# CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS

**BY**


**M. MADHAVI LATHA**

**B.Tech (Food Technology)**


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**CHAIRPERSON: Dr. SEEMA**


**SCHOOL OF AGRIBUSINESS MANAGEMENT**
**COLLEGE OF AGRICULTURE**
**RAJENDRANAGAR, HYDERABAD-500 030**
**ACHARYA N. G. RANGA AGRICULTURAL UNIVERSITY**


**2014**

# DECLARATION

I**, M. MADHAVI LATHA,** hereby declare that the report entitled "**CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS"** submitted to the **Acharya N.G. Ranga Agricultural University** for the degree of **Master of Business Administration** in School of Agribusiness Management in the major field of **Agribusiness Management** is the result of the original project work done by me. I also declare that no material contained in the report has been published earlier in any manner.

**Place: Hyderabad** **(M. MADHAVI LATHA)**

**Date:** **I. D. NO. RMBA/12-07**

# CERTIFICATE

**Ms. M. MADHAVI LATHA** has satisfactorily prosecuted the course of project and that the report entitled **"CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS"** submitted is the result of original project work and is of sufficiently high standard to warrant its presentation to the examination. I also certify that neither the project nor its part thereof has been previously submitted by her for a degree of any university.

**Date:** **Chairperson**

**(Dr. Seema)**

# CERTIFICATE

This is to certify that the report entitled "**CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS"** submitted in partial fulfillment of the requirements for the degree of **'**Masters of Business Administration' of the Acharya N. G. Ranga Agricultural University, Hyderabad, is a record of the bonafide original research work carried out by **Ms. M. MADHAVI LATHA** under our guidance and supervision.

No part of the project report has been submitted by the student for any other degree or diploma. The published part and all assistance received during the course of investigations have been duly acknowledged by the author of the report.

**(Dr. SEEMA)**

Chairperson of the Advisory Committee

**Project report approved by the Student Advisory Committee**

| | | |
|---|---|---|
| Chairperson | **Dr. Seema**<br>Professor & Head<br>School of Agribusiness Management<br>College of Agriculture, ANGRAU<br>Rajendranagar,<br>Hyderabad – 500030 | ____________________________ |
| Member | **Dr. T. V. HYMAVATHI**<br>Professor<br>Department of Foods & Nutrition,<br>Post Graduate and Research Centre,<br>College of Agriculture, ANGRAU<br>Rajendranagar, Hyderabad - 500030 | ____________________________ |
| Member | **Shri M.H.V.BHAVE**<br>Assosiate Professor & Head<br>Department of Statistics & Mathematics<br>College of Agriculture, ANGRAU<br>Rajendranagar, Hyderabad – 500030 | ____________________________ |

**Date of final viva-voce:**

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***Date:***

***Place: Hyderabad*** ***(M. MADHAVI LATHA)***

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| **Chairperson** | : | **Dr. Seema** |
| **University** | : | **ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY** |
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# ABSTRACT

Food fortification is the practice of deliberately increasing content of an essential micronutrient in a food, so as to improvise the nutritional quality of the food supply and provide a public health benefit with minimal risk to health. The fortified market today largely consists of health food drinks, iodised salt, iron fortified biscuits and fortified edible oils. Health food drinks have been focused on general nutritional needs of growing children while iodized salt and iron-fortified biscuits have become mass product segments driven by nutrient deficiencies and support through various government policies. Some of the major companies operating in the global market for vitamin fortified and mineral enriched foods and beverages include The Coca Cola Company, H.J Heinz Company, Kellogg Company, PepsiCo/Tropicana, and The Proctor & Gamble Company and so on. The present study entitled “Consumer awareness, perception and acceptability of fortified foods – a case study of Hyderabad metro consumers” was studied with the following objectives:

1. To study the level of consumer awareness and acceptability of the fortified foods in the selected market.
2. To analyze the perception of the consumers about fortified products vis-à-vis the available brands in Hyderabad metro region.

3. To find out the factors influencing the consumers purchase decisions for fortified products in the selected area.
4. To identify the constraints in purchasing and marketing of fortified foods.

This study plays an important role in assessing the consumers awareness, acceptance and perception of the fortified foods. About 200 consumers and 20 retailers were selected from 10 different areas of Hyderabad metro. Data was collected from the consumers about their perception, pricing, spending decisions, frequency and quantum of purchase, brand preference etc., was collected. Rajendranagar, Attapur, Malakpet, Santhoshnagar, Banjara hills, Ameerpet, Bowenpally, Kukatpally, Chikkadpally and Dilshukhnagar were purposively selected representing different regions of Hyderabad. Similarly, data on the nature and trend of sales of fortified food products, brands available, product variety, constraints faced etc were collected from the retailers. Secondary data on CAGR was collected from International Markets Bureau, Schieber Research, Euromonitor International, Leatherhead and Nutritional Outlook. The data collected was analyzed by using simple averages, frequencies. Garrett ranking technique was used to study the opinion of the retailers on sale of fortified food products.

The results showed that almost all the consumers were aware of the fortified food products available in the market. Due to the higher education levels, increasing disposable income and health conscious of the customers they are purchasing these products.

TV/Radio and hoardings and other display materials are more eye catching and attractive therefore they are highly influencing in generating customers awareness. It is observed that most of the customer’s stock purchases are monthly. Daily & bi weekly purchases are rare in most of the products. As in the present days, most of the consumers are aware of fortified foods and becoming health conscious, consumers prefer a particular brand mainly because of its quality, advertisements and the health benefits. It is observed that the Kellogs, Ashirvaad, Fortune and Amul were the highest preferred brands in the product category of fortified foods.

It is observed that the consumers purchase decisions influencing factors for almost all the product categories have been the health benefits, nutritive value and quality.

Lack of right publicity to generate awareness among the consumers and the competition from traditional food preparations is acting as a major marketing constraint. High price and misconception about fortified food is regarded as minor constraint by majority of the retailers.

