

Long-term pediatric sugared medicines: knowledge and attitude of medical practitioners at a university hospital

Medicamentos pediátricos de uso prolongado: conhecimento e atitude de médicos de um Hospital Universitário

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ABSTRACT

Objective

The aim of this study was to assess the knowledge and attitude of university hospital pediatricians in respect of the presence of sucrose in medicines used regularly and long-term by children, and to identify the presence of sucrose in frequently prescribed medicines.

Methods

A questionnaire was applied to all pediatricians at the University Hospital of João Pessoa, Brazil. The medicines were purchased in pharmacies to evaluate the sweeteners listed on the drug labels. The data analysis was carried out by means of descriptive statistics using absolute and percentage values.

Results

The majority of the professionals (84.2%, n=16) stated they were unaware of the sucrose content in medicines. The instruction for the patients to brush their teeth after using a sweet medicine was reported by one professional only. There was a great variety (20 types) of medicines recommended by medical practitioners. The analysis of 103 medicines revealed that 67 (65.0%) had sucrose in their formula.

Conclusion

Sucrose is a frequent sweetener in pediatric medicines. In addition, the health professionals interviewed demonstrated insufficient knowledge and attitude in respect of the presence of sucrose in pediatric medicines and the risk of the development of caries. Medical professionals and students should be made aware of the risks when prescribing pediatric sugared medicines for children.

Indexing terms: Oral administration. Dental caries. Child. Sucrose.

RESUMO

Objetivo

Avaliar o conhecimento e a atitude de médicos que atendem crianças sobre a presença de sacarose em medicamentos pediátricos de uso crônico, e identificar a presença de adoçantes nesses medicamentos.

Métodos

Um questionário foi aplicado a todos os pediatras do Hospital Universitário de João Pessoa, Brasil. Os medicamentos foram adquiridos nas farmácias para avaliação do adoçante relatado na bula dos medicamentos. Foi realizada análise descritiva dos dados por média, distribuição absoluta e percentual.

Resultados

A maioria dos profissionais (84,2%, n=16) relatou não ter conhecimento sobre a presença de açúcar nos medicamentos. A orientação dos pacientes à escovação dentária, após a administração das doses, foi relatada por apenas um paciente. Os medicamentos indicados por estes apresentaram uma grande variedade (20 tipos), resultando em 103 apresentações das quais 67 (65%) apresentavam sacarose.

Conclusão

A sacarose é um adoçante frequente nos medicamentos pediátricos; os médicos apresentaram uma atitude de indiferença sobre a presença de sacarose nos medicamentos pediátricos de uso crônico devido o pouco conhecimento sobre o tema. Profissionais e estudantes da área médica devem ser alertados sobre os riscos para cárie dentária diante da prescrição de medicamentos açucarados para crianças.

Termos de indexação: Administração oral. Cárie dentária. Criança. Sacarose.

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INTRODUCTION

Dental caries is still a public health problem in spite of the decline in the prevalence of caries observed in recent decades and the greater access to fluorides¹. Dental caries is influenced by factors such as the habit of sucrose ingestion between meals, unfavorable maternal social inclusion²⁻³ and the use of medicines, and may affect a substantial proportion of the pediatric population in many countries⁴.

Liquid preparations are usually sweetened with sucrose, which can be readily fermented by oral acidogenic bacteria. Therefore, the frequency of use and the sugar content in pediatric oral medicines can determine their cariogenic potential. The medicines that have sucrose as a sweetening agent possess high viscosity. As a result these medicines have slow salivary clearance and high cariogenic potential⁵.

Pediatricians have the opportunity to follow-up directly on the general oral health status of children because of early and frequent contact during well-child and chronic condition visits. The early intervention of dental caries and other oral health problems, for children at risk, is important for the outcome of dental treatment. The medical professionals working at university hospitals have an added challenge in the education and practices of future health professionals. Therefore, these professionals play a key role in children's general health.

The aims of this study were: a) to assess the knowledge and attitude of university hospital pediatricians regarding the presence of sucrose in medicines used regularly and long-term by children, and b) to identify the presence of sucrose in frequently prescribed medicines.

METHODS

The study was carried out in João Pessoa, in the Brazilian state of Paraíba, and was divided into two phases: Phase 1) all pediatricians at the Lauro Wanderley University Hospital, Brazil (n=19) were invited to answer a questionnaire about the most frequently prescribed long-term, pediatric, liquid oral medicines and general information about professional experience. The questions were related to the prescription of medicines available in

the Brazilian market, their knowledge of the presence of sucrose in medicine and instructions for children to brush their teeth after using oral medicines. Phase 2) all medicines indicated in phase 1 were purchased in local pharmacies to check the labels to ascertain if sucrose was the sweetener in their formula.

Medicines that are active in the central nervous system were excluded from the sample since these are restricted products with a system of controlled purchase.

