

Awareness of Dentists on the Role of Homeopathic Remedies as a Risk Factor in the Etiology of Tooth Decay

Antoniya Pomakova¹, Nataliya Gateva², Rositsa Kabaktchieva², Nina Miltcheva¹

^{1,4}Department of Pediatric Dentistry, Faculty of Dental Medicine, Medical University - Varna, Bulgaria

^{2,3}Department of Pediatric Dentistry, Faculty of Dental Medicine, Medical University - Sofia, Bulgaria

Abstract: ***Purpose:** To assess the awareness of dentists in Bulgaria on the role of homeopathic remedies as a risk factor in the etiology of tooth decay during childhood and their attitude towards adequate oral prophylaxis in frequent intake of these drugs. **Material and methods:** A questionnaire was distributed among 100 dentists in Varna, Dobrich, Sofia and Burgas. It includes 9 questions with multiple choice answers. They are related to the awareness of dentists about the sugar content of homeopathic remedies, their role as a risk factor in the development of a carious process by children and the need for prophylaxis in frequent intake. Collected data was subjected to statistical analysis and presented in summary form. **Results:** 72% of the respondents do not ask a question in the anamnesis about the use of homeopathy. Only 44% know about the presence of sugars in this type of drugs. More than 50% of them do not think that there is a positive link between frequent consumption of homeopathy and an increased risk of developing caries in childhood. Only half of the respondents recommend additional preventive measures and procedures to these patients. **Conclusion:** There is a lack of knowledge of dentists on the presence of deleterious sugars in homeopathic medicines. Many of the respondents do not find a link between their consumption and an increased risk of developing caries. There is a need for additional training of dentists in Bulgaria to raise their awareness about the possible role of homeopathic remedies as a risk factor for the development of carious disease among children.*

Keywords: homeopathy, homeopathic medicines, tooth decay, etiology, awareness

1. Introduction

Dental caries is one of the most common chronic diseases in childhood [0, **Error! Reference source not found.**, [3]]. It is a process of localized destruction of hard dental structures, which occurs on the enamel surface under a biofilm by the reaction between it and the tooth surface and leads to the formation of a caries lesion [[4], [6]]. Carious lesions are the result of events that progress over time. They start with a change in the ecology and metabolic activity of the complex bacterial biofilms and are affected by salivary flow and composition, by the exposure to fluorides, by the consumption of sugars and by the preventive individual behavior [[4], [5]].

A significant number of studies have shown the risk of frequent use of conventional sugar-containing medicines, especially in childhood [[6], [8], [9], [10], [11]]. The cariogenic potential of conventional drugs is due to the sucrose content and its acidity [[3]]. Important are also the frequency, dose and route of drug administration [**Error! Reference source not found.**]. Numerous studies search for physico-chemical parameters of pharmaceutical products, which provide valuable information about their cariogenic and erosive potential, determining endogenous pH, titratable acidity and content of soluble liquids and sugars. *Xavier et al.* [**Error! Reference source not found.**] studied these parameters in several of the most commonly used drugs in children, representatives of different medicine groups as analgesics, antibacterials, anticonvulsants, antiemetics and others. They found out that all samples show acidic endogenous pH (content of free protons). The average value of titratable acidity (total acid content - protons and undissociated acids) was identified between 0.10% and

1.17%. The average value of the total content of soluble liquids (total sugar content in a sugar solution) was determined to be 37.4%. The average percentage of sugar is 30.9%.

Homeopathic medicines, like the conventional pediatric medications, contain sugars. These medicines have specific rules for administration - repeatedly during the day, they should stay under the tongue for a long time, their use together with fluoride containing toothpastes is contraindicated. They are preferred by parents of frequently ailing children, whose treatment usually lasts for months, as they are more harmless [0, [14], [15], [16], **Error! Reference source not found.**].

Pediatricians and pediatric dentists are among the first professionals dealing with the child's health. Their advice on the appropriate treatment and prevention of a developing individual are of great importance. With the advancement of technology and the ability to easily access information the knowledge of physicians about the impact and potential risk of frequent use of homeopathic remedies to oral health in childhood, should be maintained at a high level.

A question arises whether the oral administration of homeopathic remedies, which contain sugars, is a risk for the development of carious process and whether dentists that have children-patients are interested in this risk? Do they think over preventive measures against carious process caused by frequent use of homeopathic medicines, especially by frequently ailing children?

