portuguese. The sample consisted of 84 parents who met the inclusion criteria, which made it possible to attempt to reduce confounding biases (Menezes, 2023). The study started in May 2023 and ended in March 2024. It was approved by the Health Ethics Committee of the Regional Health Administration of Central Portugal (ARSC; Process no. 125/2023).
Data were collected using an online questionnaire. The questionnaire was distributed to parents during January and February 2024 via the school group and the respective 1st- and 2nd-grade teachers.
The first page of the questionnaire consisted of a brief presentation of the study, explaining the objectives, and the participant's informed consent, ensuring compliance with the General Data Protection Regulation and guaranteeing the security, protection, and confidentiality of the data provided.
Once the above aspects had been checked and validated, the participants moved on to the questionnaire itself, which consisted of four parts. The research team developed the questionnaire, which was then validated by a multidisciplinary team of experts. This team was made up of professionals from the fields of nursing, medicine, and oral health, with a high academic degree (master's or doctorate) and research experience in the field (Nora et al., 2017). The following aspects were taken into account in the development of this tool: gathering essential information, reviewing documents, choosing the type of questionnaire, writing and ordering the questions, formatting, writing an instruction manual, carrying out

a pilot test, training the interviewers, and validating the questionnaire (Nené & Sequeira, 2022). The cultural reality of the Portuguese population was also taken into account. The data collection instrument was designed to guarantee validity, reliability, practicality, and responsiveness. To ensure validity, content validity (the clarity of the questions) and semantic validation (the suitability of the language for the respondents) were employed. Reliability was ensured by the consistency of the results over time and across different observers. The questionnaire was found to be practical due to its ease of interpretation, the ease of collecting results, and the absence of financial cost. Additionally, the questionnaire was found to be dimensional (heterogeneous views) and responsive (ability to measure small changes) (Vilelas, 2017).

The first part included sociodemographic and educational characterization, consisting of nine questions (one open-ended, seven multiple-choice, and one dichotomous) to characterize the sample and sociodemographic variables (gender, age, family relationship, nationality, child's school, child's age, and number of household members) and educational variables (level of education and oral health education or information). The second part included seventeen multiple-choice questions on oral health literacy within the family environment, with the following variables (tooth brushing, age at which tooth brushing started, frequency of tooth brushing, person who brushes the teeth, amount of toothpaste used for tooth brushing, fluoride concentration of toothpaste, moments of oral hygiene, time spent on tooth brushing, parts of oral hygiene, procedure after tooth brushing, products used in addition to toothpaste, characteristics of toothbrush, frequency of changing toothbrush, procedure for cleaning toothbrush, drinking or eating before going to bed without brushing teeth, foods harmful to oral health, and main causes of oral health problems in children). The third part concerned the characterization of oral health literacy in health-seeking behaviors and consisted of seven questions (three mandatory dichotomous questions and four non-mandatory multiple-choice questions). The variables used in this part were: presence of an oral health problem, the child having visited a dentist or oral hygienist, the reason for going to the dentist or oral hygienist, the reason for not going to the dentist or oral hygienist, receiving a dental voucher or referral to an oral hygienist, whether or not the dental voucher was used, and the reason for not using the dental voucher.

The fourth part consisted of a dichotomous question about perceived oral health literacy.

Oral health literacy is based on the concept of making informed decisions based on a person's knowledge, skills, and motivation regarding their own oral health and the oral health of those they care for (ADA, 2022a; WHO, 2021; Sørensen, 2019).

Descriptive statistics (frequency, percentage, mean, standard deviation, minimum, and maximum) were used to analyze data with IBM SPSS Statistics version 29.0.

Results

Sociodemographic and educational characterization of the sample

Most of the participants were female (91.7%), mothers (89.3%), and Portuguese (71.4%), with a mean age of 38.3 ± 6.8 years (ranging from 23 to 68 years), with three parents not answering the age question. In terms of education level, more than a third had a bachelor's degree (34.5%), and less than half had oral health education or information (46.4%). The mean number of household members was 3.8 ± 1.0 (ranging from 2 to 8). The children were half male (50%) and half female (50%) and had a mean age of 6.7 ± 0.1 (ranging from 6 to 8 years), although one parent did not answer the question, as shown in Table 1.

