



Knowledge of pediatricians and the importance of interdisciplinarity in attention to oral health in early childhood

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ABSTRACT. The objective of this study was to evaluate the knowledge of pediatricians on the integrality of attention to oral health in early childhood. A cross-sectional study was conducted with a sample consisting of 70 doctors, working in public and private services, in the city of Belém, state of Pará, Brazil. Data were collected using a questionnaire with approaches on: the professional profile; the knowledge of oral health of children; the use of fluoride; and self-perception on knowledge of oral health. A descriptive analysis of the data was performed, and the association between variables was verified with the Chi-square test, with $p = 0.05$. The average age of respondents was 41 years. Most professionals were females (88.57%) and featured more than 20 years of professional experience (38.57%). In general, most pediatricians answered satisfactorily the questions related to knowledge of children's oral health. However, when questioned about the knowledge of the use of fluoride, most professionals (92.86%) presented outdated knowledge that could result in inappropriate conduct. It was concluded that most pediatricians have knowledge of oral health promotion, although some concepts and conducts should be updated, especially the importance of fluorides in the control of tooth decay.

Keywords: tooth decay, fluorides, pediatrics, prevention.

Conhecimento de médicos pediatras e a importância da interdisciplinaridade na atenção em saúde bucal na primeira infância

RESUMO. O objetivo deste estudo foi avaliar os conhecimentos de médicos pediatras para integralidade da atenção em saúde bucal na primeira infância. Realizou-se um estudo transversal, com amostra constituída por 70 médicos, atuantes nos serviços público e privado, na cidade de Belém, Pará. Os dados foram coletados por meio de questionário com abordagens sobre o perfil do profissional; o conhecimento em saúde bucal da criança; o uso do flúor e a autopercepção do conhecimento de saúde bucal. Executou-se análise descritiva dos dados e para associação entre variáveis utilizou-se o teste do Qui-Quadrado, com $p=0,05$. A idade média dos entrevistados foi de 41 anos. A maioria dos profissionais pertencia ao sexo feminino (88,57%) e apresentava mais de 20 anos de experiência profissional (38,57%). Em geral, a maioria dos pediatras respondeu de forma satisfatória as perguntas relacionadas ao conhecimento sobre saúde bucal da criança. Entretanto, quando questionados a respeito dos conhecimentos sobre o uso do flúor, a maioria dos profissionais (92,86%) apresentou conhecimento desatualizado, podendo resultar em condutas inadequadas. Concluiu-se que a maioria dos pediatras possui conhecimento sobre promoção de saúde bucal, porém alguns conceitos e condutas necessitam ser atualizados, principalmente quanto à importância dos fluoretos no controle da cárie dentária.

Palavras-chave: cárie dentária, fluoretos, pediatria, prevenção.

Introduction

Oral health care in the first years of life is of fundamental importance, and can mean the difference between maintaining a favorable condition, or the need for invasive treatment, which can often result in premature loss of dental elements (Paiva, Bezerra, & Toledo, 1992; Maltz & Lacerda, 2001).

In Brazil, dental cavities in preschoolers still feature great prevalence (Abanto et al., 2011). Data

from the national epidemiological survey on oral health showed prevalence of 26.85% in the experience with tooth decay in children between the ages of 18 and 36 months (Projeto SB Brasil, 2004) and 53.1% in 5-year-old children, showing that the index of decayed or lost teeth, and fillings (ceo-d index) at this age was 2.43, with the component decay being responsible for over 80% of this index (Projeto SB Brasil 2010, 2012).

The early loss of deciduous teeth can cause negative functional consequences to the stomatognathic system in children and reflect on their quality of life (Leal, Bronkhorst, Fan, & Frencken, 2012).