**Keywords:** Fortified foods, Awareness, Acceptance, Perception, Brands, Constraints, Purchase decisions.

# SYMBOLS AND ABBREVIATIONS

The following abbreviations shall be used both for singular and plural units

| | |
|---|---|
| % | : Percent |
| & | : and |
| CAGR | : Compound Annual Growth Rate |
| EFSA | : European Food Safety Authority |
| *et al.* | : and others people |
| etc. | : and so on |
| FAO | : Food and Agriculture Organization |
| GDP | : Gross Domestic Product |
| GHMC | : Greater Hyderabad Municipal Corporation |
| ie., | : that is |
| ICDS | : Integrated Child Development Services |
| ICTs | : Information and Communications Technology |
| $Km^2$ | : Square Kilometre |
| MDM | : Mid-Day Meal |
| MSL | : Mean Sea Level |
| NGO's | : Non Government Organizations |
| PDS | : Public Distribution system |
| RBI | : Reserve Bank of India |
| S. No | : Serial Number |
| SPS | : Sangkap Pinoy Seal |
| viz., | : Namely |
| WHO | : World Health Organization |

# Chapter I

# INTRODUCTION

More than two billion people worldwide suffer from micronutrient deficiencies because they are not meeting their daily requirements for essential vitamins and minerals. These deficiencies not only affect an individual's long term health but can also raise societal and public health care costs and potentially depress a nation's economic productivity (WHO/FAO). It may be difficult for those living in developed countries to remember when diseases such as goiter, rickets, beriberi, and pellagra were once common health problems back in the early 20th century, today, these diseases are rarely seen due to a series of food fortification programs that helped stave off a multitude of nutrient deficiencies. According to the World Health Organization and the Food and Agriculture Organization of the United States, food fortification is the practice of deliberately increasing content of an essential micronutrient in a food, so as to improvise the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

Historically, food fortification, such as iodized salt or vitamin D-fortified milk, served as a public health measure to address population-wide nutrient deficiencies. Now, there are also calcium- and vitamin D-fortified juices, breads fortified with omega-3 fatty acids, and vegetable oil spreads with plant sterols available for health-conscious consumers searching for foods with additional health benefits. These types of foods contain added nutrients and ingredients that may promote or support overall health and wellness in a variety of ways across many different body systems including heart, bone, digestive, eye, and brain health; weight management; and increased energy and immune health, among others.

Foods not only must meet consumer needs and preferences but also address nutrition, regulatory, safety, and technical constraints. The European Food Safety Authority (EFSA), World Health Organization (WHO) and several countries, including the United States, United Kingdom, Australia, New Zealand, and Canada, follow similar guiding principles when it comes to their fortification policies. Voluntary fortification is a common practice in many countries. Additionally, 50 countries including the United

States, Canada, and Australia require mandatory fortification of certain staple foods with specific nutrient(s) to improve public health, such as the fortification of enriched flour with folic acid to reduce the risk of neural tube birth defects, and restrict the fortification of foods with certain nutrients such as vitamin D.

Voluntary fortification is the practice by which different concentrations of vitamins, minerals and other nutrients are added to processed foods, and decisions about which products and how to fortify them are made by food manufacturers. Harmonization of this practice is essential as it is common in many countries.

The fortified market today largely consists of health food drinks, iodised salt, iron fortified biscuits and fortified edible oils. Health food drinks have been focused on general nutritional needs of growing children while iodized salt and iron-fortified biscuits have become mass product segments driven by nutrient deficiencies and support through various government policies.

Edible oils, being an integral part of the traditional Indian diet with a connotation of being harmful for cardiac health, have shown a number of pro-heart products being launched and accepted by the Indian consumers. Health and Wellness products within edible oils constitute products with claims of higher content of healthier oils or with higher content of omega-3 and / or omega-6 fatty acids. Such products account for around 5% of the packaged edible oil market currently.

Another category that has witnessed increased fortification is branded "atta" or wheat flour, a staple in most Indian households. As consumers move to branded atta from buying and getting their wheat ground at neighborhood mills, marketers seek to nullify the price difference by providing value addition through fortification. This is done using either minerals and vitamins, or additional dietary fiber.

Packaged snacking (chips, traditional Indian savories) is another high growth category, currently showing year on year growth rates of about 35%. Fortification is currently negligible here, indicating opportunities for adding new ingredients or for healthy alternatives such as fortified baked snacks and low fat snacks. These are the areas where consumers are most prepared to experiment, offering opportunities for innovative marketers who can gear their products to meet consumer needs.

Product categories like sports & energy drinks, soy beverages, sugar substitutes etc. are relatively new in the Indian market. Energy drinks and sugar substitutes have shown a rapid growth in the last 2 to 3 years and are approximately US$ 20mn markets each today. Soy beverages however have been much slower as they suffer from their unpalatable tastes despite availability of a number of flavored variants (Tata Strategic Management Group, 2010).

The Health and Wellness market is highly fragmented consisting of fortified baby foods and breakfast cereals, multi-grain / digestive breads, healthier snacks, low-fat & probiotic curd, low-fat butter, diet colas, fortified / slim milk and natural juices. Among these, only breakfast cereals and fruit juices have a significant share.

The US and Canadian populations are largely dependent on fortified foods and dietary supplements to meet their needs, because foods naturally rich in vitamin D are limited. Fluid milk and breakfast cereals are the predominant vehicles for vitamin D in the United States, whereas Canada fortifies fluid milk and margarine.

Within the general wellness segment, mineral or vitamin fortification has been the most commonly used platform. Calcium fortification especially has been one of the fastest growing segments-calcium usage (for both food and feed applications) grew nearly 14% between 2004 and 2005. The benefits of calcium in terms of bone strengthening have also been well advertised by many product categories, including non-food categories such as toothpaste (Singh, 2006).

Within the food and beverage market, products that have been quick to use fortification are those aimed at children, such as biscuits, jams and cornflakes. In these categories, brands compete not just with each other, but with traditional Indian snacks and breakfast foods, which are often perceived to be more nutritious. While advertising to children is usually focused on fun and freebies, marketers have been adding minerals and vitamins to persuade mothers to buy. In mature categories such as malted food beverages, fortification has become commonplace. Fortification still largely comprises of adding vitamins and minerals, although soy protein is emerging as a promising ingredient.

The health food sector is in a nascent stage but is poised to grow manifold in the near future. The health food market stood at Rs 9,000 crore in 2010, and is expected to grow at a CAGR of 20 per cent to Rs 22,500 crore by 2015 (Technopak, 2012).

The contribution of health food to the overall packaged food market in India is 10 per cent. This is quite low when compared to the global average of 25-30 per cent. The market for health food is growing rapidly in the urban centres via both modern and traditional retail channels.

