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Consumption pattern of fermented probiotic dairy Products in metropolitan Delhi

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Abstract
The Indian Probiotic market is emerging as one of the most high growth potential markets worldwide due to multiple factors such as growing health concerns among consumers especially among the youth, changing food consumption patterns, increasing diabetic population, growing risk of stress/lifestyle related and cardiovascular diseases, and rising disposable income. Therefore, keeping in view the above facts, the present study had been undertaken in five locations of Metropolitan Delhi namely: Preet Vihar, Janakpuri, Kamla Nagar, Saket and Connaught Place representing East, West, North, South and Central locations respectively of the metropolitan Delhi. Out of the total respondents interviewed, 71 per cent were probiotic users while 29 per cent were non users. Amongst the non- users, 96 per cent were aware of the presence of probiotic brands while 4 per cent of the respondents were unaware. The study reveals that electronic media ads were the major sources of information for the respondents (22 per cent) about the probiotic products followed by internet and family and friends (21 per cent each). Among the probiotic drink users, 63 per cent of the respondents opined that they were the regular users and 37 per cent were occasional users. Majority of the respondents (53 per cent) preferred to purchase probiotic drink from local stores due to its easy availability. Most of the respondents (36 per cent) amongst probiotic dahi users opined that they purchase the product from milk parlours. Least number of respondents amongst probiotic drink (5 per cent) and probiotic dahi users (4 per cent) preferred to purchase the products from other retail stores like malls and mini outlets by the roadside. Most of the consumers of probiotic lassi (46 per cent), probiotic yoghurt (54 per cent) and probiotic buttermilk (65 per cent) were preferred to buy the product from Supermarkets due to their less availability in local stores and in turn their less popularity.

Keywords: Consumption pattern, metropolitan Delhi, fermented probiotic products, consumer behaviour

Introduction
The Indian Dairy Probiotic market is emerging as one of the high potential markets worldwide due to various factors such as growing health concerns especially among the youth, changing consumption patterns, increase in the number of diabetics, growing risk of stress, lifestyle related cardiovascular diseases and increasing disposable income. Increasing number of foreign and domestic companies in the market is escalating the demand for probiotic in India. According to the report by Tech Sci Research "India Probiotic Market Forecast and Opportunities, 2019", the Indian probiotic market is estimated to mark a Compound Annual Growth Rate (CAGR) of 19.80 per cent during 2014-19, revenue wise. Northern part of India dominates the dairy probiotic market, in terms of sales and revenue, followed by the Southern and Central regions. Mother Dairy, Amul, Yakult and Nestle India are amongst the leading producers of probiotic functional foods in the country. Socio demographic factors like age, income, literacy and location also had an effect on consumer acceptance (Verbeke, 2005) [4]. Consumers of all ages were agreeing to accept these foods if the health claims mentioned by the manufacturer were found to be true (West and Larue, 2004) [5].
With increase in income of the consumers, rising urbanization and better advertisement of the products, the demand for probiotics in India is expected to grow further in the years to come.

Analysis of consumption pattern and consumer behaviour for fermented probiotic dairy products is very important from the point of view of both consumers as well as the probiotic companies. It would help in design of the policies concerning consumer awareness and consumption of fermented probiotic dairy products.

Research Methodology

The study on consumption pattern of fermented probiotic dairy foods was conducted in Metropolitan Delhi. For detailed investigation, five representative areas were selected namely; Preet Vihar, Janakpuri, Connaught Place, Kamla Nagar and Saket which represents East, West, Central, North and South Delhi respectively. The study is based on primary data and supported with secondary data wherever necessary. For analysis of consumption pattern, the data was collected from 250 respondents who visited various purchase locations in the study area. From each respondent the data was collected pertaining to entire household. Secondary information was collected from various published and unpublished sources which include: market reports, websites and magazine and newspaper articles were referred to get information on market coverage, composition and leading player brands in the probiotic dairy industry. To examine the consumption pattern of probiotic dairy foods in Metropolitan Delhi, descriptive analytical statistics was used. The data collected on socio demographic profile of the household, consumer behaviour and awareness, expenditure on probiotic dairy foods and non-foods etc. were analysed via tabular analysis. The probiotic products considered in this study include probiotic drink, probiotic dahi, probiotic yoghurt, probiotic lassi and probiotic buttermilk. The entire sample collected was stratified into various income groups using cumulative frequency approach.

