



Received on 11 May, 2017; received in revised form, 18 July, 2017; accepted, 17 September, 2017; published 01 February, 2018

PAEDIATRICIANS COGNIZANCE ABOUT THE DELETERIOUS EFFECT OF ANTIBIOTICS AND DENTAL CARIES - A PRELIMINARY STUDY

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Keywords:

Pediatricians, Oral health, Antibiotics, Dental caries

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ABSTRACT: Aim: To evaluate pediatricians' cognizance about the use of antibiotics and dental caries. **Materials and Method:** 200 Pediatricians' who were willing to participate were selected randomly from public and private medical hospitals in South India. A pretested questionnaire was distributed to the Paediatricians' and was personally contacted to receive the responses within a week's time. Descriptive statistics was done using SPSS version 16 (SPSS Inc., Chicago, Illinois, USA). **Results:** The present study showed that 63% of pediatricians believed that paediatric medicines are not sweet. 72% of them believed antibiotics are not too sweet and 31% were unaware of what sweetens antibiotics. 35% of pediatricians frequently prescribed antibiotics and 95% of them chose oral way as their route of administration. 31% of pediatricians believed antibiotics can be related to dental effects and only 19% of them recommended children to brush after oral intake of antibiotics. 63% of pediatricians revealed that children complain about the taste of antibiotics. **Conclusion:** The Paediatricians' in the study did not perceive the correct relation between the presence of fermentable carbohydrates in antibiotics and dental caries. Many of them believed that these medicines promoted a defect in tooth structure favoring the development of dental caries. **Clinical Significance:** For the past few decades, there is an increasing rate of dental caries among children who is under consumption of paediatric medications. This study provides a channel to evaluate awareness among pediatricians'.

INTRODUCTION: Dental caries is a major oral health problem affecting 50 to 65% of school going children in India¹. Worldwide, Individuals are susceptible to this disease throughout their lifetime. Dental caries form through a complex interaction over time, between acid producing bacteria, fermentable carbohydrates and host factors, including teeth and saliva^{2,3,4}.

Knowing the causative factor of the dental caries has not helped us to completely eradicate it from the scene⁵. Sucrose is considered to be the arch criminal of dental caries^{6,7,8}. The presence of sucrose in pediatric medications^{6,9}, lowers the pH of medicine formulation^{5,10,11,12} and viscosity of oral liquid medication^{9,13}.

This leads to cavity formation and tooth decay¹⁴. Pediatricians are the first to enable contact with children and families. They are in an ideal position to influence the patient's attitude towards oral health. Hence, Pediatricians should be aware about the deleterious relationship between antibiotics and dental caries. Pierro VVS, Barcelous R (2001)¹⁵ in Brazil, Bawazir OA *et al.*, (2014)¹⁶ in Riyadh,

	<p style="text-align: center;">DOI: 10.13040/IJPSR.0975-8232.9(2).708-11</p>
	<p style="text-align: center;">Article can be accessed online on: www.ijpsr.com</p>
<p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.9(2).708-11</p>	

Folayan MO *et al.*, (2012)¹⁷ in Nigeria conducted studies on Pediatrician's perception about the use of antibiotics causing dental caries and reported that pediatricians did not perceive the correct relationship between the presence of fermentable carbohydrates in antibiotics and dental caries.

In India, there is scarcity of literature showing the pediatrician perceptions towards antibiotics and occurrence of dental caries, hence this study was undertaken.

MATERIALS AND METHOD: The study was conducted during November 2016 to January 2017 after obtaining ethical clearance from the Institutional Review Board of Sathyabama University. 200 pediatricians who were willing to participate were selected randomly from public and private medical hospitals in South India. A Pretested questionnaire comprising of 15 open and closed ended questions was used for the study¹⁵. The questions focused on the knowledge and practices of the pediatricians with regard to prescribing antibiotics for pediatric use and their relationship with dental caries, pediatrician's knowledge of the substances used to give these medicines their sweet flavor, as well as oral hygiene recommendations after oral antibiotic intake. The Pretested questionnaire was distributed to the pediatricians by the author's who were personally contacted to receive the responses within a week's time.

The recorded data were gathered and entered into Microsoft Excel 2007 computer program and then exported to the data editor page of SPSS version 16 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics was done to report frequencies and percentage.

RESULTS: The pediatricians who participated in the study ranged in age from 23 to 75 years old. Out of 200 participants, 75% usually attended pediatric age group, 25% attended both adults and children in their daily practice.

Working Sector: Among 200 pediatricians, 30 (15) % worked only in the public service, 92 (46) % pediatricians had both public and private practice, 74 (37%) worked in other sectors and 4 (2%) did not answer.

Consideration while Prescribing Antibiotics: 70 (35%) of pediatricians frequently prescribed antibiotics for children, 120 (60%) rarely prescribed antibiotics, 6 (2%) never prescribed antibiotics and 4 (2%) did not answer. A majority, 190 (95%) of them chooses oral way as their route of administration. Based on their daily practice, 38 (19%) of the pediatricians consider medication features (spectrum of action, side effects, flavor and way of administration), 12 (6%) consider child characteristics (age, medicine's acceptability and immune deficiency), 138 (69%) consider disease characteristics (severity of the case and type of microorganism involved) and 6 (3%) consider socioeconomic factors (patient's financial status and the availability of the antibiotics in the public health services) as most important, relevant factor when choosing a pediatric antibiotic at the time of writing prescriptions. 63% of pediatricians revealed that children complain about the taste of antibiotics.