The market for health food is broadly divided into three categories:

* Better for health products are the ones with lower levels of ‘unhealthy’ ingredients like sugar or fat;

* Functional food is defined as food fortified with nutritional and disease-preventing qualities such as food with iodine, breakfast cereals with iron and reduced fat content

* Natural products, i.e., food products grown naturally, without the use of preservatives and chemicals. These include organic foods, natural color and flavors, natural extracts etc.

The major product categories that are pursuing health and wellness benefits right from the product development stage are dairy products, cereals, organically grown fresh fruits and vegetables, functional and energy foods, fortified food products with enhanced health ingredients such as omega-3 fatty acids.

Some of the trends in fortified foods is Nestle's Maggi and Dabur Food's Real juice. While Nestle has launched dal and atta noodles, Dabur has launched Real Junior, targeted at kids below six years. The juice has been fortified with calcium. Today the consumer is more aware and conscious of health benefits than before. They are not willing to risk health for taste, and this is driving companies to launch low fat ice-cream, cholesterol control atta and calcium enriched juices. Like, for instance, Pepsi which uses the tagline "If you don't need it, it's not in it" for its Gatorade line of sports drinks.

The global market for fortified foods is $72 billion (Rs.335,337 crores). Of this, the functional beverage market itself is $10 billion (Rs.46,578 crores). So, be it food companies, cola majors or confectioners, all are queuing up to launch products supplementing regular diet.

PepsiCo, better known for its cola brand, has several health drinks in its portfolio including Gatorade and Tropicana juices. Gatorade is a $3 billion (Rs.13,944 crore) brand, globally while energy drink Red Bull is $1 billion (Rs.4,648 crore), pointing towards a healthier trend. (Bhupta, 2006)

The functional food and drink market is outpacing the conventional food and drink market in terms of global growth, by about 4% per year, according to a recent Leatherhead Food Research report in June.

Between 2003 and 2010, the global functional food and drink market increased 1.5 times, with a CAGR of 14%, reaching $24.2 billion USD in 2010. Comparatively, global sales in 2009 were $22.9 billion and $17.4 billion in 2006, $16.1 billion in 2005, and $9.9 billion in 2003.

Japan consistently leads demand, followed by the United States and then Europe and Australia. (The report defines the global market as these four regions.) Between 2010 and 2014, Leatherhead forecasts a total global market growth of 22.8%, to reach $29.8 billion by 2014. Broken down by location, that’s 21% growth in Japan by 2014, to reach $11.3 billion; 20.7% growth in the United States, to reach $9.1 billion; 27% growth in Europe, to reach $8.9 billion; and 34.2% growth in Australia, to reach $530 million.

Dairy accounts for the largest share of functional foods, followed by bakery/cereals, beverages, fats and oils. In terms of CAGR, however, bakery/cereals are leading (18%), followed by fats and oils (14%) and dairy (14%). Functional beverages are growing at 6% CAGR (Leatherhead, 2011).

Therefore, with the growing importance and potential for fortified foods in India as well, this study was planned to ascertain the consumer’s perception, preference and constraints for these foods.

The following objectives were identified for the study.

## 1.2 OBJECTIVES OF THE INVESTIGATION

- To study the level of consumer awareness and acceptability of the fortified foods in the selected market.
- To analyze the perception of the consumers about fortified products vis-à-vis the available brands in Hyderabad metro region.
- To find out the factors influencing the consumers purchase decisions for fortified products in the selected area.
- To identify the constraints in purchasing and marketing of fortified foods.

## 1.3 SCOPE OF THE STUDY

The study explores the consumer's level of awareness, their perception and acceptability of the fortified food products which is still in nascent stage in India.

The findings are going to be of great utility to the researchers, business planners, policy makers, NGOs, business management functionaries etc. Further the findings will provide information on the awareness level. The consumer acceptance of these products also helps in making possible suggestions for improvement of products for effective market penetration that are acceptable by the consumers. The findings emanated from the study could be effectively used in other areas where similar socio economic conditions exist with necessary changes.

## 1.4 LIMITATIONS OF THE STUDY

Since all the social science researchers are subjected to certain limitations, the present study was no exception. As such, the study had certain limitations below.

1. The study had the limitation of time and resources available for a single investigator.
2. The items included in the study for detailed investigation were also limited because it was not possible to study all the areas in a short span of time.
3. The area of investigation was restricted to certain areas in Hyderabad. As such, generaralization of the study could be extended to the areas where similar conditions exist.
4. Since the study was based on individual perception and expression of the respondents, some degree of error may be possible in the data due to lack of accurate expression of the respondents

## 1.5 STRUCTURE OF THE PROJECT REPORT

The study is presented in five chapters as follows.

I. **Introduction:** The importance of the study, problem setting and objectives are covered.

II. **Review of Literature**: The available and relevant literature is thoroughly reviewed.

III. **Materials and Methods**: The methodology adopted in sampling, data collection and methods of evaluation are explained.

IV. **Results and Discussion:** The results of the study and the discussion evolved from the study are presented under this sub head.

V. **Summary and Conclusions:** Summary and conclusions of the study are presented under this section.

## Chapter II

# REVIEW OF LITERATURE

For any investigation, the findings of earlier studies may possibly give insight of the problem and sets direction for the research. An extensive survey of literature was undertaken in order to have an understanding of various concepts related to the problem concerned, interpretation of findings of the study and the limitations. Careful study of the earlier studies conducted in India and abroad on production and marketing provides guidance and clarity while conducting the research study. In this chapter an attempt was made to review the literature of the past research work relevant to the present study. The review has been presented under the following heads.

2.1 Consumer awareness and acceptability of the fortified foods

2.2 Perception of the consumers about fortified products

2.3 Factors influencing the consumers purchase decisions for fortified products

2.4 Constraints in purchasing and marketing of fortified foods.

## 2.1 CONSUMER AWARENESS AND ACCEPTABILITY OF THE FORTIFIED FOODS

Food and Nutrition Research Institute (2014) conducted a study on awareness and usage of fortified foods in the Philippines and revealed that nation wide awareness of the Sangkap Pinoy Seal (SPS) is 16.7% whereas; awareness of fortified foods in general is only 11.6%. Almost all households use the products with SPS and other fortified foods. This can be attributed to the fact that these foods have been part of the households' everyday food even before these were fortified.