These considerations allow us to conduct a survey among dentists in Bulgaria. The aim is to determine the extent of

their awareness of the risk of the frequent intake of homeopathic remedies and the preventive measures recommended for children on homeopathic treatment.

2. Materials And Methods

An anonymous survey taken from 100 dentists from Varna, Dobrich, Sofia and Burgas was conducted. Participants were selected randomly, the only requirement was to have children-patients up to 9 years. The questionnaires were distributed in person or sent by mail with instructions for filling in. A questionnaire with 9 questions and several multiple choice answers was created. Questions are focused on: the presence of history about the use of medicines (conventional and homeopathic) among children-patients; awareness of dentists on the presence of sugars in various medicines; sugar content in homeopathic preparations; their role as a risk factor for the development of carious process by children and the need for prevention by their frequent intake. The last section of questions refers to the knowledge of the link between drug intake and development of carious process and to recommended oral hygiene measures and procedures to patients with frequent use of medicines - conventional and /or homeopathic.

Data were collected, subjected to statistical analysis and displayed in a summary form.

3. Results

The response rate was 100%. 66% of the respondents were female and the rest - male. Half of them were between 30 and 50 years old.

Seventy-two percent of the interviewed dentists did not ask the patient about their history and their frequent use of homeopathic remedies by children-patients (Chart 1). Seventy percent of the respondents were aware of sugar content in conventional pediatric drugs, but only 44 percent responded that they also knew about sugars in homeopathic medicines. Fifty-two percent of respondents did not believe that there is a link between frequent consumption of homeopathic remedies and an increased risk of developing caries by children (Chart 1).

From the part of respondents, asking a question in their history about the intake of homeopathic remedies, 61% did not recommend additional preventive products (remineralizing or fluorine) to their children-patients, who had frequent use of homeopathic medicines (Chart 2). Fifty-four percent (54%) offered them additional oral hygiene procedures, mainly flossing and mouthwash (Chart 2).

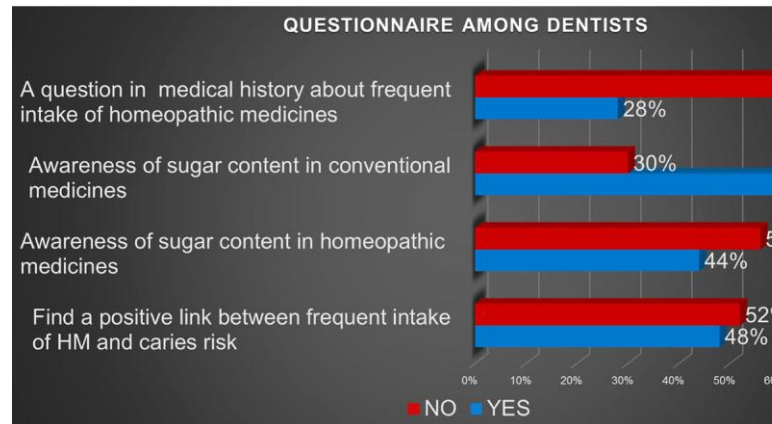


Chart 1: Results from the questionnaire from dentists

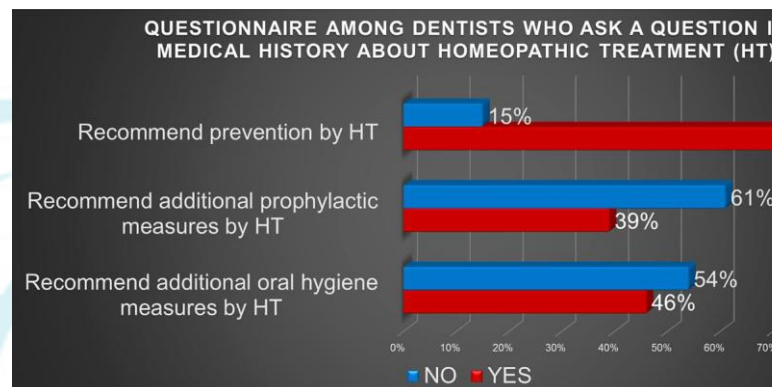


Chart 2: Results from the questionnaire from dentists, who took history about homeopathic treatment

4. Discussion

Homeopathy is one of the most popular forms of complementary and alternative medicine in modern times and often patients who use it are children [[14], [16]]. Homeopathic medicines are usually in the form of sweet tasting pellets, powders or liquids and are well accepted by them. The way for administration is to put it in the mouth and let it dissolve without chewing [[14]]. They can be in liquid form or impregnated in sugar tablets [Error! Reference source not found., [19]].

