



Research Paper

Knowledge and Awareness of People towards Probiotics Products in Lucknow City

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ABSTRACT:

Introduction: Probiotics are bacteria that help maintain the natural balance of microflora in the intestines. India is emerging as a major probiotic market. The use of probiotic is said to be an imperative aspect in dentistry in prevention and treatment of caries, periodontal disease, etc. Hence, this study is planned to evaluate the Knowledge and Awareness of people towards probiotics products in Lucknow city. **Materials & Methods:** A Cross-Sectional, questionnaire study was conducted between December 2021- February 2022 with sample size of 220 and random sampling was done. A structured, self-administered, close ended questionnaire with 16 questions in English and Hindi was prepared in electronic media. The Chi square test was used to compare the gender wise knowledge related to probiotic use. **Results:** In the study, 30.0% were men and 70.0% women, with maximum respondents lying in age group of 25 to 34 years. 34.84% male were aware of the word probiotic and will recommend it while among female 71.42% were aware and 62.33% will recommend it. **Conclusion:** The participants were well aware of the term probiotics and its role in improving the health. Majority of the participants were willing to try probiotics if it was recommended by a health-care professional.

KEYWORDS: Knowledge, Awareness, Probiotics, Lucknow

Received 02 June, 2023; Revised 10 June, 2023; Accepted 13 June, 2023 © The author(s) 2023.

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I. INTRODUCTION

Probiotics are bacteria that help maintain the natural balance of microflora in the intestines and the concept was introduced in early 20th century by **Elie Metschnikoff**.¹ According to **FAO/WHO, 2002** "Probiotics are living microorganisms which when administered in adequate amounts confer health benefits to the host". The **Natural Health Products (NHP) Regulations** defines Probiotics as a monoculture or mixed culture of live micro-organisms that benefit the microbiota indigenous to humans.² Probiotics gained importance in recent years with the emerging scientific evidences suggesting their role in digestive and immunological functions. The use of probiotic is said to be an imperative aspect in dentistry in prevention and treatment of caries, periodontal disease, etc.³ Probiotic and molecular genetic techniques have been used to replace cariogenic organisms such as *Mutans Streptococci* and *Lactobacillus*.⁴ Probiotics have applications both as preventive as well as curative therapy and are available in various varieties in the market such as Functional food & beverages (dairy products, non-dairy beverages, breakfast cereal, baked foods, fermented meat products, dry-food probiotics), dietary supplements (food supplements and nutritional supplements), Specialty nutrients (infant formulation), pharmaceutical preparations and as Animal feed.² 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 potential aiding the elimination of pathogenic micro-organisms.⁵ India is emerging as a major probiotic market of the future with annual growth rate of 22.6% until 2015 with a handful of players in Indian probiotic industry are Amul, Mother Dairy, Yakult Danone and Nestle along with other minor players operating in different regions in their own capacities.⁶ Probiotics in India generally comes in two forms, milk

and fermented milk products with the former occupying 62% of the market share and the latter having 38% marketshare.⁷ Probiotics have gained tremendous popularity amongst individuals searching for alternative and “natural” means to promote intestinal health. Hence, this study is planned to evaluate the Knowledge and Awareness of people towards probiotics products in Lucknow city.

II. AIM AND OBJECTIVES

AIM:

To evaluate the Knowledge and Awareness of people towards probiotics products in Lucknow city.

OBJECTIVES:

1. To assess the knowledge regarding probiotics products among the general population in Lucknow city.
2. To assess the awareness regarding probiotics products among the general population in Lucknow city.

III. MATERIALS AND METHODS

STUDY DESIGN: A Cross-Sectional, questionnaire study was conducted between December 2021- February 2022 to evaluate the knowledge and practice of people towards probiotics products in Lucknow city.

STUDY POPULATION: General population of Lucknow city.

Inclusion Criteria: People who participated voluntarily and submitted the complete forms were included in the study.

Exclusion Criteria: People who refused to participate in the study and Patient who couldn't comprehend the questions of the study.

SAMPLING: The sample size was estimated using the formula $n = Z^2P(1-P)/d^2$. The sample size was estimated to be 220 based on previous literature.² Random sampling technique was used.

ETHICAL CLEARANCE AND CONSENT: Ethical clearance was obtained from Institutional Ethical Committee of Babu Banarasi Das College of Dental Sciences, BBDU, Lucknow. Verbal consent was obtained from all the subjects participating in the study.

PILOT STUDY: A pilot study consisting of 20 participants was carried out to check the feasibility of the study and to assess the relevance and content validity of the questionnaire.

QUESTIONNAIRE: A structured, self-administered, close ended questionnaire with 16 questions in English and Hindi was prepared in electronic media to evaluate the knowledge and practice regarding probiotics in Lucknow city. A link to access and fill the questionnaire was generated and was shared with the general population through various social media communication.