Suganya and Aravinth (2014) conducted a study on consumer’s awareness and attitude towards organic foods. The results indicated that consumers' awareness of organic food is strongly and significantly affected by factors such as education whereas barrier to organic food consumption is its price. The consumers’ concerns on food safety, quality and nutrition are increasingly becoming important across the world, which has provided growing opportunities for organic foods in the recent years.

Bholah *et al.* (2013) studied on an insight of the Mauritian consumer’s awareness, perceptions and expectations of functional foods. The data indicated that though 85.5% of participants were aware of foods which may help in preventing certain diseases, only 13.8% of the sample population was familiar with the term ‘functional foods’. Pearson Chi-Square test indicated that awareness of functional foods was dependent on gender ($p<0.05$), age ($p<0.01$), level of education ($p<0.01$), monthly household income ($p<0.01$) and health status of respondent ($p<0.01$). Besides, perceptions of respondents towards health-enhancing foods were relatively positive and 84.6% of them were willing to try functional foods in the future. The results indicated a relatively low level of awareness and knowledge concerning functional foods in Mauritius but also noted an interest of the consumers for these products.

Ray (2012) conducted a study of consumer acceptability for noodles in Siliguri market. The results show that a little aggressive marketing push for noodles by the branding companies can make a steady headway for them to bring in noodles into the plates of the Siliguri citizens to a large extent and can replace the other snacks too. The study also revealed that the factor which enabled the consumers gain knowledge about the brand parity perception of them towards noodle which was also responsible for the styles adopted by the consumers to purchase noodles is their full awareness of the product for consuming it as a mainstay food item.

Kumar and Ali (2011) in their study on factors affecting consumer awareness on organic foods in India indicated that consumer's interest in organic foods is influenced by their belief that organically produced food is safe and better for health, environment and welfare of farmers. The results indicated that potential Indian consumer's awareness of organic foods is strongly and significantly affected by education and use of ICTs.

Peter Williams *et al*. (2008) conducted a study on Australian consumer attitudes to health claim – food product compatibility for functional foods. The results of the study indicated that consumers expect health claims to be on healthier foods and that claims about prevention of serious diseases are more appealing than those about appearance or psychological benefits. The findings of the study support regulatory options that establish nutritional eligibility requirements for foods which carry health claims and also point to the need for particular care in approval of claims for serious diseases.

## 2.2 PERCEPTION OF THE CONSUMERS ABOUT FORTIFIED PRODUCTS

Raghavan and Mageh (2013) worked on consumers purchase intentions towards organic products and the results showed that the perception towards organic products are belief about organic product friendliness to the environment and availability of product information as the major determinants.

Kalaiselvi and Mohanapriya (2013) studied women's perception towards baby food with special reference to Erode town. The results of the study revealed that most of the respondents feed the baby food to their child at the age of 6 months and there is a positive correlation between the family income and purchase frequency. Further it is found that, cerelac brand is highly influential.

Bilgiç and Yüksel (2012) conducted a research on university student's perception and attitudes towards functional foods in Istanbul. According to results of analysis, women were more aware than men through the functional food concept. In addition, ANOVA results showed that there are significant differences between gender groups for energy drinks, probiotic yoghurt and baked goods with whole grain flour; where these foods were independent from income levels. Half of the participants scored that they will probably buy functional food in the future if they were informed, whereas nearly half of the rest scored as “perhaps” for their future buying probability.

Radhika *et al.* (2012) worked out the consumer perception of organic foods in twin cities of Hyderabad and Secunderabad which showed that the market for organic food is in nascent stage and there is immense potential for development, given the increasing consciousness about health and fitness among people and the raise in disposable income. The outlets that are selling these organic products are very few and the quantities they store especially of perishable food items are limited. Creation of new channels of supply chain to procure and market organic foods, developing measures to authenticate organic produce and educating the consumers must be the priority of policy makers as well as retailers.

Muralidhar and Vedhavalli (2012) in their study on consumer perception towards organic food products in Bangalore indicated that consumers of organic food products evaluate product quality with the prices they pay and consider organic food products as healthy to consume. They prefer grain based organic food products followed by organic grain and organic fruits.

Pounis *et al.* (2011) conducted a study on consumer perception and use of iron fortified foods associated with their knowledge and understanding of nutritional issues. The results were analyzed using unadjusted logistic regression analysis which revealed that one point increase of overall nutrition knowledge score was associated with 4.3% higher likelihood that the consumer believes that iron fortified foods have a positive role in diet (OR = 1.043, 90% CI 1.040–1.080). One point increase of iron nutrition knowledge score was associated with 20% higher likelihood of consuming iron fortified foods more often (OR = 1.200, 90% CI 1.074–1.340). Hence from the results it was concluded that consumer perception on iron fortified foods seems to be associated with nutrition knowledge and highlight the importance of focused nutrition education in consumer informed choices.

Deshmukh *et al.* (2010) studied the consumer preference for pearl millet products in Beed distict of Maharashtra state. Cluster analysis was used to analyze the opinion scores given by consumers on pearl millet products. On the basis of consumer preference, the products were grouped into high, medium and low aggregate clusters. The results have shown that the aggregate cluster was classified into dimension of roasted product, dimension of cooked product, and dimension of fried product based on consumption pattern and high aggregate was given to dimension of roasted product, medium aggregate to dimension of cooked product, and low aggregate to dimension of fried products.

Landstrom *et al.* (2009) conducted the study on functional foods compensate for an unhealthy lifestyle. The results of the study indicated that functional foods would falsely compensate for an unhealthy lifestyle. The use of functional foods was considered to be justified when a healthy lifestyle is incapable of improving people's health. The interviewees perceived themselves to be in no need of functional foods. They thought that the foods were meant for others, for those in unquestionable need. The necessity of functional foods was justified unless no other lifestyle changes were able to improve a person's state of health.

Azzurra and Paola (2009) conducted the study on consumers' behaviors' and attitudes toward healthy food products: The case of organic and functional foods. In order to understand attitudes towards healthy foods, with particular reference to organic and functional products, a survey was conducted on 300 Italian consumers, through the implementation of cluster analysis. The survey results revealed a positive outlook for growth of both organic and functional foods which are gaining, even if at a different pace, more and more space in Italians household food consumption. Moreover, the consumer demand for foods to fit their specific health needs and lifestyle will continue to increase and will have an impact on all sectors of food processing and manufacturing, and also on the supporting industries.

