

Consumer's Preferences for Indigenous Functional Foods of Haryana State in India

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Abstract: Consumption preferences for the different functional food products were assessed by interviewing consumers with the structured questionnaire. Focus group discussion revealed various functional foods commonly consumed in the research locale. There were different groups of product found to be consumed like namely *curries/dhals*, sweets, drinks, medicinal foods, *Chutneys* and others. Consumer preferences vary with different functional food products. The preferences factors associated with the consumer choice are dependents on the personal choices and not on the socio-cultural restrictions. However, few market based preferences like availability and purchase locations are dependent on the economic factors. Scenario analysis based on various consumer preference factors affecting the choices revealed some significant factors for innovation.

Keywords: Traditional Functional Foods, Health Foods, Dietary Preferences, Consumers Choice, Food Liking

1. Introduction

The increase in demand for the functional foods has created a gap in the marketing strategies for the foods. The various issues of marketing the foods need re-analysis. Some of these significant issues are packaging, nutritional labeling and conveying the real meaning of the function foods. Apart from these there are concerns in the development of the functional foods. Different approaches are in practice for the development of the foods. But in case of the functional foods, do the basic approaches are applicable, is a question to be answered. New products are continuously launched, making intense competition. Consumer's oriented food product development is one such approach which considers what consumers desire (Linnemann *et al* 2006).

Consumer choices for food are inclined by the perception of food characteristics, food preferences, food awareness, accessibility and affordability (Siró *et al.*, 2008). Therefore, it is of significant to analyze them which is the key target of the present study. This study aims to identify the preferences' related factors and their interrelation with each other.

This research targets to reflect different preferences of the consumers for the functional food consumption. The factors related to the preferences for the consumption, purchase and availability of the functional foods will help in deciding and implementing the different approaches for the marketing, designing and production of the functional foods in the Indian food market. The results of this

study will possibly facilitate health professionals and policy makers to systematically inform the consumers about the positive effects of functional foods and its components. Furthermore, results will help out marketing professional and product developers (van Kleef *et al*, 2005, van Kleef *et al*, 2005) in preparing suitable model for the consumer's preferences and implementation into suitable new functional food products. The products can be developed in relation with the nutritional status of the population (Vijayaraghavan *et al*, 1998)

2. Methods:

2.1 Research area:

Haryana, one of the states situated in northern India, which harbors a high level of local biodiversity, was selected as the locale for the research described in this research. The food consumption patterns of the local population include diverse foods based on cereals, milk, fruits, vegetables and legumes (Manu and Khetarpaul, 2006). Indigenous foods have traditionally provided nutritionally balanced food to the northern Indians. The traditional food system includes many indigenous functional foods like curd, *chavanprash*, *amla*, tomato, *gund ke laddu* and many more. People here come from varied age group, caste, race, literacy and financial background. Apart from being the traditional state there are many urbanized cities of world level which will provide consumer of varied advanced functional foods like breakfast cereals,

functional drinks, medicated food. Due to availability of wide variety of consumer and involvement of various functional foods in the consumption pattern this state suited as the research locale for this research.

2.2 Demographic details of the respondents :

The 250 respondents were selected for the study from different cities (Bhiwani, Rohtak, Hisar, Bahurgarh and Gurgaon) of Haryana including rural (50 %) and urban consumer (50 %), included 50 % males and 50 % females of different ages and economic background. Amongst the respondents 25.0, 25.0, 33.0 and 17.0 % were aged from 8-19, 20-35, 36-50 and above 50 years, respectively. Out of these 71.1 % were married. In terms of education status uneducated, primary level school education, secondary level school education and high level school education were selected in equal percentages. Similarly equal percentages were taken for the occupations including farmers, house wives, civil servants, businessmen and school students. Apart from these factors included for keeping diversity in the respondents other factors like caste, origin, marital status etc were also considered depending on the results of focus group discussion.

2.3 Focus group discussions :

To take stock of the different functional food processed and consumed by rural and urban society, focus group deliberations with 15-20 test subjects were

conducted in each rural and urban area. Focus groups consisted of at least one commercial and one household processor of each functional food, along with female, male, children and elderly people as consumers of functional foods. Group participants were informed about the purpose of the focus group discussion. Participants were asked to freely interact with each other on the given topic. Theme for the focus group discussions was the number and type of functional food, difference between functional foods and health foods, products commonly processed and consumed. Participants were asked to sort products into groups and to identify the main characteristics of each group formed. The probes used for the discussion were household/commercial products, sweets and snacks. Key points commented about the functional food products were recorded. During the discussions many functional foods were identified. The outcome was also used to validate and develop the interview questionnaire (Brown *et al*, 2011).