STATISTICAL ANALYSIS: The data collected was entered in IBM SPSS 20.0 version (Chicago, Inc, USA). The results are presented in frequency and percentage through graphs and tables. The Chi square test was used to compare the gender wise knowledge related to probiotic use.

IV. RESULTS

From the data retrieved by the survey, a randomly distributed population was obtained. Of the 220 individuals who answered the final questionnaire 30.0% were men and 70.0% women, with maximum respondents lying in age group of 25 to 34 years and maximum of the respondents were housewife. In the present study 34.84% male and 71.42% female participants were aware of the word probiotic. Most of them have heard it by internet and by family member or friend. Only 33.33% male and 70.12% female participants know the benefits of probiotics. Yoghurt was consumed by 10.60% of male and 24.02% female participants. 68.62% of male participants do not consume probiotic product as they are not aware whereas female participants do not consume probiotic product as it is not affordable. 75.75% male and 37.66% female participants consider probiotics harmful. 34.84% male and 62.33% female participants will recommend it to others. There was no statistically significant difference between the response of male and female students (**p value=0.000**).

Graph 1: Gender wise distribution of the participants

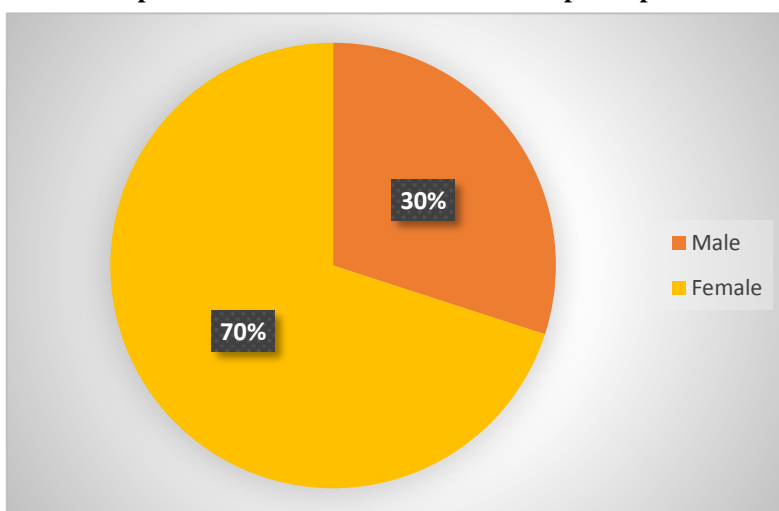
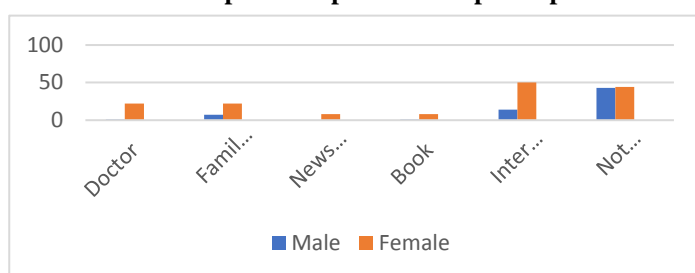