Van and Van (2007) studied on consumer perceptions of nutrition and health claims in Italy, UK, Germany and US. They studied the impact of claims of food products containing extra or reduced levels of specific ingredients like extra calcium that brings health benefits like stronger bone is still increasing. Nutrition and health related claims are systematically varied as a function of six health benefits (cardiovascular disease, stress, infections, fatigue, overweight and concentration) and five claim types (content, structure-function, product and disease risk reduction and marketing claim). The results indicated that consumer perceptions differ substantially by country and benefit being claimed but much less by the claim type. In marketing terms, this means that global brands with health claims will have to invest different amounts of nutritional communication support in different countries.

Bech-Larsen, and Grunert (2003) studied consumers’ perception of functional foods among Danish, Finnish and American consumer’s. The results clearly indicated that consumer’s perception of the healthiness of functional foods is more dependent on their perception of nutritional qualities of the base-product than on any type of health claim. Finnish respondents were generally more positive towards functional foods than the Americans and the Danes.

## 2.3 FACTORS INFLUENCING THE CONSUMERS PURCHASE DECISIONS FOR FORTIFIED PRODUCTS

Kaur and Singh (2014) studied consumer behavior in purchase of processed cereal food products in Punjab. The research was carried out in three cities of Punjab with a sample size of 300 respondents. Research revealed that external influence, health and brand consciousness and quality are the major factors that influence people to eat processed cereal food.

Safrah and Azila (2014) conducted a study on consumer-behavioral intention towards the consumption of functional food in Malaysia: their profiles and behaviors. This study describes the profiles and behaviors of the consumers who are willing to consume functional foods in Malaysia. By using mall intercept surveys, data were collected from consumers shopping at hypermarkets in Malaysia. From the analysis undertaken, it was found that the level of consumer-behavioral intention to consume functional food is encouraging. The results indicated that behavioral intention towards functional food tends to be different across gender, age and marital status. Respondents from different ethnic, religion, level of education and income groups were found to perform similar levels of intention to consume functional foods. However, females were found to exhibit higher levels of consumer-behavioral intention compared to males. Similarly, older and married people were found to demonstrate higher levels of behavioral intention to consume functional food.

Carrillo *et al.* (2013) conducted the study on why buying functional foods? Understanding spending behavior through structural equation modelling. The objective of this study was to build a structural equation model of Spaniards' functional foods spending behavior, based on individual characteristics such as satisfaction with life, decision-making styles, gender, age and some attitudes towards food choice. It was observed that almost a half of the initial participants did not have enough knowledge about functional foods. Women were the most concerned with functional foods. The model proposed reflects, in a general way, how different variables that influence functional foods spending behavior could be taken into account when designing and planning marketing campaigns. These perceived variables (positive attitude, novelty/fashion, health and natural content) show how non-sensory factors create expectations that influence the choice of functional foods. Thus, the results of structural equation analysis support the hypothesis that positive attitudes influenced by preconceptions about functional foods play an important role in functional foods spending behavior. It is worth highlighting the power of the SEM to model a behavior in consumer research and useful to approach for disentangling the structures underlying food choice and the consumer's response to new categories such as functional foods.

Sujatha *et al*. (2013) conducted a study on consumers' willingness towards expending premium price for organic food products in Coimbatore district and opined that consumers have high positive attitude towards organic products and they exhibited willingness to pay higher prices for these products. Hence it was suggested that the marketing strategies for organic food products must be targeted towards those segments of consumers who are appreciative of the positive attributes of organic food.

Pouratashi (2012) conducted a study on factors influencing consumers' willingness to pay for agricultural organic products and revealed that attitude, knowledge, age, income, characteristics of agricultural organic products such as tests, color, nutritive value were among the factors which affected consumer's decision making about purchase. The study also revealed that high prices and deficiencies in distribution channels are obstacles to the purchase of agricultural organic products.

Szakály *et al.* (2012) conducted a study on the influence of lifestyle on health behavior and preference for functional foods. The results indicate that a Hungarian consumer makes rational decisions, he or she seeks bargains, and he wants to know whether or not he gets good value for his money. Further on, various lifestyle segments are defined by the authors: the rational, uninvolved, conservative, careless, and adventurous consumer segments. Among these, consumers with a rational approach provide the primary target group for the functional food market, where health consciousness and moderate price sensitivity can be observed together. Adventurous food consumers stand out because they search for novelty; this makes them an equally important target group. Conservative consumers are another, one characterized by positive health behavior. According to the findings of the research, there is a significant relationship between lifestyle, health behavior, and the preference for functional food products.

Vijayabaskar and Sundaram (2012) conducted a study on purchasing attitude towards ready – to –eat/ cook products by health conscious consumers in southern India with respect to tier-I cities. Results indicated that health benefit and ingredients form the major impact on decision making of consumers in going for healthy ready-to-eat products. The major influencing factors were calorie content, packaging and fibre contents in deciding the products. Internet technology also plays a major role in influencing these consumers to go for the processed products.

Pasquale *et al.* (2011) have analyzed consumer attitudes and consumers willingness to pay for functional foods. The results revealed the presence of four emerging consumer profiles, each characterized by specific dynamics. Purchase targeted by those who, concerned about their health, are looking for foods that can preserve or improve it. However, the analysis indicated the presence of consumers who are also completely uninformed and unaware of the existence of functional foods and therefore do not intend to buy them.

Mabaya *et al*. (2010) studied the preferences and willingness to pay for fortified cereal foods in Botswana and the results showed that, the most important attributes, listed in order of importance, were product brand, product quality, price, color/appearance and nutritional value. There is a close correlation between residential area and knowledge about fortified foods, with rural residents having the least knowledge. Willingness to pay for fortified milled products was very low among consumers owing to limited knowledge about fortification and its benefits.

Aryal *et al*, (2009) studied on consumer's willingness to pay for organic products in Kathmandu valley and revealed that consumers are willing to pay price premium of 5-50% for organic products. Knowledge and awareness about organic products can affect attitudes, perceptions and buying decisions of the consumers. Consumer's willingness to purchase are influenced by limited and erratic supply, higher price of the products and very limited access and information about organic products.

Dean *et al.* (2007) studied public perceptions relating to different healthy grain foods like bread, pasta and biscuits and how these perceptions are influenced by gender, nationality, base product, type of health claim and people's perception associated with different production methods. Two thousand and ninety four members are surveyed from UK, Italy, Finland, and Germany. Results of the study conclude that there were gender and country differences in people's perception of benefits relating to functional products.