Table 1

Sociodemographic and educational characterization of the sample (n = 84)

Sociodemographic/educational variables	*N* (%)	*Min-Max*	*M* ± *SD*
Parent's gender (*n* = 84)			
Female	77 (91.7)		
Male	6 (7.1)		
Did not answer	1 (1.2)		
Parent's family relationship (*n* = 84)			
Mother	75 (89.3)		
Father	7 (8.3)		
Grandmother	2 (2.4)		
Parent's nationality (*n* = 84)			
Portuguese	60 (71.4)		
Other	24 (28.6)		
Parent's age (years; *n* = 81)		23-68	38.3 ± 6.8
Parent's education level (*n* = 84)			
1st-4th grade	5 (6.0)		
5th-6th grade	1 (1.2)		
7th-9th grade	17 (20.2)		
10th-12th grade	23 (27.4)		
Bachelor's degree	29 (34.5)		
Master's degree	8 (9.5)		
Doctoral degree	1 (1.2)		
Parent's oral health education or information (*n* = 84)			
Yes	39 (46.4)		
No	40 (47.6)		
I do not know	5 (6)		
Household members (*n* = 84)		2-8	3.8 ± 1.0
Child's gender (*n* = 84)			
Female	42 (50)		
Male	42 (50)	6-8	
Child's age (*n* = 83)			6.7 ± 0.1

Note. *N* = Sample size; *Min* = Minimum; *Max* = Maximum; *M* = Mean; *SD* = Standard-deviation.

Characterization of oral health literacy within the family environment

The data obtained showed that all children brushed their teeth (*n* = 84; 100%), and the majority brushed twice or more a day (*n* = 59; 70.2%). Most parents (*n* = 49; 58.3%) reported that the child rarely went to bed without brushing their teeth, followed by never (*n* = 29; 34.5%). They stated that tooth brushing was mostly done by the adult or by the child under supervision if they had already acquired manual dexterity (*n* = 57; 67.9%). Regarding the times of day when hygiene should be performed, the majority reported at least two times (n = 67; 80%), at least one of which was before bedtime (*n* = 64; 76.2%). Regarding the age at which they started brushing, the most common answer (*n* = 36; 42.9%) was after the first tooth appeared. Regarding the size of the paste, most parents (*n* = 62; 73.8%) reported the size of a pea or up to about 1 cm. Regarding the concentration of fluoride in the child's toothpaste, the majority of the answers were evenly divided between "I do not know" (*n* = 33; 39.5%) and a concentration of 1000-1500 parts per million (ppm; *n* = 33; 39.5%). Regarding the amount of time the children usually took to brush their teeth, the responses ranged from 1 to 2 minutes (*n* = 37; 44%). Regarding the parts of the oral cavity that were cleaned, the majority (*n* = 42; 50%) said teeth and tongue. Regarding the procedure the child followed after brushing, the majority (*n* = 42; 50%) said that they rinsed their mouth with water and 'spat out' the excess, while only 13 (15.5%) said that they 'spat

out' the excess. In terms of oral hygiene products used, apart from toothpaste, most parents (*n* = 41; 48.8%) did not use any, while the most commonly used products were mouthwash (*n* = 21; 25%) and dental floss/tape (*n* = 12; 14.3%). Regarding the most appropriate type of toothbrush for the child, most parents (*n* = 38; 45.2%) responded that the toothbrush head size should be appropriate for the child's age. When asked how often the toothbrush should be replaced, most parents replied every 3 months (*n* = 35; 41.7%). Regarding toothbrush hygiene, most parents (*n* = 53; 63.1%) said that they rinse the toothbrush with water after brushing. There was almost unanimous agreement on sugar as a food harmful to oral health (*n* = 83; 98.8%). Regarding the main causes of oral health problems, the most common answer was poor oral hygiene and sugar consumption (*n* = 8; 9.5%).

Characterization of oral health literacy related to health-seeking behavior

Most parents thought their child had never had any oral health problems (72.7%) and had taken their child to a dental hygienist or dentist (81%). Parents' main reasons for visiting the dentist were routine (34.3%) and tooth decay (10.2%), and one parent did not answer the question. The main reason given by parents who had never taken their child to the dentist was that they had never felt the need to do so (46.7%), with one parent not answering the question. Most parents received the dental voucher (58.3%) and used it (67.3%). However, the study covered children aged 6 years (42.2%), so they had not yet received a dental voucher from the 7-year-old cohort. The main reason given by parents for not using the dental voucher they received was that they did not feel they needed it (28.6%), as shown in Table 2.