Tooth decay in early childhood is considered a serious health problem, and is the result of a combination of risk factors (individual, social, economic and cultural), triggering a greater likelihood of subsequent development of decay in deciduous and permanent dentition, in addition to local, systemic, psychological and social complications, affecting health as a whole (Losso, Tavares, Silva, & Urban, 2009). Studies show that children between three and five years of age with early childhood tooth decay feature commitment in body growth, both in stature and weight, when compared to children of the same age group, free of caries, possibly associated with painful symptoms during feeding (Ayhan, Suskan, & Yildirim, 1996). Early childhood tooth decay is defined as the presence of one or more deciduous teeth with caries (with or without cavities), lost (by caries) or restored before 71 months of life and, as early severe tooth decay, with any sign of carious surface in children under three years old (Scalioni et al., 2012).

In this context, the adoption of preventive and educational measures should be focused on children and their guardians as early as possible, when a multidisciplinary approach is important, with integration between oral and general health.

One of the important preventive measures responsible for the reduction of the prevalence of tooth decay is the use of fluorides in their different forms of presentation, whether they are added to toothpastes, restorative materials, food and water from public supply (Featherstone, 2000).

The effectiveness of fluoride as an inhibitor of tooth decay is scientifically known through its ability to activate the precipitation of minerals lost by the dental structure. The great advantage of fluoride over other preventive agents concerns the maintenance of its action even in very low concentrations. Thus, it is possible to keep its physical-chemical effect for a few hours after brushing with fluorinated toothpastes, for example, or constantly, by the low concentration of fluoride that returns to the saliva after ingesting fluorinated water or food (Kidd & Fejerskov, 2011).

There is a direct relationship between increasing the amount of fluoride ingested and the subsequent incidence and severity of fluorosis, which is a disorder of maturation in formation of enamel. Considering the timeline of the mineralization of permanent teeth, the period for greatest risk of

occurrence encompasses the age of 15 to 24 months for boys and 21 to 30 months for girls (Evans & Darvell, 1995), where major criteria for their use are indispensable, and thus is fundamental its indication by a skilled professional.

Scientific evidence shows that parents seek systematically the pediatrician in the first years of life; however, this is not the case with the pediatric dentist (Pastor & Rocha, 2003; Brickhouse, Unkel, Kancitis, Best, & Davis, 2008). The National Research of Domicile Samples of 2008 showed that 66.7% of individuals aged zero to six years never sought dental care (Peres et al., 2012).

The need for interdisciplinarity within the professions related to this age group has often been reported in the literature. According to Camargo et al. (2012) the actions for health care in the first year of life must be performed in such a way and the guidelines on children's oral health should not be the sole task of the dentist, but of all the professionals who have contact with the child. All members of health teams, when qualified, can guide the parents and/or those responsible for the children on oral care in early childhood (Reis, Luvison, & Faustino-Silva, 2015).

In this sense, the pediatrician plays an important role in the maintenance of oral health, and may give directions about habits, attitudes and actions for a healthy life, as this professional has the opportunity to contact parents/guardians right after the baby is born and monitor the growth and development of the child, keeping frequent contact with the infant aged 0 to 3 years (Balaban, Aguiar, Araújo, & Dias-Filho, 2012).

Thus, the objective of this study was to assess the profile of the pediatricians who work in the city of Belém, State of Pará, Brazil, and evaluate the knowledge of these professionals regarding their conduct on oral health orientation, use of fluoride and self-perception on oral health knowledge, in view of the integrality of attention in early childhood.

Material and methods

For this study, due to involvement of individuals, and according to the National Health Council Resolution 466/2012 (Brasil, 2012), the project was assessed and approved by the Research Ethics Committee of the Institute of Health Sciences of the Federal University of Pará, under number 961.343.

This is a cross-sectional study, in which the population was composed of 227 pediatricians registered in the Regional Council of Medicine, Pará Section. To obtain the names and addresses, data

from the Regional Council of Medicine (CRM-PA) was used as source. Exclusion criteria involved professionals not involved in clinical practice, those who did not attend in the addresses registered in CRM-PA and those who did not sign the term of Informed Consent (TCLE in Portuguese).