Ares and Gambaro (2007) studied the influence of gender, age and motives underlying food choice on perceived healthiness and willingness to try functional foods. Results showed that carrier products had the largest effect on consumer's perception of healthiness and willingness to try the functional foods. The carriers include five different food products, popular in Uruguay: honey, yogurt, vegetable cream soup, dulce de leche and marmalade. The highest positive relative utilities were achieved when the enrichment was a functional ingredient inherent in the product. Furthermore, gender, age and motives underlying food choice affected the preference patterns for the evaluated functional foods concepts, but it depended on the carrier and enrichment considered, suggesting that functional foods might not be accepted by all the consumers and that they could be tailored for certain groups.

Verbeke (2006) studied consumer willingness to compromise on taste for health of functional foods. Cross-sectional consumer data was collected in Belgium from two socio-demographically comparable samples in 2001 and 2004 using personal interviews. Results have shown that the preferences for functional foods rose from 2001 to 2004. Females and elderly were more ready to compromise on taste for health in 2001, socio-demographic differences faded away in 2004. Health benefit belief from functional foods emerges as the strongest positive determinant of willingness to compromise on taste, but willingness to compromise on taste decreased over time. The conclusion is that counting on consumer willingness to compromise on the taste of functional foods for health is a highly speculative and risky strategic option.

## 2.4 CONSTRAINTS IN PURCHASING AND MARKETING OF FORTIFIED FOODS

Jain *et al.* (2014) conducted a study on consumer behavior towards functional foods in India- a study of market drivers & challenges. The study indicates that beliefs about the nutrition and health link, current purchasing and consumption patterns, and positive attitude towards functional foods significantly affected willingness to pay. However, availability and expense to purchase functional food effect the decision to pay and the decision of how much to pay. Specifically for the functional food marketer there is need to determine what factors significantly influence the decision to pay. Overall, this study has contributed to further understanding of the functional food consumer especially concerning health awareness, lifestyle changes and factors encouraging as well as discouraging people to purchase functional foods.

Somehagen *et al.* (2013) conducted a study on Functional Food - A study of consumer attitudes towards functional foods in Sweden. The present study investigated consumer's attitudes towards functional foods, the recognizability and willingness to use different functional food categories was measured with the help of eight different functional foods as well as two organic product categories. They considered different aspects for different food category such as reward, necessity, confidence and safety. The constraint is that each functional food category should be approached in a different way, and different aspects should be highlighted for each individual food category in the packaging or advertisement to give the marketing strategy an advantage to increase consumer willingness to use that product.

Annunziata and Vecchio (2011) conducted a study on functional foods development in the European market: A consumer perspective. Consumer behavior towards functional foods was analyzed through a quantitative survey conducted on 400 Italian food shoppers. Findings reveal that respondents are confused due to the ambiguity of what functional foods products are, and that consumers perceive products that are intrinsically healthy such as yogurt, cereals and juice, as preferable and credible carriers of functional foods. Fortified foods need to be promoted with the aim of making them much more visible and recognizable to final consumers, in order to avoid confusion with other generic health foods, such as light or diet products. Functional food properties should be communicated to them clearly and less scientifically. In this regard, in line with findings elsewhere, the role of labeling should be strengthened, perhaps also with the introduction of a specific logo that could better distinguish such products in the market.

Siro *et al.* (2008) in their study on functional food - product development, marketing and consumer acceptance - a review found that consumer acceptance of functional foods is far from being unconditional, with one of the main conditions for acceptance pertaining to taste, besides, product quality, price, convenience and trustworthiness of health claims. As a rule, consumers seem to evaluate functional foods first and foremost as foods. Functional benefits may provide added value to consumers but cannot outweigh the sensory properties of foods.

Urala and La¨hteenma¨ki (2005) conducted a study on consumers changing attitudes towards functional foods. They were able to structure an attitude measurement that can be used in predicting consumer's willingness to use functional foods. The functional foods seem to approach the status of conventionally healthy foods in Finland. This means, that their benefits may become standard options of healthiness. However, the cultural, health effect and product-dependent differences are likely constraints that influence strongly how a functional food product is perceived.

Kumar and Jain (2003) worked on marketing of organic food product and minor forest produce and indicated that the domestic market for organic products is as yet not developed as the export market. Wholesalers/ traders and supermarkets play a major role (60%) in the distribution of organic products. Major markets for organic products are in the metropolitan cities like Mumbai, Delhi, Kolkata, Chennai, Bangalore and Hyderabad. The channel adopted for the exports of organic products is through export companies. The high price expectations, low quality, slow shipment, import restrictions, lack of national certification, lack of market intelligence, poor customer service, lack of proper marketing networks, low involvement of government and lack of subsidies are major constraints in organic products market.

Chapter III

# MATERIAL AND METHODS

The present study was carried out in Hyderabad metro region. The study pertains to understanding of consumer awareness, perception and acceptability of fortified food products. This chapter presents the research tools and techniques followed in conducting the study. It gives details of research design, sampling procedure, instruments and methods used for collection of data, and analytical procedures followed for interpretation of the data.

The contents of this chapter are discussed under the following sub heads

3.1 Sampling procedure

3.2 Items studied under investigation

3.3 Statistical analysis

## 3.1 SAMPLING PROCEDURE

### 3.1.1 Location of the study

Hyderabad metro city is one of the popular and fast growing centers in India. There are varied types of consumers present and it is seen that their awareness and inclination on health consciousness is picking lot of momentum. The disposable income of the people is also fast growing making them capable to spend more on functional/health foods. Therefore, Hyderabad metro is purposively selected for the study.

### 3.1.2 DESCRIPTION OF THE STUDY AREA

#### 3.1.2.1 Description of Hyderabad city

Hyderabad is ranked as 6$^{th}$ metropolitan city in India and is one among the fastest growing places with respect to adapting new styles in food.

#### 3.1.2.2 Location

Situated in the north-western part of Telangana in southeastern India, Greater Hyderabad covers 650 km$^2$ (250 sq m), making it one of the largest metropolitan areas in India. Latitude: 17°22′31″ N Longitude: 78°28′27″ E.