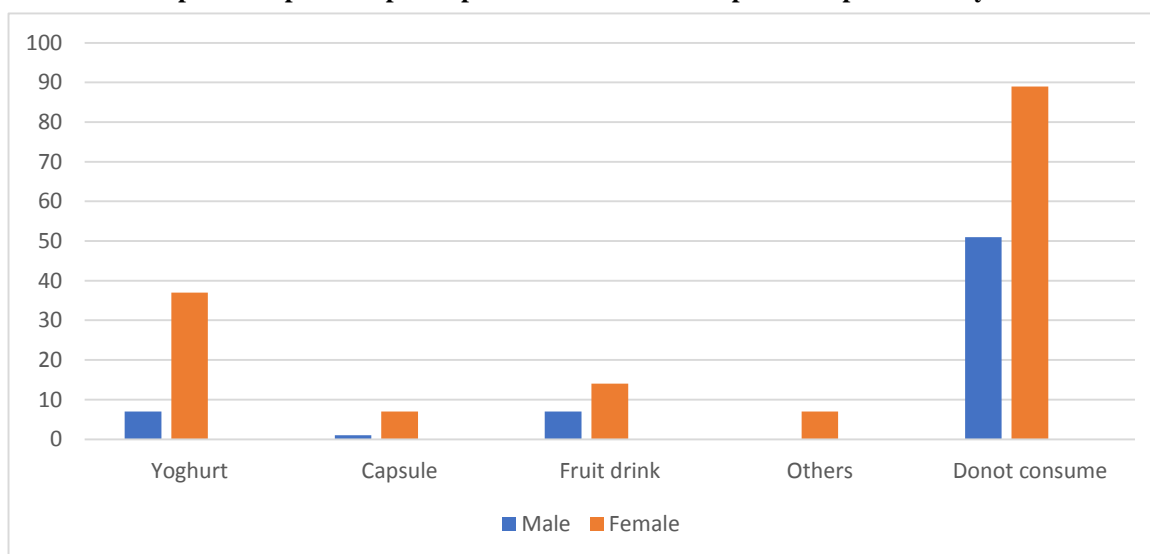
Table 1: Response of the participants

	Male		Female		Chi-square value	p value
	Yes	No	Yes	No		
Are you aware of the word probiotic?	23	43	110	44	25.859	0.000
Do you know the benefits of probiotics?	22	44	108	46	25.877	0.000
Do you consume any probiotic product ?	15	51	65	89	7.577	0.004
Do you consider it harmful for health?	50	16	58	96	26.828	0.000
Do you believe that Indian traditional diet is sufficient natural source of probiotic?	8	58	60	94	15.585	0.000
Do you believe that probiotic food promote stimulation of immune system?	16	50	66	88	6.847	0.009
Do you believe that probiotic containing products are not easily digested?	8	58	66	88	19.552	0.000
Will you recommend it ?	23	43	96	58	14.059	0.000

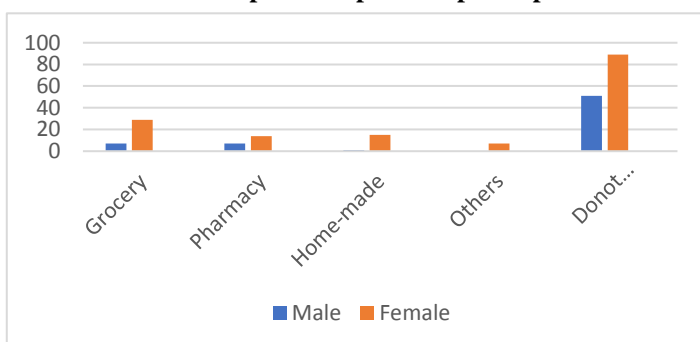
Graph 2: Response of the participants on how have they heard about probiotic



Graph 3: Response of participants on which form of probiotic product they consume



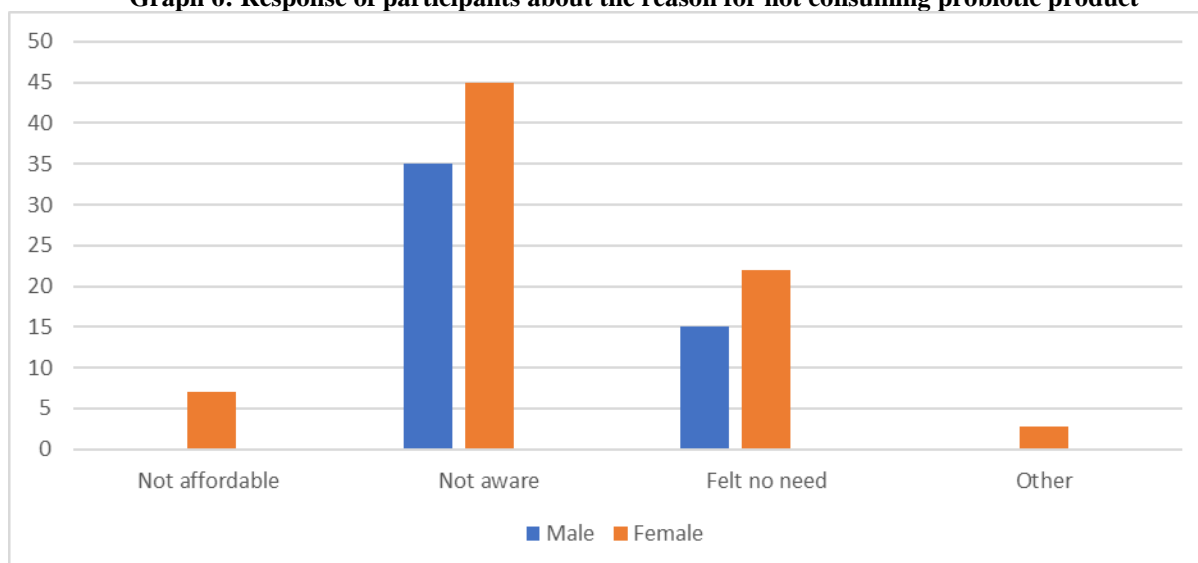
Graph 4: Response of participants from where they purchase the product



Graph 5: Response of participants how they select which probiotic product to consume



Graph 6: Response of participants about the reason for not consuming probiotic product



