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## RESEARCH ARTICLE

### AWARENESS, KNOWLEDGE AND ATTITUDE ABOUT PROBIOTICS AMONG PEDIATRIC DENTIST'S IN CHENNAI

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#### ABSTRACT

Probiotics are a valuable adjunct for the prevention of oral diseases. These are dietary supplements containing potentially beneficial bacteria or yeast. Probiotics have come to play a vital role in the shift of paradigm of treatment from the age old practice of specific bacteria elimination, to alteration of bacterial ecology. **Aim:** The aim of the study is to assess the awareness, knowledge and attitude about probiotics among pediatric dentists in Chennai. **Material and Methods:** This study recruited pediatric dentists (n=51) in Chennai city. The subjects completed a questionnaire that aimed to assess the awareness, knowledge and attitude about probiotics through online survey. The collected data were summarized in the MS Excel and subjected to statistical evaluation using SPSS. **Results:** 88.2% of the pediatric dentists were aware of the use of probiotic in dentistry while 58.8% willing to prescribe it to their patients in that 20.8% will do to reduce the incidence of dental caries. Commonly prescribed probiotics formulation was 41.2% milk products and least was 3.9% drops. 80.4% were not aware about probiotic side effects. **Conclusion:** Therefore, this study revealed awareness about probiotics among pediatric dentists was moderate. Though beneficial, lack of adequate knowledge regarding probiotics limited its usage among pediatric dentists in Chennai.

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#### INTRODUCTION

##### "Prevention is better than cure"

Human body lives in a heavily contaminated environment associated with millions of microorganisms and some can cause disease to the host (Jindal, 2011). WHO stated that dental caries and periodontal diseases as the most important global oral health burdens (Tzu-Hsing Lin, 2017). Dental caries is a multifactorial disease, which results in demineralization of the hard tissue and destruction of soft tissue, by production of acid from bacterial fermentation from bacterial fermentation of the food debris which often leads to cavitation on the tooth surface (Kavitha, 2019).

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It affects 60%–90% of children and adults, affecting the quality of life in an early stage (Featherstone, 2004). *Streptococcus mutans* is the main causative organism of dental caries. Various preventive strategies are recommended to control caries risk factors like dietary changes, administering antibacterial agents, enhancing host resistance. By these methods complete elimination is difficult and almost impossible, but tries to suppress the caries activity (Frencken *et al.*, 2012; Islam, 2007). One of the novel self-administered strategies is by manipulation of resident microorganisms by the ingestion of probiotic organism (Jindal, 2011). Probiotics are defined as "Live microorganisms which when administered in adequate amounts confer a health benefit on the host live microorganisms" (FAO/WHO 2002) (Mohamed, 2015). As an antonym of the term 'antibiotics', it was introduced by Lily and Stillwell (1965).

It is also known as bacteriotherapy or replacement therapy (Hillman *et al.*, 2007). Species of Bifidobacterium, Lactobacillus and Streptococcus are commonly used microorganisms for the preparation of probiotics (ManipalSunayana, 2013). Probiotics are delivered in four basic forms: beverage or food (fruit juice), prebiotic fibers, milk-based products, dried cell packages such as powder, capsule, gelatin tablets (Caglar, 2009).

An ideal probiotic preparation should have the following characteristics (Gupta, 2009):

- High cell viability, and thus, they must be resistant to low pH and acids
- Ability to persist in the intestine even if the probiotic strain cannot colonize the gut
- Adhesion to the gut epithelium to cancel the flushing effects of peristalsis
- They should be able to interact to send signals to the immune cells associated with the gut
- They should be of human origin
- Should be non-pathogenic
- Resistance to processing
- Must have the capacity to influence local metabolic activity.

Probiotics act by microbial adhesion to the target tissue, which compete with the pathogenic microbes on adhesion sites. Once adhered, they secrete antimicrobial substances such as bacteriocins, hydrogen peroxide and organic acids, which can modify the pH and the oxidation-reduction potentialaiding the elimination of pathogenic micro-organisms. They can stimulate the non-specific immunity and modulate the cellular and humoral immune response. They can be used in various oral diseases like caries, periodontal disease, oral mucosal lesions, oro-pharyngeal cancers, halitosis and reduction in the levels of Candida albicans (Caglar, 2005). Some studies have shown countries with advanced healthcare delivery systems like Australia, Canada and the United States acquired displayed a high level of awareness, knowledge and consumption of probiotic supplements.<sup>12</sup> Conversely this seems not to be the case in developing countries like India. So aim of this study is to access awareness, knowledge and attitude about probiotics among pediatric dentists in Chennai.