$$L_i = Y_i - 1 + \frac{Y_i - (Y_i - 1)}{\sqrt{f_i}} \left(\frac{S_k}{L} - S_i - 1\right)$$

Where

L = No. of strata

L_i = i^{th} strata

$\sqrt{f_i}$ = Square root of the frequency of the i^{th} class in which $L_i (S_k/L)$ lies

S_i–1 = Cumulative square root of the frequency of the preceding class in which

$L_i (S_k/L)$ lies

Y_i = Upper limit of the class in which L_i lies

$Y_i - 1$ = Lower limit of the class in which L_i lies

$Y_i - (Y_i - 1)$ = Width of the class in which $L_i (S_k/L)$ lies

Results and Discussion

Awareness status of fermented probiotic dairy products

The analysis of consumer awareness relating to fermented probiotic dairy products is considered as key factor for successful development of Indian fermented probiotic dairy industry for market orientation, consumer preferred product development and assessing opportunities for growth of fermented probiotic dairy products. The study revealed that out of the 250 respondents interviewed, 247 (98.8 per cent) were aware of the fermented probiotic dairy products while 3 (1.2 per cent) of the respondents were not aware of these products (Fig.1).

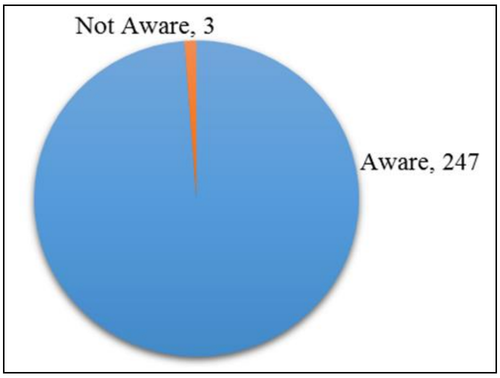

Fig 1: Awareness status of the respondents for fermented probiotic dairy products

Out of the 250 respondents interviewed 71 per cent were users of fermented probiotic dairy products while 29 per cent were the non-users (Fig. 2). The respondents consuming these products were of the opinion that they consume these owing to the health benefits. The confidence in functional food is about the fact that whether consumers think that functional foods can be used in order to promote their health, the level of confidence consumers have in functional foods and whether or not they perceive functional foods as something that is safe and healthy to consume (Lahteenmaki and Urala 2007) [2]. While, the health claims were given least importance by the consumers whereas the brand value of the product had utmost importance (Ares 2010) [1].

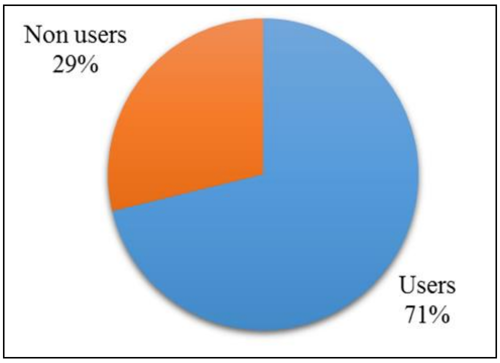

Fig 2: Distribution of respondents based on the usage of fermented probiotic dairy products

Out of the non-users, it was observed that 96 per cent were aware of the fermented probiotic dairy products while 4 per cent were unaware about the same (Fig.3).