The data analysis was conducted by means of descriptive statistics using absolute and percentage values. The research was approved by the local ethical committee at the Lauro Wanderley University Hospital/ UFPB/ Brazil (protocol no. 64/06).

RESULTS

The mean±SD professional experience after graduation was 24.8±6.8 years. Out of 19 professionals, 16 (84.2%) were resident physicians, followed by those with Master's degrees (n=2) and one PhD.

The medicines prescribed by the pediatricians varied greatly (20 types, according to the active substance). The 103 presentations between generic and commercial medicines are distributed across 6 groups, according to their indication (Table 1).

In respect of the presence of sucrose in pediatric medicines, 84.21% (n=16) of the medical practitioners replied that they were unaware of this aspect, whereas one was aware of its existence. The instruction to brush the teeth after using medicines was reported by one medical practitioner and the reported reason for that recommendation was solely to reduce the unpleasant taste of the medicines. The frequency of administration was from one to four times daily, following the instructions on the drug labels.

Among the 20 types of pediatric medicines, sucrose was present in the composition of 16 (80%); out of a total of 103 presentations, 67 (65%) contained sucrose (Table 2). Of these, only 2 displayed the sucrose concentration on their labels: 1.94 g/100ml in a suspension of Azithromycin and 300 mg/ml in a solution of Cephalexin.

After sucrose, saccharin was the most common sweetening agent present in the medicines (49.5%), followed by sorbitol (34%) (Table 2).

Table 1. Therapeutic group, active substance and sucrose presence in liquid pediatric medicines. João Pessoa (2008).

Therapeutic group	Active substance	Medicine		
		n	With sucrose n	%
Respiratory	Ketotifen	8	5	62.5
	Cetirizine	3	1	33.3
	Cyproheptadine	7	7	100
	Montelukast sodium	1	0	0
	Carbocistein	8	7	87.5
Cardiovascular system	Digoxin	2	2	100
	Nitrofurantoin	1	1	100
	Nalidixic acid	1	0	0
Infections	Cephalexin	6	5	83.3
	Amoxicillin	12	10	83.3
	Azithromycin	9	8	88.8
	Trimethoprim-sulfamethoxazole	12	7	58.3
	Folic acid	2	2	100
	Iron Sulfate	5	4	80
Nutrition and blood	Vitamin B Complex	4	1	25
	Vitamin C	5	1	20
	Polyvitaminic	1	0	0
	Prednisolone	4	0	0
Endocrine	Dexamethasone	8	2	25
	Betamethasone	4	4	100
Total		103	67	65

Table 2. Reported sweetener types in pediatric medicines. João Pessoa (2008).

Sweetener	Medicines	
	n	%
Sucrose (sugar)*	67	65
Sodium saccharin	51	49.5
Sorbitol	35	34
Sodium cyclamate	24	23.3
Glucose syrup	1	1
Sucralose	1	1
Mannitol	2	1.9
No information	3	2.9

* included 23 (34%) medicines with generic term "sugar" in the drug labels.

DISCUSSION

Sucrose is a trigger for dental caries⁶. Nevertheless, few studies have explored the knowledge and attitude of medical professionals towards long-term pediatric medicines with sucrose and the risk of caries in children, particularly in those children using medicines on a daily basis⁶⁻⁹. For patients with chronic diseases, the risk of dental caries increases due to the need for frequent and prolonged consumption of medicines. This issue is worthy

of investigation since it has already been observed that most pediatric chronic use formulations available in the Brazilian pharmaceuticals market, have this disaccharide as a sweetening agent¹⁰.

In our study, only one professional was aware of the presence of sucrose in the composition of some pediatric medicines. Indeed, this observation was not even linked to concern for oral hygiene. These health professionals have a golden opportunity to inform and guide the children's parents about the risk of dental caries when sugar medicines are used regularly. Recently, it was estimated that 84.9% of parents do not have professional (medical or dental) guidance for appropriate oral hygiene after the consumption of pediatric medicines⁸. This seems to be a trend in other parts of Brazil since our data showed that oral hygiene after medication was recommended by only one professional and this was not related to concerns for oral health.

Many pediatric liquid medicines have sweeteners in their composition in order to mask the unpleasant taste of some active ingredients⁵. Medicines with alternative sweetening agents may be an interesting choice for prolonged treatment⁶. However, Andreatta et al.¹¹ observed that regular use of artificial sweeteners for 10 years or more, was positively correlated with carcinogenic potential. The search for generic medicines can be fraught due to the fact that prescriptions of medicines without sucrose are most often substituted at pharmacies for less expensive, commercial brands containing sucrose. Amongst all of the sweetening agents, sucrose is the most frequently reported (65%) on drug labels¹². These values could be even higher. Peres et al.¹⁰ observed that only 50% of medicines containing sugar publicized this information on drug labels.