According to *Subramaniam et al.* sugar content of homeopathic medicines can affect oral health [[16]]. They've conducted a research on the change of salivary pH after intake of several homeopathic medicines. These homeopathic remedies showed a high sugar content and acidity. They observed a pH drop after administration of each of the tested drugs. The authors opined that sustaining a low salivary pH <5.5 by intake of every single dose of a homeopathic medicine can be a potential threat to the dentition. Depending on their composition, frequency of intake and duration of therapy, the oral health of children undergoing regular homeopathic treatment should be monitored [[19]]. Medical and dental professionals must be aware of the potential problems associated with sugar-containing medicines and do their best to reduce their cariogenic potential [[16]].

There are studies conducted among pediatricians and general practitioners regarding their awareness to the sugar content of pediatric medicines and their effects on oral health by

frequent use [Error! Reference source not found., [21], Error! Reference source not found.]. It turns out that most of them are either not aware of the sugar content of medicines or do not consider it as a risk factor for oral health. *Farias and al.* found that 84.21% of the interviewed pediatricians do not know about the presence of sugar in pediatric medicines (conventional and / or homeopathic medicines) [[21]]. A significant percentage of the respondents in other studies did not give further instructions for oral hygiene after administration of a medication, although it contains sugar. These results vary in the range from 68.9% [[3]], 49.2% [Error! Reference source not found.] to 47% [Error! Reference source not found.].

Interesting conclusions were made by *Subramaniam and Kumar* [[16]], according to whom, unlike the pediatric liquid medicines, sugar in homeopathic remedies cannot be labeled as "hidden sugar" but rather as "ignored", "neglected". They identify children who are chronically ill as a risk group. They have a greater sugar load and may be at higher risk of developing caries at an early age.

Nirmala et al. conclude that given the high cariogenic and erosive potential of sugar containing and acidic drugs administered to children it is important for pediatricians and pediatric dentists to be involved in educating parents to provide adequate oral cleaning after each dose of the drug as an initial step to minimize the risk of dental caries [[3]].

Our survey also showed the insufficient awareness of dentists in Bulgaria on the presence of simple sugars in homeopathic medicines and their negative impact on oral health (Figure 1 and 2). Generally, studies in the medical literature about this topic are very limited and so far there is no information for a similar study in Bulgaria.

We can summarize the following data from the survey:

- Most dentists do not gain information in the medical history of their children-patients about a frequent intake of homeopathic medicines.
- Most dentists are not looking for a link between frequent intake of homeopathic medicines and a possible risk of caries in early childhood.
- Recommendations for an adequate anti-caries prevention by homeopathic treatment is virtually absent. About 50% of the respondents offer their patients some kind of additional prevention, mainly - oral hygiene.

5. Conclusion

There is a need for additional information among dentists in Bulgaria about the possible role of homeopathic remedies as a factor for an increased risk of caries development. In this aspect it is necessary to change the attitude towards the prophylactic measures by children-patients who have a frequent intake of homeopathic remedies.

6. Acknowledgments

The authors would like to thank all the participants in the questionnaire for their responsiveness and for taking time being a part of this study.

