

## Knowledge, Attitude And Practices Onuse Of Probiotics For Oral Health Among Indian Population - A Cross Sectional Study

Research Article

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### Abstract

**Aim:** To assess the knowledge, attitude and practices on use of Probiotics for oral health among Indian population.

**Materials And Methods:** This descriptive cross sectional study was designed as an online questionnaire based study consisting of 28 close ended questions on probiotics in oral health. The questionnaire was standardized and randomly circulated online. 315 completed responses were collected, recorded, tabulated and scored. The data thus obtained was interpreted using SPSS software version 22.

**Results:** Results revealed that there was significant difference in the knowledge levels between age groups, between gender and attitude, per capita income and attitude. Female participants were more aware of probiotics than males. Participants in the higher economic range, graduates and post graduates showed greater positive knowledge, attitude and practice on probiotics.

**Conclusion:** The basic knowledge on probiotics is good among the Indian population. However more information regarding probiotics in oral health needs to be augmented to strengthen oral homeostasis and enhance overall wellbeing.

**Keywords:** Homeostasis; Oral Health; Oral Infections; Probiotics.

### Introduction

Human oral microbiome comprises of about 700 currently recognized bacterial species, the majority of which are niche-adapted oral cavity commensals. It also includes a variable subset of potentially pathogenic species [1]. Disturbances in the homeostasis or oral dysbiosis caused by overgrowth of one or more pathogenic bacterial species leads to establishment of oral infections. Strengthening of oral homeostatic mechanisms is one way to reduce oral infections [2]. Several methods aim at attaining this. One such method is the use of probiotics which is defined as 'live microorganisms, which when administered in adequate amounts, confer a health benefit on the host.' They are generally consumed as fermented foods such as yogurts, however, probiotics supplements are now being formulated in the form of tablets, capsules,

granules and liquids [3].

The use of probiotics has been an imperative aspect in dentistry ever since the oral infections played a pivotal role among other infections in humans. Specific strains of Lactobacillus and Bifidobacterium species are the most commonly used probiotic strains for oral infections. Several review papers have researched on the role of various probiotic strains for prevention of oral diseases, including dental caries [4, 5].

A large number of probiotic products are now commercially available that includes dairy as well as non-dairy products and dietary supplements [6-8]. Although there is growing evidence for the benefits of probiotics on oral health, the lack of knowledge on probiotics by the general public and poor awareness of

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their beneficial effects has resulted in under consumption of these products [9]. Literature search showed that there is paucity in the studies that have focused on consumers' perception on use of probiotics to improve oral health and there was a lacunae of this data among Indian population. Thus the current cross sectional study was undertaken that aimed to assess the knowledge, attitude and practices on use of probiotics for oral health among Indian population.

## Materials And Methods

This descriptive cross sectional study was designed to assess the knowledge, attitude and practices related to use of probiotics for oral health among Indian population. Ethical approval from the Institutional Review Board at Sri Venkateswara Dental College was obtained before study initiation. The study adheres to the provisions of the Declaration of Helsinki. An online questionnaire was developed in a standardized manner, using an accepted measure development methodology and distributed among the general public in various parts of India. The study was conducted from February 2019 to April 2019.

### Development of Questionnaire and Validation

Standard methodology of questionnaire development was used that included item development, content and face validation, pilot testing, and test-retest validation. Item development was done in a multi-step process after reviewing the related publications in Medline using Pubmed. The first part of the questionnaire on general information included questions addressing the demographics such as age, gender, educational qualification, occupation and per capita income. The second part comprised of 28 questions pertaining to the knowledge, attitude and practice (KAP) on use of probiotics. The KAP questions were framed mainly as closed ended questions using a preformed scale.

Face and content validation of the item were done by circulating the questionnaire among the experts in the field. The significance and relevance of each question in assessing the KAP were reviewed. Relevant corrections and suggestions from each expert were considered with modifications of indefinite and unfamiliar terms. The questionnaire was pretested among 10 randomly selected individuals. Feedback regarding the clarity, wordings and difficulty in filling the questionnaire were collected. Corresponding changes were made to keep the questions simple and specific. For testing and retesting the questionnaire, the questionnaire was tested among 10 individuals. The participants were requested to complete the questionnaire without accessing to any external knowledge sources. Any difficulties in answering the questionnaire were collected. Retest was conducted to assess test retest reliability after one day with the same members. To analyze the reproducibility of KAP questions, paired 't' test was used and 'p' value of less than 0.05 was considered as significant difference between test and re-test responses. The final questionnaire was developed based on the expert's consensus with four main sections: General information, knowledge, attitudes and practices related to use of probiotics for oral health. The final questionnaire had 10 questions on general information, 10 knowledge questions, 10 attitude questions and 08 practice related questions.

## Data Collection and Analysis

The questionnaire developed was distributed randomly online to around 400 individuals. Sampling technique used was convenient sampling. The acceptance to fill in the survey form was considered as the consent to participate in the study. All individuals participating in the survey were requested to complete the questionnaire as per their convenience.