2.4 Interviews with structured questionnaire:

In total 250 respondents participated individually in this test. A cross sectional survey of consumers was conducted using a structured questionnaire (Roininen *et al*, 1999). The questionnaire was framed into different sections to collect data about consumer knowledge of various functional foods. Questions were planned to assemble both qualitative data through multiple choice questions and

quantitative data through open questions. Pre-testing and finalizing of the questionnaire was done on the basis 15 experimental interviews and appropriate modifications were made. The questionnaire was in English, and was translated in the local language (Hindi) or dialect (*Haryanvi*) when required during interview. The objective of this fraction of the research was explained and described to each respondent before the dialogue. Data was taken personally by administering the interview agenda to the respondents.

2.5 Statistical analysis:

Data were analyzed using descriptive statistics (mean, frequencies and percentages). All statistical analyses were performed with PASW Statistics (Version 18.0.2) IBM Co. USA.

3. Results :

3.1 Description of the functional food products

The focus group discussion with the consumer indicated various functional foods consumed with various intentions. Table 1 presents a brief description of the functional foods and their ingredients. They were classified into six groups, namely *curries/dhals*, sweets, drinks, medicinal foods, *Chutneys* and others. *Curries* and *Dhals* are spiced of vegetables or split legumes, with thick soup-like consistency, commonly consumed with cereal products like rice and chapattis

(Indian flat bread). Sweets include two products like *laddu*, prepared with ghee (clarified butter oil) and sugar along with flour by shallow frying. *Khichadi* products each have distinctive characteristics and thus were combined as a category of other products. Sprouts are germinated mung bean grains eaten as such or fried to be used in salads. *Khichadi* is prepared by cooking split mung beans with white rice. *Sattu* is a summer drink made with the roasted cereal flour and mixed in cold water with sugar. *Rabdi* is a cereal-curd based fermented drink. *Lassi* is butter milk. *Chavanprash* is a medicinal preparation with thick paste like consistency consumed in low amounts. *Amla murabba* is a fruit preserve with sugar syrup.

3.2 Consumers awareness for the functional foods:

The majority of consumers were well aware of the different functional food products. However, *Suhanjane ki sabji* is a dry curry which is less known by few consumers. It is a product comparatively common in the rural areas. It is processed mostly by rural housewife. The majority of consumers did not know the processing of all the functional products. *Chavanprash* processing is not known by any of the consumer. The main reason for such a deviation is this product being a medicinal product and commercial in nature. Similarly, *sattu* is a product which is consumed by people mostly in the rural areas and only few knows how to make it. Though, the product is also available in the traditional retail shops.

3.3 Consumer preferences for the functional foods:

The interview data depicting consumer preferences for the consumption of function foods are given in Table 2. *Dhals* were preferred to be stored in the refrigeration. Few of the consumers (46 out of 250) also store the food products at room temperature. This shows that the keeping quality of the product is very less and needs to be avoided from the microbial growth and contamination. Similarly majority of the consumers preferred to store the *Raita* and *Suhanjane ki sabzi* in the refrigerator. However as compared to the *Dhals*, these products can be kept at the room temperature as well considerably. In case of *laddus* room temperature is the most favored condition in comparison to the refrigeration. *Pudina* and *Daniya Chutney* both can were equally preferred to be stored in the refrigeration and at room temperature. In case of the drinks *Sattu* and *rabdi* both are preferred to be the stored at room temperature. However, the *lassi* is preferred to be stored at the refrigeration temperature. *Lassi* being the microbial function food products contain active microorganism needs controlled temperature for sustainable number of microorganism at the time of consumption. As per the storage of the *Chavanprash* and *amla murabba* is concerned, *Chavanprash* is preferred to be stored at the room temperature whereas, *amla murabba* seems to be equally good while storing at room or refrigeration temperature. Similarly, *kichadi* and

sprouts both can be equally preferred to store at the refrigeration and room temperature.

As the functional food may be difficult to process and low availability at rural or urban areas, the consumer were asked to give their consent about their wish to accept the traditional functional food in ready to eat form. Consumer accepted *dhals* to be available in the ready to eat form. However, they seem not interested in packaging the *raita* as the ready to eat functional food. Consumers showed mixed responses in case of the ready to eat for the *Suhanjane ki sabzi*. However, in case of the whole mung *dhal laddu* and *gund ke laddu* consumers want them to be available as the ready to eat convenience food. *Pudina and daniya chutney* are not wished to be available in the ready to eat form. Similarly, *sattu*, *lassi* and *rabdi* are not liked by majority of the consumer to be packed as the ready to eat foods. *Chavanprash*, *amla murabba*, *khichadi* and *sprouts* are wished to be present in the market as the convenience foods.