The data were collected from January to March 2015 by the researchers, by means of a questionnaire composed of 17 questions, with open and closed questions. The questionnaire was divided into four sections: 1) professional profile, which contained personal questions, as gender, professional performance, type of training and active sector; 2) knowledge of oral health of children; 3) knowledge about the use of fluorine and 4) Self-perception on knowledge of oral health. The contact with the doctor, most of the time, was made through the secretary, who delivered an envelope containing the questionnaire and the TCLE to the professional. After approximately fifteen days the researchers returned to collect the questionnaire and the TCLE signed by the participant.

After the collection and organization of data in a Microsoft Office Excel 2010 worksheet, a descriptive analysis was performed, being the variables described by means of the absolute and relative frequencies. For association between variables, the Program BioEstat version 5.0 was used, applying the Chi-square test with a significance level of 5%, and level of confidence of 95%.

Results

Of the 227 pediatricians registered in CRM-PA, 63 were excluded in accordance with the criteria described above, resulting in a final total of 164 pediatricians. 70 doctors returned the questionnaire, resulting in a response rate of 42.68%, similar to the study by Freire, Macedo and Silva (2000).

The average age of the professionals interviewed was 41 years, ranging from 27 to 75 years; of the total, 88.57% were female and 11.43% male. When asked about the place of work, 55.71% worked in the public service, 28.57%, worked only in private practice and 15.71% acted both in public service and private practice. In relation to the time since graduation, 25.71% were in the profession for less than 5 years, 12.85% between 5 and 10 years, 22.85% between 11 and 20 years and 38.57% have been acting professionally for over 20 years (Table 1).

Table 1. Activity profile of pediatricians in the city of Belém, Pará State, 2015.

Profile	n	%
Gender		
Male	8	11.43
Female	62	88.57
Sector of Activity		
Public	39	55.71
Private	20	28.57
Public and Private	11	15.71
Time since Graduation		
Less than 5 years	18	25.71
Between 5 and 10 years	9	12.85
Between 11 and 20 years	16	22.85
More than 20 years	27	38.57
Total	70	100.0

Table 2 depicts the pediatricians' knowledge regarding the etiological factors of tooth decay. It was observed that 100% of the professionals reported poor hygiene as one of the determining factors for the development of the disease, 88.57% of them reported the addition of sugar to the milk, 81.42% mentioned the addition of honey to the milk, 77.14% cited the frequency of use of the bottle and 68.57% mentioned the frequency of feedings at night.

Table 2. Knowledge of pediatricians regarding the etiological factors of tooth decay. Belém, Pará State, 2015.

Etiological Factors	n	%
Frequency of use of bottle		
Yes	54	77.14
No	16	22.85
Lack of hygiene of teeth		
Yes	70	100
No	0	0
Addition of sugar to milk/cream/porridge		
Yes	62	88.57
No	8	11.42
Addition of honey to milk/cream/porridge		
Yes	57	81.42
No	13	18.57
Frequency of feedings (breast or bottle) at night		
Yes	48	68.57
No	22	31.42
Total	70	100.0

Table 3 shows that most professionals (60.0%) reported referring the child for the first appointment with the pediatric dentist before the 1st year of life. However, 2.86% of the professionals interviewed, with up to 10 years since graduation, do not do referrals to pediatric dentists. Nevertheless, these data did not show statistical significance (p = 0.3383). Regarding the indication of toothpaste, 54.28% indicate toothpaste without fluoride, and most of them feature more than 10 years since graduation. These significant results (p = 0.0146) show that the time since graduation is a factor for decision between fluoridated toothpastes or not (Table 3).

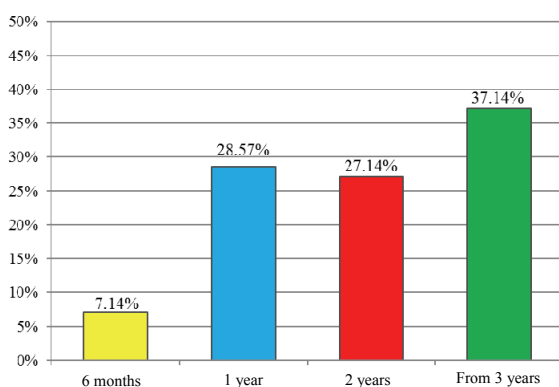
Table 3. Relation between time since graduation, conducts, knowledge and self-perception of pediatricians about dental health. Belém, Pará State, 2015.