Table 2

Characterization of oral health literacy related to health-seeking behaviors

Characterization of health-seeking behaviors	*N* (%)
The child has had an oral health problem (*n* = 84)	
Yes	17 (20.2)
No	61 (72.7)
I do not know	6 (7.1)
The child has gone to an oral hygienist or dentist (*n* = 84)	
Yes	68 (81)
No	16 (19)
Reason for going to an oral hygienist/dentist (*n* = 67)	
Routine	23 (34.3)
Pain	3 (4.5)
Caries	7 (10.2)
Trauma	1 (1.5)
Use of dental voucher	4 (6)
Other	5 (7.5)
Routine and pain	1 (1.5)
Rotine and trauma	2 (3)
Routine and caries	3 (4.5)
Routine and use of dental voucher	4 (6)
Rotine and other	4 (6)
Pain and caries	2 (3)
Trauma and caries	1 (1.5)
Caries and other	1 (1.5)
Routine, caries, and use of dental voucher	2 (3)
Routine, use of dental voucher, and other	2 (3)
Pain, caries, and use of dental voucher	1 (1.5)
Routine, pain, caries, use of dental voucher, and referral to oral hygienist	1 (1.5)
Reason for not going to an oral hygienist/dentist (*n* = 15)	
Not feeling the need	7 (46.7)
Lack of money	4 (26.7)
Other	2 (13.3)
Not feeling the need and lack of money	1 (6.7)
Lack of money and other	1 (6.7)
Received dental voucher or referral to oral hygienist (*n* = 84)	
Yes	49 (58.3)
No	35 (41.7)
Used dental voucher or referral to oral hygienist (*n* = 49)	
Yes	33 (67.3)
No	14 (28.6)
I do not know	2 (4.1)
Reason for not using the dental voucher (*n* = 14)	
Forgetfulness	3 (21.4)
Not considering it useful	4 (28.6)
The dentist does not have an agreement with the health insurer	3 (21.4)
The voucher expired	3 (21.4)
Used a health insurance plan or subsystem	1 (7.2)

Note. *N* = Sample size.

Characterization of perceived oral health literacy
Most parents considered their level of oral health literacy to be sufficient (n = 77; 91.7%).