The response from the participants were then computed into a Microsoft excel worksheet. For each question, correct answers were scored as 1 while the incorrect and not sure answers were scored as 0. Individual scores were summed up to yield a total score. Data were then analyzed using SPSS (Statistical package for social sciences, software Version 22; Chicago, IL, USA). Descriptive statistical analysis was done for all variables. Mean percentage scores, standard deviation ( $\pm$  SD), and frequency distribution were calculated for knowledge, attitudes and practices related to use of probiotics for oral health. Chi square test was used to assess the significant effect of each demographic variable.

## Results

316 individuals completed the survey by entering all the mandatory fields and submitting the survey form online. The response rate was 63.2%.

Among the 316 individuals who completed the survey, 56.6% were males, 43% were females and 0.4% preferred not to reveal their gender. Majority of the population were under the age range of 18-35 years (50%) and 47.5% were between 35.1- 65 years. About 66.1% of the participants were married and a huge majority of 50.3% possessed a post graduate/professional degree. 15.8% of the population were unemployed and among the employed, a predominant portion (38%) were professionals, 16.1% were managers, 4.4% were sales and service workers, 2.8% were students, 2.5% pursued clerical support jobs and 2.2% were technicians and associate professionals. 81.2% were non health field workers. Among the 18.8% employed in health field, 37.1% were dentists, 24.2% in medical services and the others in applied medical sciences. The per capita income of 63% of the participants was Rs 47,000 and above.

Table 1 shows the association between the demographics of the study population with knowledge, attitude and practice expressed in terms of p value. There is a significant difference in the knowledge levels between different age groups. Comparison of attitude scores among gender was found to be highly significant. Comparison of attitude scores based on per capita income was also found to be highly significant.

## Discussion

Probiotic bacteria are live microbial food supplements that beneficially affect the host by improving its intestinal balance. [10, 11]. Recently, numerous research papers and studies focusing on the effect of probiotics for oral health are being published. Unfortunately, these products are underutilized due to a lack of public familiarity with probiotic products and low awareness of their benefits. Some studies have shown a high level of awareness,

**Table 1. Shows the association between demographic details and knowledge, attitude and practice expressed in terms of p value.**

Demographic parameters	Knowledge	Attitude	Practice
Age	0.004*	0.181	0.169
Gender	0.71	0.000*	0.305
Education	0.148	0.458	0.011
Marital status	0.089	0.283	0.185
Occupation	0.315	0.659	0.959
Per capita income	0.511	0.000*	0.924

knowledge and consumption of probiotic supplements in countries with advanced healthcare delivery systems [12-14]. However, this may not be the case in developing countries like India. Data on the knowledge, attitudes and practices related to use of probiotics for oral health among Indian population is currently unavailable. Hence the current study intended to provide such information and to provide a comprehensive overview which can help the planning and evaluation of the use of probiotics for oral health.

With probiotics gaining great momentum in dentistry, it is important that the general population is aware of the use of probiotics in oral health for its efficient utilization. The present study was conducted among the general public and questions pertaining to knowledge, attitude and practice on the use of probiotics in oral health were assessed. The results revealed that though a huge majority of the population (71.8%) accepted that probiotics would confer good general health when consumed, only 43.7% were aware of the fact that probiotics can be used to address issues on oral health. This is however much higher compared to the study conducted among the Rio population where only 7.86% were aware that probiotics could cause a reduction in caries. (15)77.5% of our population were aware that milk, yoghurt and cheese are some of the richest sources of probiotics. This knowledge could be attributed to the power of marketing dairy products labeled with benefits of probiotics in them. Further, a massive 61.4% of the population also believes that the variety of products containing probiotics can be increased.

Females have better awareness of probiotics compared to males. This is in concordance with a similar study conducted among the Saudi public where females had greater knowledge and awareness levels than males [16]. Men and women exhibit considerably dissimilar behavior towards healthy food and lifestyle. Men show reduced eagerness towards dietary guidelines than women. One probable justification for this might be that women are more knowledgeable about food and nutrition and are more interested when it comes to physical appearance and health than men. This is however in contrary to the study by Payahoo et al., [17] where male students had higher knowledge levels than female students. Married respondents showed better knowledge, attitude and practice compared to unmarried participants. 31.3% of the participants with per capita income of Rs 47,000 and above exhibit good knowledge, 35.8% show good attitude and 44% show good practice. This reveals the bearing economic status has on the awareness of probiotics in the population. Graduates and post graduates showed higher positive knowledge, attitude and practice on probiotics, considering the quality of education and training they receive.

The current study clearly revealed that the participants had a basic knowledge of probiotics. However, 77.8% still admit that information about probiotics is less among the public and 85.1% are willing to know more information on probiotics if given to them. This reinforces the positive attitude the society has towards health. With public awareness on health and nutrition increasing day by day, it is important to bridge the gap between medical literature and consumer awareness. Increased accessibility to health promoting channels and media would be the best way to achieve this. This would bring out knowledgeable individuals who are concerned about the health and lifestyle of themselves and the society as a whole.

## Conclusion

Within the limitations of this study it can be concluded that there exists good basic knowledge, attitude and practice towards probiotics among the Indian population, however its importance in oral health has to be further reinforced. With abundance of information on probiotics available in literature, it becomes imperative that it is made accessible to the general community for better upliftment and promotion of health and lifestyle.

## Compliance With Ethical Standards

The authors declare that the paper has complied with the ethical standards as per the guidelines of the journal.

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