		Time since graduation				Total	
		Up to 10 years		More than 10 years		n	%
		n	%	n	%		
Referral to consultation with pediatric dentist (p = 0.3383)*	Before 1 year of age	15	55.55	27	62.79	42	60.00
	After the 1 st year of age	9	33.34	14	32.56	23	32.86
	After 2 years of age	1	3.70	2	4.65	3	4.28
	Do not refer	2	7.41	0	0.00	2	2.86
Indication of toothpaste (p = 0.0146)*	With fluoride	9	33.33	9	20.93	18	25.71
	Without fluoride	9	33.33	29	67.44	38	54.28
	Do not indicate	9	33.33	5	11.63	14	20.00
Prescription of fluoride supplements (p = 0.6828)*	Yes	1	3.70	4	9.30	5	7.14
	No	26	96.30	39	90.70	65	92.86
Knowledge about the toxic effects of fluoride (p < 0.0001)*	Yes	5	18.52	36	83.72	41	58.57
	No	22	81.48	7	16.28	29	41.43
Self-perception in relation to knowledge of oral health (p = 0.0012)*	Excellent	0	0.00	2	4.65	2	2.86
	Good	3	11.11	22	51.16	25	35.71
	Reasonable	22	81.48	19	44.19	41	58.57
	Bad	2	7.41	0	0.00	2	2.86
Total		27		43		70	100.0

*Chi-square Test ($\alpha = 0.05$).

Similarly, the toxic effects of fluoride are known to 58.57% of professionals, being 83.72% of pediatricians with more than 10 years since graduation ($p < 0.0001$). It was noted that regardless of time since graduation, 92.86% of pediatricians do not prescribe fluoride vitamin supplements to their patients ($p = 0.6828$).

Figure 1 highlights the conduct on recommendation about the beginning of the use of fluoridated toothpastes by pediatricians. Most of them (37.14%) recommend using it only after 3 of age, whereas 28.57% recommend the use from 1 year of age, 27.14% from 2 years and only 7.14% indicate the use from 6 months of age.

**Figure 1.** Percentage of recommendation of pediatricians for the beginning of use of fluoridated toothpaste. Belém, Pará State, 2015.

When asked about their self-perception in relation to knowledge of oral health, 58.57% of the professionals reported to have a reasonable level of knowledge, especially those with up to 10 years

since graduation (81.48%). Most of the pediatricians with more than 10 years since graduation (51.16%) reported to have good knowledge of oral health (Table 3). However, 91.43% of the professionals stated they need to acquire more knowledge on the subject.

Discussion

In the literature, it is frequent to mention the importance of the pediatrician being able to the direct on the prevention of dental caries in early childhood, in view of the regular contact this professional has with the child since birth. These professionals are the first to be sought by parents in case of doubts, and so they exert considerable influence on advising about healthy habits, and thus setting up a potential impact on oral health of children.

In this study, only 7.14% of pediatricians had adequate knowledge about all topics covered in the questionnaire, related to the moment of referral to pediatric dentist (American Academy of Pediatrics, 2009), the use of fluoride (American Academy of Pediatrics, 2009; Cury & Tenuta, 2014) and etiological factors of tooth decay (American Academy of Pediatrics, 2009; Silva, Basso, & Locks, 2010). This result, which represents a deficient knowledge, was similar to that of Lewis, Grossman, Domoto and Deyo (2000), who found only 9% of correct answers, and Reis et al. (2015) who reported only 18.8% of all questions answered correctly. Thus, the results showed that knowledge of pediatricians still is below expectations, whereas the questions were accessible and objective, for which it

was only necessary to have a basic knowledge of the subject.