### 3.1.2.3 Demographics

When the GHMC was created in 2007, the area occupied by the municipality increased from 175 $km^2$ (68 sq m) to 650 $km^2$ (250 sq m). Consequently, the population increased by 87%, from 3,637,483 in the 2001 census to 6,809,970 in the 2011 census, 24% of which are migrants from elsewhere in India, making Hyderabad the nation's fourth most populous city. As of 2011, the population density is 18,480 /$km^2$ (47,900 /sq m). At the same 2011 Census, the Hyderabad Urban Agglomeration had a population of 7,749,334, making it the sixth most populous urban agglomeration in the country. There are 3,500,802 male and 3,309,168 female citizens—a sex ratio of 945 females per 1000 males, higher than the national average of 926 per 1000. The socio-economic strata consist of 20% upper class, 50% middle class and 30% working class.

### 3.1.2.4 Geography

The modern Hyderabad is spread over an area of 650 $km^2$ (250 sq m), making it one of the largest metros in India. The predominant topography of the city is sloping rocky terrain of grey and pink granites. Some locations with higher altitude are scattered throughout, giving rise to the appearance of several small hillocks. Hyderabad has an average altitude of about 1,778 feet (542 m) above Mean Sea Level (MSL), while the highest point in the city is Banjara Hills at 2,206 feet (672 m). The city houses multiple lakes and large water tanks. The lakes in the city are often referred to as sagar which means sea. The Hussain Sagar lake, built in 1562, is located at the heart of the city. The Osman Sagar and Himayat Sagar are two artificial lakes created as a result of dams on Musi River.

### 3.1.2.5 Economy

Hyderabad is the largest contributor to the gross domestic product (GDP), tax and other revenues, of Telangana, and the sixth largest deposit centre and fourth largest credit centre nationwide, as ranked by the Reserve Bank of India (RBI) in June 2012. Its US$74 billion GDP makes it the fifth-largest contributor city to India's overall GDP in 2011–12. Its per capita annual income in 2011 was ₹44300(US$740). As of 2006, the largest employers in the city are the Governments of Telangana (113,098 employees) and of India (85,155). According to a government survey in 2005, 77% of males and 19% of females in the city were employed. The service industry remains dominant in the city, and 90% of the employed workforce is engaged in this sector.

### 3.1.3 Selection of the respondents

A sample of 200 households/consumers has been randomly selected from 10 different centres of Hyderabad i.e., 20 consumers from each centre who are consuming the fortified food products in some form or the other. Further, 20 retailers selling the fortified food products were also randomly selected representing 2 from each centre.

### 3.1.4 Selection of the study centres

Rajendranagar, Attapur, Malakpet, Santhoshnagar, Banjarahills, Ameerpet, Bowenpally, Kukatpally, Chikkadpally and Dilshukhnagar were purposively selected representing different regions of Hyderabad.

### 3.1.5 Data collection

Both primary and secondary data was used for the study. Primary data from the consumers about their perception, pricing, spending decisions, frequency and quantum of purchase, brand preference etc were collected with the help of pre-tested schedule. Similarly, the data on the nature and trend of sales of fortified food products, brands available, product variety, constraints faced etc were collected from the retailers with the help of separate set of questionnaire designed for the purpose. The secondary data was collected from the International Markets Bureau, Schieber Research, Euromonitor International, Leatherhead and Nutritional Outlook.

## 3.2 ITEMS STUDIED UNDER THE INVESTIGATION

### 3.2.1 Consumer’s survey data

#### 3.2.1.1 Education level of respondents

Education level of the respondents and their spouses were taken as illiterate, primary school, high school, intermediate, graduation, post graduation and Ph.D.

### 3.2.1.2 Occupation of respondents and spouses

Occupation level of the respondents and their spouses were taken as government employee, business, self employed, doctor, house wife, engineer, other professional and banker.

### 3.2.1.3 Annual income of the family

Annual income of the family is divided into four categories ie., less than 2 lakhs, 2-5 lakhs, 5-10 lakhs and more than 10 lakhs.

### 3.2.1.4 Awareness of fortified food products

Consumers were asked whether they are aware of the fortified food products, each item was measured on two point continuum. i.e., yes and no respectively.

### 3.2.1.5 Awareness on various kinds of fortified food products

Consumers were asked to tick on relevant products they are aware of as fortified foods. Mentioned fortified foods are corn flakes, multigrain atta, fruit juices, beverage drinks, ice-cream and fortified cooking oil.

### 3.2.1.6 Frequency of purchase of fortified foods

Consumers were asked to tick in the relevant column regarding their frequency of purchase of fortified food products. The frequencies taken are daily, twice a week, weekly, fortnightly and monthly.

### 3.2.1.7 Brands preferred by consumers related to fortified food products

Consumers were asked to give the brand preference for the listed products as their first choice.

### 3.2.1.8 Perception of consumers about fortified food products

The consumers were asked to give their rating for the perception of fortified products as strongly agree, agree and disagree.

### 3.2.1.9 Factors considered for purchasing of fortified food products

Consumers were asked to give ranking depending upon their consideration on factors they consider while purchasing fortified food products. The ranking was given on a 3 point scale in which 3 was given for highly consider, 2 was given for moderately considered and 1 was given for least considered.

### 3.2.1.10 Constraints for not purchasing fortified food products

Consumers were asked to give ranking depending upon their consideration on reasons for which they are not purchasing fortified food products. The ranking was given on a 3 point scale in which 3 was given for highly consider, 2 was given for moderately consider and 1 was given for least consider.

### 3.3.11 Products known by consumers

The ranks given to the sources which influenced consumers purchase decisions of fortified food products was highly influencing, influencing and less influencing.

### 3.2.2 Retailers survey data

### 3.2.2.1 Educational status

The respondents were asked to indicate their educational qualification as upto SSC, upto degree, above degree and illiterate. Accordingly, the educational score was computed and grouping was done based on the above categories in order to have clear picture about the formal education of the respondents.

### 3.2.2.2 Experience of the Retailer

The details of experience such as less than one year, 1-5 years, 5-10 years and greater than 10 years were taken.

### 3.2.2.3 Selling of fortified foods

The retailers were asked whether they are selling fortified food products and the response is measured on two point continuum. i.e., yes and no respectively.

### 3.2.2.4 Fortified food product sale

The retailer’s were asked to give their rating for the sale of fortified foods between 1-7 in which 7 was given for high sale and 1 was given for low sale.