Knowledge about antibiotics: The present study showed that 126 (63%) of pediatricians believe that pediatric medicines are not sweet (**Fig. 1**). 144 (72%) of them believe antibiotics are not too sweet, 30 (15%) do not know whether antibiotics are sweet, 20 (10%) knew antibiotics are sweet and 6(3%) did not answer. 31% were unaware of what sweetened antibiotics (**Fig. 2**).

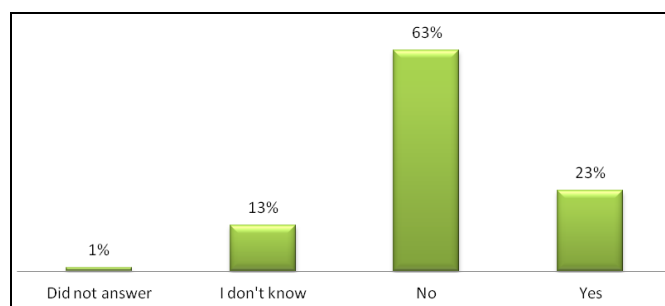


FIG. 1: PERCENTAGE OF PEDIATRICIANS WHO BELIEVE PEDIATRIC ANTIBIOTICS ARE SWEET

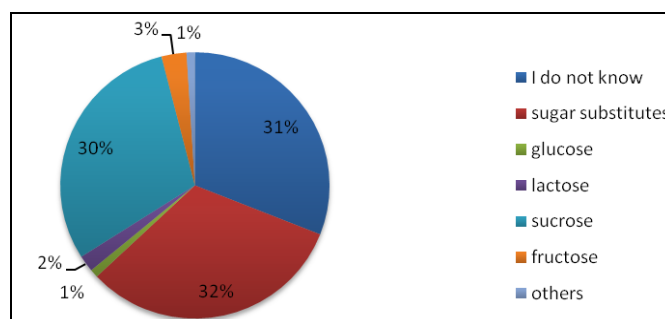


FIG. 2: PERCENTAGE OF PEDIATRICIANS KNOWLEDGE ABOUT WHAT SWEETENS ANTIBIOTICS

Cognizance about Antibiotics and Dental Caries: 46 (23%) of pediatricians believe that antibiotics can cause defects to tooth structure. 31% of pediatricians believed antibiotics can be related to dental effects and only 19% of them recommended children to brush after oral intake of antibiotics.

DISCUSSION: In the current scenario, age group of 71 months or younger children's are affected by Early Childhood Caries. The deep rooted etiology is the heedless attitude of parents towards oral hygiene practices¹⁸. These factors can be abrogated by providing a clear guide to the caretakers of the child to practice an ideal oral hygiene measures with the support of pediatrician's and Pedodontist's¹⁹. Although this study was carried out among 200 pediatricians, it described a gross picture of their awareness and knowledge about the factors that causing dental caries due to the use of pediatric medications. 80% of the pediatricians never recommended to practice oral hygiene after the intake of liquid medicine. Considering the economic background of our country, most of the drug manufactures' ideally choose sucrose and similar carbohydrates to sweeten medications as they are cheaper compared to the other sugar substitutes. Many of the studies recognized sucrose causes dental defects⁵. Similar studies conducted in Brazil¹⁸ and India^{4,19}.

In a Brazilian study, 56.7% and in Indian 51.1% of pediatricians believed that sucrose concentrated medications are the known cause of dental defects. This fact is of concern because of the known relationship between carbohydrate consumption and dental caries, it becomes more alarming if the pediatricians neglect the importance of oral hygiene after medicine intake.

The result of this study supported the insistence for the pediatricians to be instructed about dental caries and its relationship with fermentable carbohydrates as these people are the first to influence Children and parents' attitude towards oral health by informing them about the bombarding effect of sucrose and other hidden sugars present in liquid medications and the necessity to practice oral hygiene after medicine intake.

CONCLUSION: Pediatricians in this study did not perceive the correct relation between the presence of fermentable carbohydrates in antibiotics and dental caries. Many of them believed these medicines promoted a defect in tooth structure favoring the development of dental caries.

CLINICAL SIGNIFICANCE: For the past few decades, there is an increasing rate of dental caries among children who is under consumption of pediatric medications. This study provides a channel to evaluate awareness among pediatricians about the pediatric antibiotics causing dental caries.

ACKNOWLEDGEMENT: We would like to acknowledge Dr. A. G. Manimegalai MDS, Dean, Sathyabama University Dental College and Hospital for her constant support and all the Paediatricians' for their active participation.

CONFLICT OF INTEREST: Nil

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How to cite this article:

Anu V, Harshamol S, Helena T, Hannah PD, Gokila R and Manomani H: Paediatricians cognizance about the deleterious effect of antibiotics and dental caries - a preliminary study. *Int J Pharm Sci & Res* 2018; 9(2): 708-11. doi: 10.13040/IJPSR.0975-8232.9(2).708-11.

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