Liking of the consumer is one of the most important preference factors playing a critical role in the overall consumer choice of the products. In case of the Split mung bean *dhal* majority of the consumer do not like the products. One of the reasons for the dislike is that sensory characteristics of the products. In comparison to the *dhals*, *raita* is liked by the consumers. However, consumers do not show much of the interest in the consumption of the *Suhanjane ki sabzi*

which is moderately liked. Being sweets, whole mung *dhal laddu* and *gund ke laddu* both are liked extremely as compared to the other functional food products. Similar consent was found for the *pudina and daniya chutney* which being spices products and goes well with the various types of the snacks are like very much. Similarly, all the three drinks i.e. *sattu*, *lassi* and *rabdi* are liked by the consumers. *Chavanprash* and *khichadi* are not liked much by the consumers. Consumers thought these products to be food for the diseased patients not by the general healthy consumers. *Sprouts* and *amla murabba* both were like by the consumers.

Packaging is one of the important factors for the containment and marketing point of view. In case of the functional foods under study, all the foods are preferred to be stored in the utensil except *pudina chutney* and *sattu*. As per the place for the product availability is concerned most of the products are available in the rural and urban markets except the *suhanjane ki sabzi* and *rabdi* which were found to be more rural in nature. In case of the place of purchase most of the products were homemade except the *chavanprash*, which is already a commercial product.

Table 1. Description of functional food products and summary of their preparations.

Food group	Name of the Food Product	Main ingredients	Unit operations involved
Curries/dhals	Split mung bean <i>dhal</i>	Split mung bean, red chili powder, salt, cumin seeds, vegetable oil, turmeric powder, garam masala, tomato, onion, coriander leaves garlic and water	Soaking and pressure/open cooking
	<i>Raita</i>	Curd, salt and spices	Mixing and beating
	<i>Suhanjane Ki sabzi</i>	<i>Moringa oleifera</i> , red chili powder, salt, cumin seeds, vegetable oil, turmeric powder, garam masala, tomato, onion, coriander leaves garlic and water	Open cooking
Sweets	Whole mung <i>dhal laddu</i>	Whole mung bean, sugar, nuts and ghee	Crushing and flour roasting
	<i>Gund ke laddu</i>	Whole wheat flour, powdered sugar, ghee and nuts	Milling, mixing and flour roasting
Chutneys	<i>Pudina Chutney</i>	<i>Pudina</i> (Mint) leaves, spices and water	Mixing and grinding
	<i>Dhaniya Chutney</i>	Coriander leaves, spices and water	Mixing and grinding
Drinks	<i>Sattu</i>	Roasting wheat flour, sugar, water and salt	Roasting of flour and mixing
	<i>Lassi</i>	Curd, sugar, salt/ spices	Churning
	<i>Rabdi</i>	Cereal flours, curd/butter milk	Fermentation and soaking
Medicinal products	<i>Chavanprash</i>	Salt and red chili powder, mango powder, coriander seed powder, ghee, nuts, medicinal plant parts	Cooking, soaking and mixing
	<i>Amla murabba</i>	<i>Amla</i> fruits, sugar and water	Sugaring, boiling
Others	<i>Kichadi</i>	White rice and split mung bean, rice, ghee, water and salt	Soaking and open cooking

Sprouts

Whole mung bean and water

Soaking and germination

Table 2. Consumer preferences for consumption of functional food products.

Food group	Name of the Food Product	Storage method				Would a ready to eat form be desirable?		Preferences for consumption			Storage/ packaging medium			Place of availability			Place of purchase					
		Refrigeration	Room temperature	Don't store	Don't know	Yes	No	Like very much	Moderately liked	Not like	Utensil	Plastic bag	Gunny bag	Don't know	Rural	Urban	Both	Don't know	Retail shop	Home made	Street vendor	Don't know
Curries/dhals	Split mung bean dhal	179	46	23	2	205	45	23	78	149	250	0	0	0	145	105	0	0	0	236	14	0
	Raita	106	123	18	3	23	227	197	37	16	247	3	0	0	140	110	0	0	0	233	17	0
	Suhanjane Ki sabzi	125	110	13	2	145	105	67	109	74	247	3	0	0	194	56	0	0	0	250	0	0
Sweets	Whole mung dhal laddu	43	189	8	2	198	52	156	76	18	161	89	0	0	197	53	0	0	3	247	0	0
	Gund ke laddu	23	223	2	2	185	65	178	56	16	156	94	0	0	189	61	0	0	35	215	0	0
Chutneys	Pudina Chutney	145	103	1	1	34	216	158	68	24	145	105	0	0	106	144	0	0	76	140	34	0
	Dhaniya Chutney	144	104	1	1	56	194	186	45	19	170	80	0	0	145	105	0	0	75	130	45	0