Discussion

This study characterized parents' oral health literacy and how they perceive it. Most of the parents who participated in the study were Portuguese mothers with a bachelor's degree, which corroborates another study (Ferreira et al., 2020). Less than half of the parents reported having received oral health education or information, which is consistent with the OMD study (2022).
In terms of oral health literacy within the family environment, tooth brushing was a common daily practice and was performed at least twice a day, mostly before bedtime, in line with national recommendations and other reported studies (Ferreira et al., 2020; Ministério da Saúde, 2021; OMD, 2022). Tooth brushing was mostly performed by the adult or child under supervision if they had already acquired manual dexterity, in line with national guidelines and other studies (Ferreira et al., 2020; Ministério da Saúde, 2021). Regarding the amount of toothpaste used, most responses were the size of a pea or up to about 1 cm, which is in line with the recommendations of other authors (Ferreira et al., 2020; Ministério da Saúde, 2021). The age at which tooth brushing begins, which should start after the first tooth appears, had results below those recommended by the Ministry of Health (Ministério da Saúde, 2021) and the OMD (2021). The recommended fluoride concentration of 1,000 to 1,500 parts per million (ppm) and the appropriate 2-minute brushing time also had lower results than those recommended (Ferreira et al., 2020; Ministério da Saúde, 2021; OMD, 2021). Regarding the parts of the oral cavity that should be cleaned, the results obtained were also not in line with national recommendations, which recommend that brushing should cover all internal, external, and chewing surfaces, as well as the tongue (FDI, 2020). The procedure to adopt after brushing is to only spit out excess toothpaste and not rinse with water, which did not correspond to the results obtained in the study (Ministério da Saúde, 2021; OMD, 2022).
Regarding the products used in addition to toothpaste for oral hygiene, most did not use them, as shown in the OMD study (2022), which is not in line with national guidelines that recommend complementing this with the use of dental floss or tape, a toothbrush or other product that helps to remove plaque in the interdental spaces (Ministério da Saúde, 2021; OMD, 2022).
With regard to questions related to the toothbrush, most answers were incomplete. The toothbrush should have soft or medium bristles, suitable for the size of the child (Ministério da Saúde, 2021; OMD, 2022) and should be replaced every 3 months, or more often if the bristles are damaged (FDI, 2020; OMD, 2021), which did not correspond to the results of the study. Toothbrush cleaning also received low scores, as it should be rinsed with water after brushing, left to air, and stored in an upright position (ADA, 2022b). Good practices point to the adoption of a healthy diet as a preventive measure for good oral health, recommending the avoidance of excessive sugar consumption and good oral hygiene (FDI, 2020). The study showed that parents identified sugar as a harmful food but had little knowledge of the main causes of oral health problems.
Most parents believed that their child had never had oral health problems, which was supported by another study (Ferreira et al., 2020).
Almost all parents have taken their child to an oral hygienist or dentist, according to a study conducted by OMD (2022). The main reasons for going to the dentist were routine and caries, which is in line with the OMD study (2022). On the other hand, the reasons given for not going to the dentist were not feeling the need and lack of money, which corroborated the OMD (2022).
Parents who received and used the dental voucher were consistent with the OMD study (2022). Parents who received but did not use the dental voucher said that the main reasons were that they did not feel the need, followed by forgetfulness, the dentist did not have an agreement with the health insurer, and the voucher had expired, which was in line with the study conducted by Filipe and Aguiar (2018).
In addition to characterizing parents' oral health literacy, the results obtained showed that although they considered their literacy to be adequate, there were still many areas that needed intervention. Most parents reported that their child had no oral health problems, but more than one-third responded tooth caries, pain, and trauma as reasons for taking their child to the dentist.
According to the above-mentioned studies, the Portuguese population has oral health literate but in a low level, due to difficulties in understanding, communicating, or critically applying oral health information, resulting in low adherence rates in terms of preventive behaviors, self-care adherence, and decision-making (OMD, 2022; Veladas, 2022).
To improve this problem, educational interventions are needed to reach children, parents, and health care providers in the form of health promotion programs that provide adequate information about dental care, including practices and attitudes (Sree et al., 20-22).
The study had limitations such as a small sample, which limits the generalizability of the results and the non-representativeness of the sample for Portuguese parents, and the lack of a validated questionnaire that assessed the intended literacy issues and was adapted to the cultural reality of the population studied.
According to the WHO (2022), diseases and problems related to oral health can and should be prevented from childhood, starting in the family. Therefore, it is important to apply preventive measures from an early age, and it is essential to educate the community and the family, especially among the most vulnerable populations (with low education and/or economic resources). Therefore, strategies to achieve health gains and improve oral health include valuing the adoption of healthy and appropriate behaviors and health literacy, which are essential for the

prevention of oral diseases and the promotion of oral health (FDI, 2020). Partnerships are also crucial as they increase dissemination and improve outreach to more remote populations (WHO, 2022). Health education is the most appropriate approach to prevent oral disease and can reach all children and parents (Sree et al., 2022).

Conclusion

This study aimed to characterize oral health literacy and how it is perceived and found low levels of literacy on some topics, which reinforces its importance in defining and implementing strategies to respond to this need. The study revealed important gaps in oral hygiene, such as the age at which to start brushing teeth, the time needed for proper hygiene, the parts to be cleaned, the concentration of fluoride in toothpaste, the products to be used, and the procedure after brushing teeth. With regard to toothbrushes, the gaps were related to their characteristics, proper cleaning, and frequency of replacement. Although parents identified sugary foods as the most harmful, they did not correctly identify the main causes of oral health problems.

Most parents had taken their child to the dentist, with routine being the main motivation. Parents who had never taken their child to the dentist cited not feeling the need and lack of money as the main reasons. Dental vouchers were received and used by the majority of parents.

As there are few studies on oral health literacy among parents in the literature, this study aims to respond to this gap and suggests that more studies should be conducted to gain a better understanding of the phenomenon.

As a result of this study, a community intervention project is planned to improve parents' oral health literacy. The school health team responsible for the school group where the study took place is also developing training in this area for children, with the intention of extending this to teachers in the future.

In this way, the training and empowerment of parents can strengthen skills that will enable them to improve oral health literacy, which will translate into better oral health care for themselves and their children, and therefore health gains.

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Writing – review and editing: Oliveira, A. M., Menino, E. P.

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