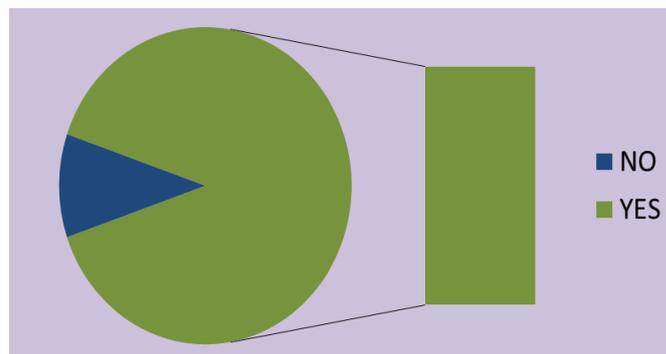
**MATERIALS AND METHODS**

An online survey was carried out among pediatric dentist (n=51) in Chennai, Tamilnadu. Self-administered, closed ended questionnaires which was previously validity and reliability tested were taken. The questionnaire had a set of 11 questions, regarding the awareness, knowledge and attitude about probiotics and its use among pediatric dentists. The study group comprised of pediatric dentist who are both academician and clinician in Chennai city. Data were collected and subjected to statistical evaluation using SPSS software version 2.0.

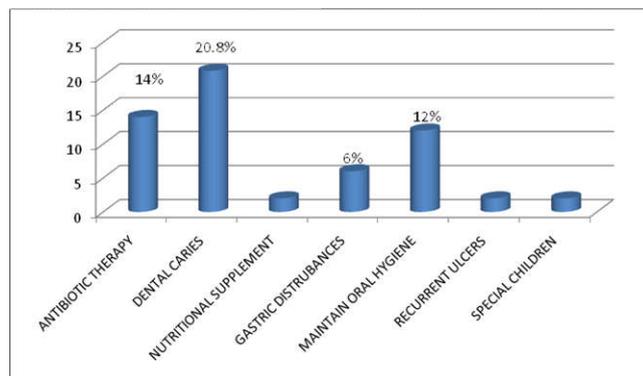
**RESULTS**

This study comprised of 51 participants out of which, 33.3% had 5 months to 2 years 27.5% had 2-4 years, 17.6 had 5- 10 years and 21.6% had more than 10 years of experience. 98% of the participants in our study had knowledge about probiotics but only 88.2% was aware of use of probiotics in dentistry

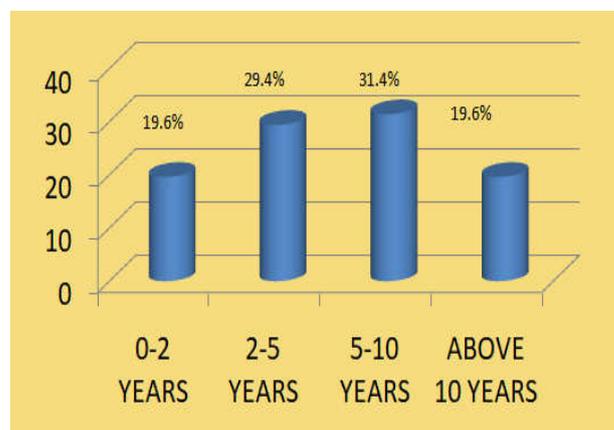
shown in graph 1. Majority of the participant 92.2% in this study thought that probiotic can reduce the incidence of dental caries but 7.8% did not agree on this. 84.3% of the study population had the knowledge that probiotic could overcome antibiotic side effects.78.4% of pediatric dentists were aware of the probiotic marketed products while 21.6% were not aware of it. 58.8% of the participants in this study population have said that were willing to prescribed probiotics but 41.2% said will not prescribe it. Out the 58.8% pediatric dentists who were willing to prescribe probiotic to their patients 14%, 20.8%, 2%, 6%, 12%, 2%, 2% of dentists said that they would prescribe in case of patient having antibiotic therapy, dental caries, as nutritional supplement, gastric disturbances, to maintain oral hygiene, recurrent ulcers, for special children respectively shown in graph 2. The distribution about the age of the patient, the dentists would prescribe probiotics shown in graph 3.