Drinks	<i>Sattu</i>	23	224	2	1	67	183	145	58	47	45	205	0	0	187	63	0	0	0	250	0	0
	<i>Lassi</i>	178	57	13	2	73	177	167	56	27	242	8	0	0	167	83	0	0	45	173	32	0
	<i>Rabdi</i>	98	134	16	2	98	152	167	62	21	250	0	0	0	198	52	0	0	0	245	0	5
Medicinal products	<i>Chavanprash</i>	38	209	1	2	238	12	98	86	66	250	0	0	0	123	127	0	0	235	15	0	0
	<i>Amla murabba</i>	108	125	15	2	223	27	109	75	66	175	75	0	0	125	125	0	0	167	48	35	0
Others	<i>Kichadi</i>	109	124	14	3	164	86	45	56	146	245	5	0	0	145	105	0	0	0	250	0	0
	<i>Sprouts</i>	107	134	7	2	172	78	125	91	34	205	45	0	0	56	194	0	0	10	186	54	0

4. Discussion:

The variety of consumption preferences factors affecting the consumer choice for a given product indicates that the might be equally important but the importance of each factors is relative to the priority of the marketing and packaging strategies. To get the clear picture of the issue, the factors were ranked relative to each other and ranked were summed to get the relative rank considering all the factors. This indicates that in certain circumstances food choice is influenced more by social-economic restrictions (Hoefling and Strack, 2010), as in case of the place of purchase and place of availability. Both these factors provide the opportunity for the food industry to process the function food products and provide them as the packaged food products at rural and urban market. Table 3. shows the relative ranking for the

various preference factors affecting the consumer's choice for the functional foods. Ranking data, do not give a clear picture of the preference factor influence on the consumer choice and needs more in depth analysis. However, when few scenarios were taken and were give more weightages compared to others, the analysis shows that the place of availability and preferences for consumption might be the potential factors playing significant role in the consumer choice as preference factors. However, this type of analysis is subjective in nature and more objective analysis is recommended before concluding the significant factors for the consumers in terms of the functional foods under study. Moreover, this analysis is relative analysis and only implies in relation to the products listed.

Table 3. Product ranking for preference factors affecting consumer choices influencing the overall acceptance potential of the product

Factors affecting consumer choice	Curries/dhals			Sweets		Chutneys		Drinks		Medicinal products		Others		
	Split mung bean dhal	Raita	Suhanjane Ki sabzi	Whole mung dhal laddu	Gund ke laddu	Pudina Chutney	Dhaniya Chutney	Sattu	Lassi	Rabdi	Chavanprash	Amla murabba	Kichadi	Sprouts
Storage method	2	8	4	11	10	2	2	7	1	4	4	2	2	1
Would a ready to eat form be desirable?	3	13	7	3	3	9	8	7	6	5	1	1	2	1
Preferences for consumption ^B	14	1	11	5	2	4	1	3	2	1	3	2	2	1
Place of availability ^A	7	9	3	2	2	8	4	2	2	1	3	2	1	1
Storage/ packaging medium	1	3	3	8	8	8	7	7	4	1	1	3	1	1
Place of purchase	12	12	8	7	4	3	3	4	3	4	1	1	1	1
Overall ranking score	39	46	36	36	29	34	25	30	18	16	13	11	9	6
Place of availability (A X 2)	46	55	39	38	31	42	29	32	20	17	16	13	10	7
Preferences for consumption Scenario (B X 2)	53	47	47	41	31	38	26	33	20	17	16	13	11	7

5. Conclusion:

In the end it can be concluded that there are many factors which contribute to the final consumer choice in case of the functional foods, however, the consumer preferences pertaining to the functional foods are also important factors. The most important preference factors seem to be place of availability of the products and consumer liking. There is big opportunity for the processing of the products and commercialization in the packaged form.

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