Taking into consideration that these professionals have a fundamental role in the promotion of oral health in early childhood, it is essential that correct and up-to-date information is available on the main problems that may compromise oral health of children, and on ways to prevent them (Lewis et al., 2000), making the multidisciplinary approach indispensable, with an objective of integral attention to offer better health conditions to children.

As described in the literature, it was observed that the pediatricians who participated in the study were predominantly women (Nunes, Brusco, Brusco, Perussolo & Patussi, 2011; Soares et al., 2013). The majority of respondents were professionals working in the public service, with an average age of 41 years and with over 20 years of experience in pediatrics (Table 1). Similar results were found in the study by Soares et al. (2013).

The results showed that all the pediatricians interviewed mentioned the lack of hygiene as one of the determining factors for the occurrence of tooth decay; however, not all related feedings at night and that the addition of carbohydrate to the diet as a factor for the formation of carious lesions (Table 2). These results are similar to those of the study by Freire et al. (2000), where most of the pediatricians interviewed (46.9%) related tooth decay to a combination of bacterial and dietary factors, and 28.8% only to bacterial factors. It is known that tooth decay has multifactorial etiology, where the diet assumes considerable importance. The habit of feeding or consuming sugary drinks before falling asleep or during sleep, with no proper oral hygiene, is detrimental in terms of tooth decay activity. The development of carious lesions depends on the presence of pathogenic microorganisms in the mouth, fermentable carbohydrates that pathogens metabolize in organic acids and dental surfaces susceptible to dissolution of organic acids, whereas such factors must interact for a period of time (Silva et al., 2010).

Among the questions offered, those in which the professionals presented more ignorance or misconduct were related to the use of fluoride, mainly regarding the indication of fluoridated toothpastes. Most doctors (54.28%) recommend the use of toothpastes without fluoride. In relation to the beginning of brushing with fluoridated toothpaste, only 7.14% of professionals presented the right conduct, in which brushing with fluoridated toothpaste must be indicated since the

eruption of the first tooth, around 6 months of age (American Academy of Pediatrics, 2009).

It is known that the effective control of tooth decay by use of fluoridated toothpaste occurs by combining the mechanical effect of brushing on total or partial removal of the dental biofilm with physical-chemical action of fluorine in the process of decay, not only inhibiting demineralization as activating the remineralization of enamel and dentin. For the anti-tooth decay effect of fluoride to be maximized, it is essential that it is constantly present in the oral cavity. Thus, the fluorinated toothpastes, in standard concentration (1000-1500 ppm of fluoride) are considered to be the most rational form of use of topical fluorides (Cury & Tenuta, 2014).

In Table 3 is observed that most professionals with over 10 years since graduation reported knowledge about the toxic effects of fluoride and, perhaps for this reason, they recommend the use of toothpaste without it. This result is in accordance with the study by Ferro, Bonow, Romano and Torriani (2011), which shows that professionals with more time of practice have less updated information and, therefore, inappropriate conduct on the oral health of children. On the other hand, the study performed by Reis et al. (2015) show that most professionals, regardless of time of practice, still lack updated information on the new recommendations for the use of fluorides.

Not indicating the use of fluoride or indicating toothpastes for children with low concentrations of fluoride (less than 600ppm) comes from the concern of professionals with the possibility of developing dental fluorosis (Davies, Ellwood, & Davies, 2003). However, fluorosis is a result of the action of fluoride on the circulating blood and not of fluorine available in the oral cavity. The mechanism of action of fluoride in fluorosis, contrary to what occurs in relation to tooth decay, is dose dependent, i.e. the development of fluorosis depends on the quantity ingested (Warren et al., 2009).

The amount of toothpaste put on the toothbrush has a significant impact on the ingestion of toothpaste by preschoolers, having been suggested that the greater the amount of toothpaste, the greater the amount ingested (Ellwood & Cury, 2009). It is recommended that pre-school children brush their teeth with a small amount of toothpaste, equivalent to a small pea grain (0.25 to 0.30 g), and for children under two years old, an amount of toothpaste equivalent to a grain of rice or a 'smear' (approximately 0.1 g) would be enough (Hugo, Rosing, & Araújo, 2012).