V. DISCUSSION

In the present study 220 individuals participated out of which 30% were men and 70% were women. Among the sample size of 220, 34.84% male participants and 71.42% female participants were aware of the word probiotics accounting for a good familiarity which was similar to the studies conducted by Sahib PK et al in which 60.5 % of population was familiar with the word probiotics² and another study done by Stanczak M and Heuberger R in which 38.5% participants stated that they had heard of probiotics.¹⁶ When the participants were asked how have they heard about probiotic, 21.21% of male participants and 32.46% female participants answered internet which was similar to the study conducted by Rahmah PA et al in which 26% of the respondents gained information on probiotics from the Internet.⁷ It was seen that 33.33% male participants and 70.12% female participants know the benefits of probiotics which was similar to the study conducted by Raihing C et al in which majority of the consumers (85%) perceived probiotic foods as beneficial in improving gut health¹³ and another study done by Saheer A et al in which 83% of the respondents were aware that probiotics improve their health¹² and also related to study conducted by Shireen A et al.¹⁴

Present study shows that 22.72% male participants and 42.20% female participants consumed some form of probiotic product which can be compared with the study done by Barqawi HJ et al in which Only 17.8% of the participants reported to have consumed probiotics¹⁵ and by Aldakheel HA in which 19.6% of participants consumed probiotics.¹⁰ Among different forms of probiotic products consumed, most common was Yoghurt which can be compared to the study done by Sahib PK et al.² When participants were asked from where they purchase the product, 10.60% male participants and 9.09% female participants purchased the product from pharmacy which is in contrast with the study done by Havelda L et al in which the majority of participants would buy goods in pharmacies (86.4%).⁹ The time of consumption of the product by the participants shows that 1.51% male participants and 18.83% female participants consumed it with meal which is similar to the study conducted by Aldakheel HA et al in which 24.4% of the participants consumed probiotics with the meal.¹⁰ When participants were asked the reason for not consuming probiotic product, 68.62% of male participants and 50.56% female participants do not consume probiotic product as they were not aware which is similar to the studies conducted by Barqawi HJ et al in which being unaware of the health benefits of probiotics was the most common barrier to taking them (45.7%)¹⁵ and by Krishnan L et al in which majority (94% participants) did not use probiotics as they were not aware of its use.¹⁷

In the present study it was found that 93.33% male participants and 73.84% female participants believed probiotics to be beneficial which can be compared with the studies done by Ananya B et al in which people consuming probiotics had health benefits⁴ and by Sharma B in which 57% participants believed Probiotics are good bacteria.¹¹ Also 75.75% male participants and 37.66% female participants consider probiotics harmful for health which is similar to study conducted by Faden AA et al in which 74.5% males and 77.1% females considered it harmful⁸ and by Saheer A et al in which 25% participants considered probiotics not safe.¹² When the participants were asked whether they believe that probiotic food promote stimulation of immune system, 24.24% male participants and 42.85% female participants believed it which is similar to the study conducted by CarvalhoI NB et al in which 36 % participants believe that probiotics promote stimulation of the immune system⁶ and by Stanczak M et al in which 36.7% identified increased immune function as a role of probiotic.¹⁶ When the response of the participants was asked that will they recommend it to others, 34.84% male

participants and 62.33% female participants responded that they will recommend it to others which can be compared with the study conducted by Rahmah PK et al in which 52.9% participants responded that they will recommend it to their friends and relatives⁷ and by Aldakheel HA et al in which 66.9% said yes when asked would they recommend probiotics to others.¹⁰

VI. LIMITATION

The study was conducted using self-administered questionnaire for the collection of data hence study is subjected to response bias. And also this study was limited to participants of Lucknow city only, so it is difficult to study trends which reflect attitudes of the population on a larger scale.

VII. CONCLUSION AND RECOMMENDATION

Probiotics are considered as an emerging supplementary field in health care. They play an important role in improving the microbiota of the general as well as oral health. From the present study, we can conclude that the participants were well aware of the term probiotics and its role in improving the health. Majority of the participants were willing to try probiotics if it was recommended by a health-care professional. Efforts should also be made to explore and popularize the forgotten traditional foods with probiotics and prebiotics. Consumption of indigenous sources is likely to be more economical than consuming commercial products or supplements. Educational strategies such as nutrition education, media campaign and awareness programs should be carried out to address the correctness of information about probiotics and probiotic products as well as to promote the increase of probiotic consumption. The manufacturing companies should bring the marketing strategies by combining the doctors/scientific approach to the consumers to make the consumers know about the health benefits of probiotics. An online up-to-date database and professionally reliable websites should be created which would make appropriate information accessible about the probiotic strains, their benefits and risks and even about those products which are currently on the probiotic market and are available for consumers. A further clinical investigation should be carried on to confirm the beneficial influence of the oral probiotics on dental and oral health. Laws about health claims are also required to be reformed because they are not sufficient to explain the health benefits of probiotics products.

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