In addition to sucrose, saccharin and sorbitol are also frequently used¹². Sorbitol is hypo-acidogenic, and when combined with xylitol (xylitol-sorbite), it presents a non-acidogenic behavior¹³. However, we found that the sucrose concentration was omitted from most of the drug labels in medicines that were sweetened with it. Two factors may be noted about this procedure: the industrial strategy for not exhibiting details of the formula⁵ and the lack of demand for this information, since the publication of inactive ingredients in formulas is not compulsory by law¹⁴.

Our study supports the hypothesis that medical practitioners are unaware of the presence of sucrose in pediatric chronic use medicines. This lack of information may be related to a general lack of interest in addressing

this interdisciplinary issue during training programs in medical schools. It is also important to point out that other complications related to frequent sugar consumption (e.g. diabetes, obesity) are already discussed in the medical field. Therefore, its inclusion, in respect of dental caries and other oral health problems (e.g. dental erosion, periodontitis), on the general health agenda can be easily addressed. According to Chung et al.⁸, there is a need to include some aspects of oral health risk assessment, early detection and referral services in the medical education program. The outcome could be positive for dentists and medical professionals that work in both the public and private sectors in Brazil¹⁵.

CONCLUSION

It may be concluded that, even though sucrose is a sweetener frequently used in pediatric medicines, the health professionals interviewed showed insufficient

knowledge and attitude with regard to the presence of sucrose in pediatric medicines and the risk of the development of caries. Medical professionals and students should be aware of the risks when prescribing pediatric sugared medicines for children.

Acknowledgements

This study was backed by the Brazilian agency CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior).

Collaborators

IAP FARIAS was responsible for conceiving the work, collecting data, reviewing the literature, analyzing the data and writing the manuscript. CHSM FREITAS and FC SAMPAIO participated in the conception of the work, data interpretation, discussion, conclusions and performed a final review of the manuscript.

REFERENCES

- Weeks JC, Dutt A, Peter GR. Promoting sugar-free medicines: evaluation of a multi-faceted intervention. *Community Dent Health*. 2003;20(4):246-50.
- Fadel CB, Saliba NM. Aspectos sócio-dentais e de representação social da cárie dentária no contexto materno-infantil. *RGO - Rev Gaúcha Odontol*. 2009;57(3):303-9.
- Kelly A, Soares LF, Pomarico L, Souza IPR. Risco e atividade de cárie em crianças com e sem infecção pelo HIV. *RGO - Rev Gaúcha Odontol*. 2009; 57(2):217-22.
- Bigeard L. The role of medication and sugars in pediatric dental patients. *Pediatr Dent*. 2000;44(3):443-56.
- Durward C, Thou T. Dental caries and sugar-containing liquid medicines for children in New Zealand. *N Z Dental J*. 1997;93(414):124-9.
- Bradley M, Kinirons M. A survey of factors influencing the prescribing of sugar-free medicines for children by a group of general medical practitioners in Northern Ireland. *Int J Paediatr Dent*. 1996;6(4):261-4.
- Bradley M, Kinirons M. Choice of sugar-free medicines by a sample of dentists, doctors and pharmacists in Northern Ireland: the views of parents and health professionals. *Community Dent Health*. 1998;15(2):105-8.
- Chung MH, Kaste LM, Koerber A, Fadavi S, Punwani I. Dental and medical students' knowledge and opinions of infant oral health. *J Dent Educ*. 2006;70(5):511-7.
- Neves BG, Pierro VSS, Maia LC. Perception and attitudes among parents and guardians on the use of pediatric medicines and their cariogenic and erosive potential. *Cienc Saude Coletiva*. 2007;12(5):1295-300.
- Peres KG, Oliveira CT, Peres MA, Raymundo MS, Fett R. Sugar content in liquid oral medicines for children. *Rev Saude Publica*. 2005;39(3):486-9.
- Andreatta MM, Muñoz SE, Lantieri MJ, Eynard AR, Navarro A. Artificial sweetener consumption and urinary tract tumors in Cordoba, Argentina. *Prev Med*. 2008;47(1):136-9.
- Balbani APS, Stelzer LB, Montovani JC. Pharmaceutical excipients and the information on drug labels. *Rev Bras Otorrinolaringol*. 2006;72(3):400-6.
- Rekola M. In vivo acid production from medicines in syrup form. *Caries Res*. 1989;23(3):412-6.
- Brasil. Ministério da Saúde. Agência de Vigilância Sanitária. Resolução RDC nº 140 de 29 de Maio de 2003 [citado 2009 Jan 5]. Available at: <<http://e-legis.bvs.br/leisref/public/showAct.php?id=6311>>.
- Aerts D, Abegg C, Cesa K. The role of dentists in the Unified Health System (SUS). *Cienc Saude Coletiva*. 2004;9(1):131-8.

Received on: 25/7/2010

Final version resubmitted on: 9/12/2010

Approved on: 23/2/2011