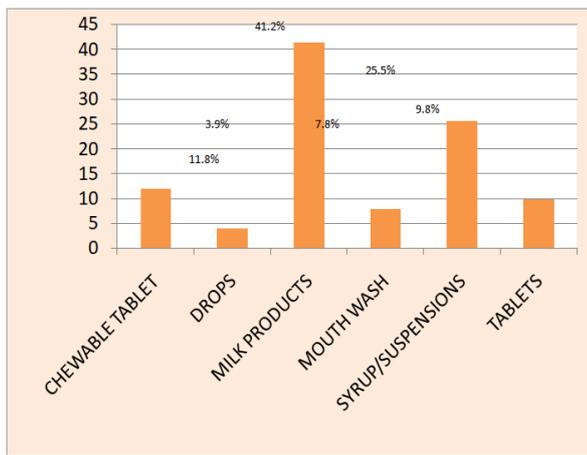
**Graph 1. Aware of Use of Probiotics In Dentistry**



**Graph 2- Prescription of Probiotics in Cases or Condition**



**Graph 3- Age At Which Probiotics Prescription Was Done By Dentists**



**Graph 4- Different formulation of probiotics prescribed by Dentists**

Commonly prescribed probiotics formulation among the participants in our study was 41.2% milk products and least was 3.9% drops shown in graph 4. Only 19.6% were aware about the side effects of probiotics while 80.4% were not aware about it.

## DISCUSSION

Many clinical trials have supported the evidence of Potential benefits of probiotics such as prevention of colon cancer, lowering cholesterol, lowering the blood pressure, managing lactose intolerance and *Helicobacter pylori*, improving the immune function, preventing infections and antibiotic-associated diarrhoea, reducing inflammation, halitosis, reduction of dental caries, HIV patients, multiple drug resistance patients. This study aimed at assessing the awareness, knowledge and attitude about probiotics among pediatric dentists in Chennai. Most of the pediatric dentists were aware of the term probiotics similar results shown in study conducted among general dental practitioner by Sam

Prasad *et al* 2017 (Sam Prasad, 2017). 92.2% in our study thought probiotics usage reduces the incidence of dental caries but only 58.8% were willing to prescribe it. Comparable results showed in a study done by Sam Prasad *et al.* 2017 that 79% agreed that it are beneficial but only 64% of them prescribe. In a study conducted by Manipal *et al.* 2013 out of 75 participants, 73 thought probiotics were useful and 54 dentists had used it before. Conflict results shown in a study done by Amaruche *et al.* 2016 only 14.4% of the dentists were aware of the term probiotics and none of them prescribed it. About the awareness of the available probiotic products, 78.4% of pediatric dentists were aware in this study, while 1.4%, 34.4%, of dentists only were aware of probiotic products in a study done by Amaruche *et al.* 2017 and Manipal *et al.* (2013).

Out the 58.8% pediatric dentists who were willing to prescribe probiotic to their patients 20.8% thought it reduces the incidence of dental caries. This was supported by studies done by cagler *et al.* 2005 saw reduction of *S. mutans* count after a 2 weeks consumption of yogurt containing *Lactobacillus reuteri*. Lin *et al.* 2017 analyzed the potential cariogenic/cariostatic effects of Yakult intake in children by investigating the effects of the short-term intake on oral biofilm acidogenicity and cariogenic bacterial counts and it showed significant cariostatic effect. About the side effects

only 19.6% of the pediatric dentists were aware of it. Supporting this 9% of the dentists were aware in a study done by Manipaletal<sup>9</sup> and 4% agreed in a study done by Sam Prasad *et al.*

## Conclusion

Probiotics are emerging as a fascinating field in health. They play an important role in combating issues with overuse of antibiotics and antimicrobial resistance. To summarize, pediatric dentists of Chennai are aware of probiotics, but they hesitate to prescribe it to their patients, but the knowledge about the marketed products were moderate. And the awareness about the side effects was very limited. Further education is needed to increase the knowledge and awareness and usage of probiotics. Also future studies need to be carried out regarding the barriers of usage of probiotics in their daily practice.

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