References

- [1] National program for prevention of oral diseases in children aged 0-18 in Bulgaria 2015-2020, in accordance with "National health strategy 2014-2020". [Internet]
- [2] Dawkins E, Michimi A, Ellis-Griffith G, Peterson T, Carter D, English G. Dental caries among children visiting a mobile dental clinic in South Central Kentucky: a pooled cross-sectional study. *BMC Oral Health*. 2013 May 2;13:19.
- [3] Nirmala SV, Popuri VD, Chilamakuri S, Nuvvula S, Veluru S, Babu MS. Oral health concerns with sweetened medicaments: Pediatricians' acuity. *J Int Soc Prevent Communit Dent*. 2015 Jan-Feb;5(1);35-39.
- [4] Fejerskov O, Kidd EA, Nyvad B, Baelum V. Dental caries: the disease and its clinical management. Blackwell Monksgaard - second edition. 2008. p. 4; 20-21
- [5] Fejerskov O, Kidd EAM. Dental caries: the disease and its clinical management. Blackwell Monksgaard, 2003. p.4
- [6] Marsh P, Martin MV. Oral Microbiology. 4th edn. Oxford: Wright. 1999. p.58-81
- [7] Cairns AM, Watson M, Creanor SL, Foye RH. The pH and titratable acidity of a range of diluting drinks and their potential effect on dental erosion. *J Dent*. 2002 Sep-Nov; 30(7-8);313-317.
- [8] Maguire A, Baqir W, Nunn JH. Are sugars-free medicines more erosive than sugars-containing medicines? An in vitro study of paediatric medicines with prolonged oral clearance used regularly and long-term by children. *Int J Paediatr Dent*. 2007 Jul; 17(4); 231-238.
- [9] Marquezan M, Marquezan M, Pozzobon RT, Oliveira MDM. Medicines used to pediatric dentistry patients and their cariogenic potential. *Rev Pos-Grad*. 2006 Oct-Dec;13(4);334-339.
- [10] Nankar M, Walimbe H, Bijle M, Kontham U, Kamath A, Muchandi S. Comparative evaluation of the cariogenic and erosive potential of commonly prescribed pediatric liquid medicaments: An in vitro study. *J Contemp Dent Pract* 2014 Jan;15(1);20-25.
- [11] Saeed S, Bshara N, Trak J, Mahmoud G. An in vitro analysis of the cariogenic and erosive potential of pediatric liquid analgesics. *J Indian Soc Pedod Prev Dent*. 2015; 33(2);143-146.
- [12] Pierro VS, Abdelnur JP, Maia LC, Trugo LC. Free sugar concentration and pH of paediatric medicines in Brazil. *Community Dent Health*. 2005 Sep;22(3):180-3.
- [13] Xavier AF, Moura EF, Azevedo WF, Vieira FF, Abreu MH, Cavalcanti AL. Erosive and cariogenicity potential of pediatric drugs: study of physicochemical parameters. *BMC Oral Health*. 2013 Dec 10;13:71.
- [14] Bhat SS, Sargod SS, George D. Dentistry and homeopathy: an overview. *Dent Update* 2005 Oct; 32(8);486-8, 491.
- [15] Dodwad V, Malhotra S, Nayyar N. Toothpaste wars: To assess the efficacy of an herbal, homeopathic and a

- conventional toothpaste in the control of plaque and gingivitis – A clinico-biochemical study. *Indian J Stomatol* 2011; 2(2);91-94
- [16] Subramaniam P, Kumar K. Change in salivary pH following use of homeopathic medicines: A preliminary study. *Eur J Gen Dent*. 2013 Jan-Apr;2(1):31-36.
- [17] Anushree B, Fawaz MA, Narahari R, Shahela T, Syed A. Comparison of Antimicrobial Efficacy of Triclosan-Containing, Herbal and Homeopathy Toothpastes- An Invitro Study. *J Clin Diagn Res*. 2015 Oct;9(10):DC05-8.
- [18] Smith K. Against homeopathy--a utilitarian perspective. *Bioethics*. 2012 Oct; 26(8):398-409.
- [19] Upadhyay RP, Nayak C. Homeopathy emerging as nanomedicine. *Int J High Dilution Res*. 2011; 10(37): 299-310.
- [20] Bawazir OA, Alsuwayt B, Alqahtani W, Al-Dhafiri A, Al-Shamrani M. Knowledge, attitude and practice of pediatricians and pharmacists in Riyadh City toward the use of sugar free medications. *J Contemp Dent Pract*. 2014 Nov 1;15(6):755-60.
- [21] Farias IAP, Sampaio FC, Freitas CH. Long-term pediatric sugared medicines: knowledge and attitude of medical practitioners at a university hospital. *RGO - Rev Gaucha Odontol., Porto Alegre*. 2011 Oct-Dec;59(4):599-602.
- [22] Neves BG, Pierro VS, Maia LC. Pediatricians' perceptions of the use of sweetened medications related to oral health. *J Clin Pediatr Dent*. 2008 Winter;32(2):133-7.

Author Profile

Antoniya Plamenova Pomakova, Department of pediatric dentistry, Faculty of Dental Medicine, Medical University, Varna, 84, Tsar Osvoboditel str., 9000 Varna, Bulgaria;