Although the development of fluorosis by intake of fluoridated dentifrice is a possibility, scientific evidence show a balance between benefits and risks, and should be the ideal that all individuals, regardless of age, use toothpaste with standard concentration of fluoride (1000-1500 ppm fluoride), because this is a proven effective measure for prevention and control of tooth decay (Cury & Tenuta, 2014).

Another significant factor in the research results from the self-perception of pediatricians in relation to their knowledge of oral health. Although the majority (51.16%) of professionals graduated over 10 years ago consider their knowledge adequate, the results showed that concerning the use of fluoride, this knowledge is out of date. Based on these results, it is noticed that, in general, professionals with more practice time have less up-to-date information, and therefore present a misleading conduct, which is also highlighted by other authors (Feldens, Feldens, Kramer, Class, & Marcon, 2005) making evident the need for continuing education of these professionals. Balaban et al. (2012) highlight the importance of the publication of papers on oral health directed to doctors, as well as including this theme in post-graduation courses in Medicine. In addition, they advise the development of specific protocols on oral health for routine use by pediatricians.

In this research, most of the pediatricians interviewed (60.0%) reported referring the child to a pediatric dentist before the first year of life, demonstrating knowledge of the recommendations set out by the American Academy of Pediatrics, which indicates that the first visit to a dentist should occur around the first year of life (American Academy of Pediatrics, 2009). These results are similar to that found by Balaban et al. (2012), in which 63.9% of pediatricians from the city of Recife, State of Pernambuco, Brazil, recommend a visit to the pediatric dentist at this age, though they highlighted the need for greater knowledge of children's oral health.

A study performed by Soares et al. (2013) with pediatricians of the city of Teresina, State of Piauí, Brazil, showed that though the doctors present proactive conducts concerning oral health, they needed more enlightenment on the use of fluoride. A research by Buzalaf, Ramires, Maria, Peres and Lauris (2006) with pediatricians and pediatric dentists of the cities of Bauru and Marília, State of São Paulo, Brazil, found that the knowledge of these professionals regarding fluoride was insufficient, although there is no relationship between time since graduation and knowledge presented. The study performed by Dalto, Turini and Cordoni-Júnior

(2008) that assessed the knowledge and the attitude of pediatricians in the city of Londrina, State of Paraná, Brazil, in relation to dental aspects related to the promotion of oral health to children attended by them, evidenced satisfactory results both concerning knowledge and attitude directed to the oral health of their patients.

The results of this study, although showing that some pediatricians from the city of Belém have satisfactory basic knowledge of oral health in early childhood, reflect the unfamiliarity with many subjects, especially about the current scientific evidence on fluoride, confirming that there is a need for the implementation of actions aimed at better interaction between doctors, dentists and other professionals of the health team, seeking the integrality of attention to oral health. The collaboration of pediatricians is fundamental for guidance of parents and guardians about preventive practices and motivation to adopt healthy behaviors at a very young age to avoid early childhood tooth decay. According to Nunes et al. (2011), greater interdisciplinarity in the attention to children will increase the quality of the service, for both doctors and pediatric dentists, grounding the guidelines and reinforcing educational practices in health.

Therefore, updating the doctors' knowledge of oral health is necessary, with provision of basic information through short courses, information material and greater interdisciplinarity between doctors and dentists. Conduct and appropriate knowledge on the part of pediatricians would result in a proactive attitude of these professionals and in a way to implement the paradigm of health promotion and integral actions directed to health and well-being of children.

Conclusion

The profile of the pediatricians interviewed is mostly female, engaged in public service and with over 20 years since graduation. The knowledge of doctors related to oral health was satisfactory; however, as to the use of fluoride, professionals showed ignorance or inappropriate conduct, especially regarding the indication of fluoride toothpaste. The professionals with more practice time presented outdated knowledge, providing inadequate conducts for guidance on oral health of children.

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