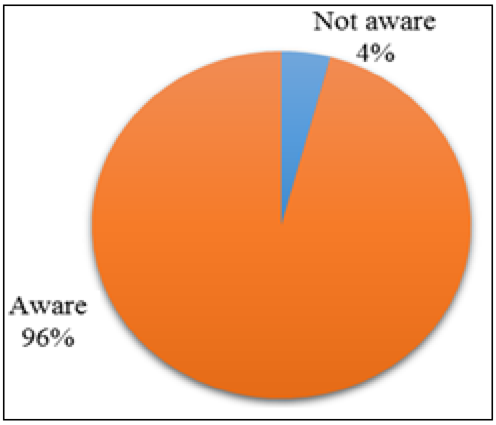

Fig 3: Distribution of the non-users based on their awareness status

Source of information for fermented probiotic dairy products

Growing consideration about health and wellness has led to a strong focus on gathering information about the fermented probiotic dairy products. In the present study, the analysis of source of information regarding the knowledge of fermented probiotic dairy products was carried out and it is presented in Fig 4. It reveals that the major source of information was the electronic media advertisements (22 per cent) followed by friends and relatives and the internet at 21 per cent each. The least contributors in this aspect were scientific panel discussions (4 per cent), F.M (5 per cent) and scientific journals (8 per cent). About 19 per cent of the contribution to sources of information regarding the fermented probiotic dairy products was due to newspaper advertisements. Most of the fermented functional food users claim that electronic media advertisements was the most important and popular source of information provider regarding the products consumed by them (Govindrao 2013) [3].

Table 1: Different sources of information for fermented probiotic dairy products

Source of information	Percentage of respondents
Newspaper advertisements	19
Scientific journals	8
Electronic media advertisements	22
Scientific panel discussions	4
F.M.	5
Internet	21
Friends and relatives	21

Consumption pattern for fermented probiotic dairy products

The study of consumption pattern of households for the fermented probiotic dairy products has a prime importance in order to expand the market in India. The increasing middle class population along with increased health consciousness amongst the metropolitan consumers will definitely act as key factors for growth of fermented functional dairy product sector. Table.1 represents the per capita consumption of fermented probiotic dairy products across different income groups. In this study it was found that the overall highest per capita consumption was that of probiotic drink (893.65 ml/month) followed by probiotic dahi (346.07 g/month). The least per capita consumption was that of probiotic yoghurt (158.15 g/month). The overall per capita fermented probiotic dairy product consumption in the study area was found to be 2038.38 g/month. It was found that across all the income groups the per capita consumption was found to be the highest for probiotic drink. The total per capita fermented probiotic dairy product consumption was found to be the highest for income group III (2588.46 g/month) followed by income group II (2088.08 g/month) and income group I (1485.16 g/month). In income group I, the least per capita consumption was found to be that of probiotic dahi (100 g/month) while in income groups II and III, the least per capita consumption was found to be that of probiotic yoghurt i.e. 176.04 g/ month and 100.96 g/month, respectively. The per capita monthly consumption of functional food in Metropolitan Maharashtra was more for income group III followed by income group II and income group I, respectively (Govindrao 2013) [3].

Table 2: Per capita consumption of fermented probiotic dairy products across different income groups (g/month) or (ml/month)

Product Type	Income Group I	Income Group II	Income Group III	Overall
Probiotic Drink	592.19 (39.87)	887.04 (42.48)	1295.19 (50.04)	893.65 (43.84)
Probiotic Dahi	100.00 (6.73)	365.00 (17.48)	584.62 (22.59)	346.07 (16.98)
Probiotic Lassi	281.25 (18.94)	351.67 (16.84)	300.00 (11.59)	329.78 (16.18)
Probiotic Yoghurt	136.72 (9.21)	176.04 (8.43)	100.96 (3.90)	158.15 (7.76)
Probiotic Buttermilk	375.00 (25.25)	308.33 (14.77)	307.69 (11.87)	310.73 (15.24)
Total	1485.16 (100.00)	2088.08 (100.00)	2588.46 (100.00)	2038.38 (100.00)

Figures in the parentheses indicate percentage.

Consumer behaviour for fermented probiotic dairy products

The study analysed the purchase locations, reasons behind the consumption, consumers' expected frequency of consumption, etc. The probiotic drink users stated that 63 per cent of them consumed the product regularly while 37 per cent of the users opined that they used the products occasionally (Fig.4.1). Out of the respondents who were the regular users of the probiotic dairy drink stated that 71 per cent of them used the products regularly while 29 per cent of them used them on certain days of the week (Fig. 4.2). When asked about the frequency of consumption of probiotic lassi, 85 per cent of the user respondents revealed that they used the product occasionally while 15 per cent of them used it on certain days of the week (Fig.4.3). The frequency of consumption of probiotic lassi according to the respondents revealed that 80 per cent of the respondent users consumed the product occasionally while 20 per cent of them used it on certain days of the week (Fig.4.4). The respondent users who consumed probiotic yoghurt revealed that 24 per cent of them used the product occasionally while 76 per cent of them used the product rarely (Fig.4.5). The user respondents consuming probiotic buttermilk stated that 58 per cent of them used it occasionally while 42 per cent of them used it on certain days of the week (Fig.4.6).

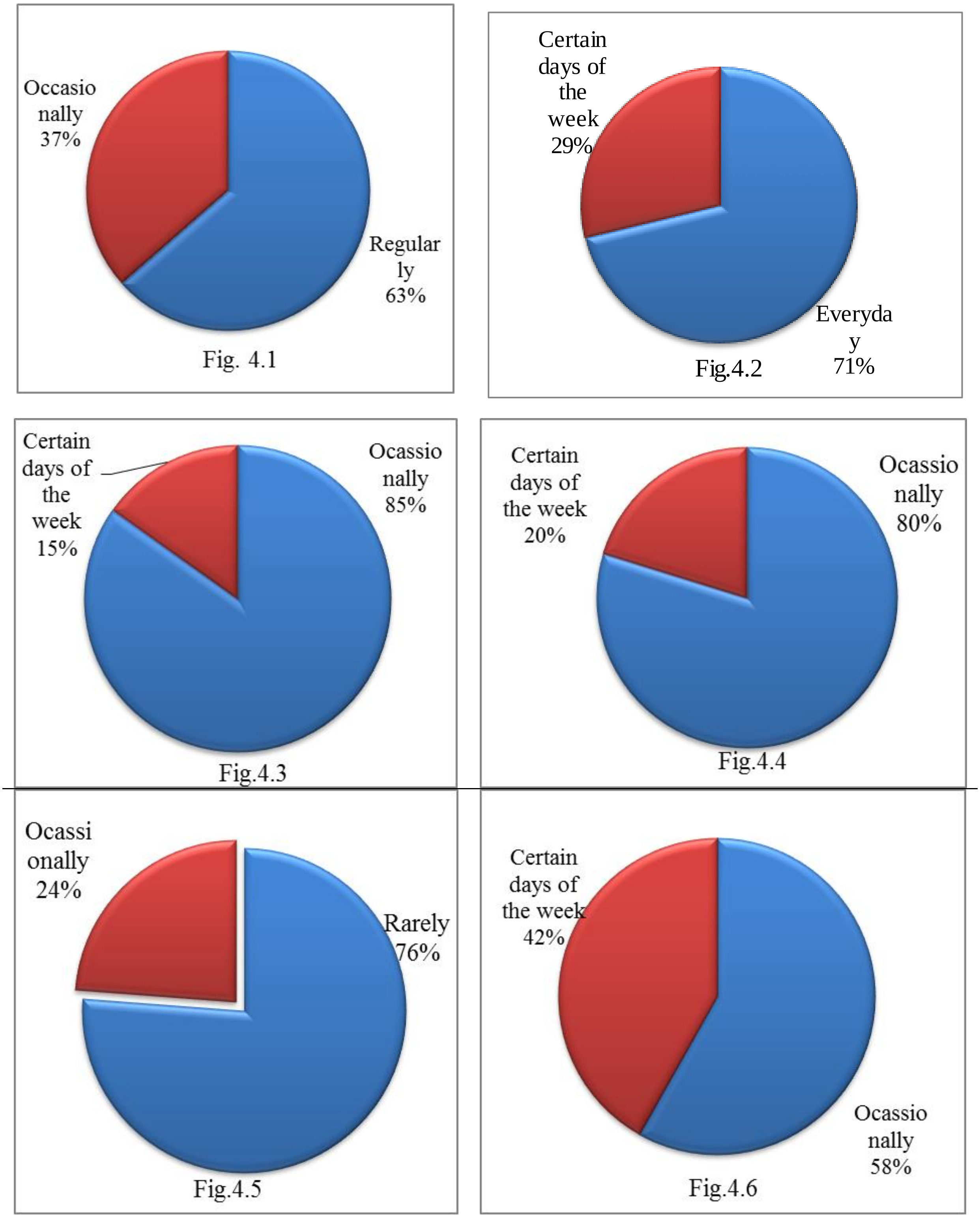

Fig 4.1 to 4.6: Frequency of consumption of: probiotic drink by respondent users, regular respondent users of probiotic drink, probiotic dahi, probiotic Lassi, probiotic yoghurt and probiotic buttermilk respectively.

The analysis of purchase locations for fermented probiotic dairy foods is of prime importance in order to know which purchase locations are the most preferred by the consumers. In case of probiotic dahi the user respondents revealed that most of them (36 per cent) purchased the product from milk parlours followed by supermarkets (33 per cent). Similarly, most of the user respondents (53 per cent) of probiotic drink stated that they purchased the product from local stores which represents the wide availability of the product in local stores which was the result of highly efficient distribution of the product into nooks and corners of the study area. About 30 per cent of the respondents consuming probiotic drink revealed that they purchased the product from supermarkets. In case of both probiotic drink (5 per cent) and probiotic dahi (4 per cent), the purchase locations that was least explored was other retail stores which include malls, mini kiosk and local product outlets (Table 3).

When asked about the purchase location preferences for probiotic Lassi, probiotic yoghurt and probiotic buttermilk, it revealed that the most preferred location for these products were mostly preferred to be bought from supermarkets and the least preferred locations for the purchase of these products were other retail stores for probiotic lassi and yoghurt while for probiotic buttermilk it was found to be local stores. This indicates the less availability of these products locally (Table 3).

Table 3: Purchase locations for fermented probiotic dairy products

Probiotic product	People purchasing from different purchase locations (per cent)			
	Supermarket	Milk Parlour	Local store	Other retail store
Probiotic dahi	33	36	27	4
Probiotic drink	30	12	53	5
Probiotic lassi	46	18	28	8
Probiotic yoghurt	54	18	20	8
Probiotic butterrmilk	65	25	2	8

The functional food users preferred local shops for purchasing functional drinks which are used frequently while for other products like functional yoghurt, dahi etc. the respondent users preferred supermarkets and malls (Govindrao 2013) [3].

Conclusions

The fermented probiotic dairy products are a very good option to expand the Indian nutraceutical market and research related to that. Out of the 250 respondents interviewed, 247 (98.8 per cent) respondents were aware of probiotic brands available in the markets while 3 (1.2 per cent) of them were not aware. Out of the total respondents, 71 per cent were probiotic users while 29 per cent were non users. Amongst the non- users, 96 per cent were aware of the presence of probiotic brands while 4 per cent of the respondents were unaware. The study reveals that electronic media advertisements were the major sources of information for the respondents (22 per cent) about the probiotic products followed by internet and family and friends (21 per cent each). Least number of respondents got information for probiotic products from the scientific panel discussions (4 per cent) followed by FM (5 per cent) and scientific journals (8 per cent). Out of the respondents who were probiotic drink users, 63 per cent opined that they were the regular users and 37 per cent were occasional users. Amongst the Dahi consumers, 15 per cent of the consumers said that they consumed it on certain days of the week while 85 per cent consumed it occasionally. About 80 per cent of the consumers consumed the probiotic lassi occasionally while 20 per cent of them consumed it on certain days of the week. Yoghurt was rarely consumed by 76 per cent of the respondents and 24 per cent consumed it on certain days of the week. About 42 per cent of the respondents consumed probiotic buttermilk on certain days of the week while 58 per cent consumed it occasionally. Majority of the respondents (53 per cent) preferred to purchase probiotic drink from local stores due to its easy availability. Most of the respondents (36 per cent) amongst probiotic dahi users opined that they purchase the product from milk parlours. Least number of respondents amongst probiotic drink (5 per cent) and probiotic dahi users (4 per cent) preferred to purchase the products from other retail stores like malls and mini outlets by the roadside. Most respondents amongst consumers of probiotic lassi (46 per cent), probiotic yoghurt (54 per cent) and probiotic buttermilk (65 per cent) preferred to buy the product from Supermarkets which indicated their less availability in local stores and in turn their less popularity. This study is of great help or the probiotic companies to increase their user base in the Metropolitan Delhi by adoption of proper marketing strategies.

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