### 3.2.2.5 Brands of foods that sells more

The retailer’s were asked to give their rating for the brands which sells more in their outlet as high sales, moderate sales and low sales of the products.

### 3.2.2.6 Marketing constraints

The retailer's were asked to give their rating for the constraints they are facing while marketing the products as major constraint, minor constraint and 1 not a constraint.

### 3.2.2.7 Rating of the sales

This was measured on the basis of four options, i.e. excellent, good, average and poor.

### 3.2.2.8 Consumers loyalty towards fortified food products

This was measured on the basis of four options i.e. excellent, good, average and poor.

## 3.3 STATISTICAL ANALYSIS

The data obtained from various parameters were recorded and statistically analyzed. This was done by working out simple averages and percentages. Simple averages were used to estimate consumer's awareness, perception, brands preferred, reasons for purchasing and not purchasing. Comparisons were made based on the percentages calculated.

### 3.3.1 Garrett Ranking Method

The Garrett ranking technique was used to study the opinion of the retailers on sale of fortified food products.

The ranking given by the respondents to various attributes has been subjected to Garrett ranking. Garrett percentages were calculated by using the following formulae.

$$\text{Per cent position} = \frac{100\,(Rij - 0.5)}{Nj}$$

Where,

Rij = Rank given for the $i^{th}$ items by the $j^{th}$ individual.

Nj = Number of items ranked by the $j^{th}$ individual.

By using score card prepared by Garret, scores were allocated to the percentage values. Mean of Garret scores was calculated for each attribute. Attribute with highest mean score is considered as a major selling product.

## Chapter IV

# RESULTS AND DISCUSSION

In accordance with the pre-determined objectives of the study, this chapter deals with the presentation and description of results emerged from the research work. For easy understanding and convenience this chapter is presented under the following sub-heads:

4.1 Socio-economic features of the consumers

4.2 Consumer awareness and acceptability of the fortified foods in the selected market.

4.3 Perception of the consumers about fortified products vis-à-vis the available brands in Hyderabad metro region.

4.4 Factors influencing the consumers purchase decisions for fortified products in the selected area.

4.5 Constraints in purchasing and marketing of fortified foods in the selected market.

## 4.1 SOCIO ECONOMIC CHARACTERISTICS OF THE CONSUMERS

The socio- economic characteristics of the consumers include family size, educational status and occupation. Analysis of socio economic characteristics is required to have comprehensive view about the consumers background.

### 4.1.1 Family particulars

Out of the total respondents, majority of the respondents i.e., 45.6% have 4 members in the family, 36% have 5 members in the family and 18.5% have 6 members in the family.

### 4.1.2 Education level of the selected respondents in the study area

**Table 4.1** Distribution of consumers based on their education level

| S.No | Education level | No. of Respondents | Percentage | No. of Spouses | Percentage |
|---|---|---|---|---|---|
| 1 | SSC | 24 | 12 | 13 | 6.5 |
| 2 | Intermediate | 36 | 18 | 20 | 10 |
| 3 | Graduation | 82 | 41 | 103 | 51.5 |
| 4 | Post Graduation | 55 | 27.5 | 58 | 29 |
| 5 | Ph.D | 3 | 1.5 | 6 | 3 |
| | **Total** | **200** | **100** | **200** | **100** |

The profile of sample is analyzed and observations are made of the total surveyed respondents and presented in table 4.1 it is noted that 12% of respondents have studied upto SSC, 18% completed intermediate, 41% were graduates, 27.5% were post graduates and 1.5% have done their Ph.D. On the other hand, their spouses qualifications were indicated as 6.5% were SSC, 10% completed intermediate, 51.5% were graduates, 29% were post graduates and 3% have done their Ph.D.

Thus the analysis indicate that majority of the respondents and their spouses are educated with graduate and post graduate qualifications.

### 4.1.3 Occupation of the respondents and their spouses

**Table 4.2** Distribution of consumers based on their occupation in the study area

| S. No | Occupation | No. of Respondents | Percentage | No. of Spouses | Percentage |
|---|---|---|---|---|---|
| 1 | Govt. Employee | 22 | 11 | 9 | 4.5 |
| 2 | Business | 23 | 11.5 | 32 | 16 |
| 3 | Doctor | 3 | 1.5 | 12 | 6 |
| 4 | Housewife | 88 | 44 | 8 | 4 |
| 5 | Engineer | 41 | 20.5 | 112 | 56 |
| 6 | Other Professionals | 10 | 5 | 21 | 10.5 |
| 7 | Banker | 13 | 6.5 | 6 | 3 |
| | **Total** | **200** | **100** | **200** | **100** |

The respondent's occupation plays a major role in determining the choice of the product and their purchase behavior. Therefore, the respondent's occupational details along with their spouse's profession were collected and presented in the table 4.2. It was observed that the majority of the respondents were housewives (44%) followed by engineers (20.5%), business (11.5%) etc. Whereas the spouses details indicated that about 56% were engineers, 16% were businessmen etc. Thus it is noticed that the large number of sampled respondents were housewives who have given their views about the fortified foods in this study.

### 4.1.4 Annual income of the family

**Table 4.3** Distribution of consumers based on their annual family income in the selected area

| S. No | Annual Income | No. of Respondents | Percentage |
|---|---|---|---|
| 1 | < 2 lakhs | 28 | 14 |
| 2 | 2-5 lakhs | 76 | 38 |
| 3 | 5-10 lakhs | 92 | 46 |
| 4 | > 10 lakhs | 4 | 2 |
| | **Total** | **200** | **100** |

The table 4.3 provides the annual income of the family of the respondents. The results revealed that 46% of the sample belonged to the category whose annual income ranged between 5-10 lakhs. About 38% respondents annual income was between 2-5 lakhs. The percentage of respondents with less than 2 lakhs annual income were 14% only 2% consumers income was more than 10 lakhs.

Thus it can be concluded that majority of the sampled respondents belonged to middle income category with moderate purchasing power.

## 4.2 CONSUMER AWARENESS AND ACCEPTABILITY OF THE FORTIFIED FOODS IN THE SELECTED MARKET

### 4.2.1 Consumer awareness about fortification of food

Out of the total respondents interviewed, 100% of them were aware about fortified food products. People knew about these fortified foods products only by product or product name but not as a generic name.

### 4.2.2 Consumer awareness about fortified food products

**Table 4.4** Distribution of consumers based on awareness on fortified food products in the selected market

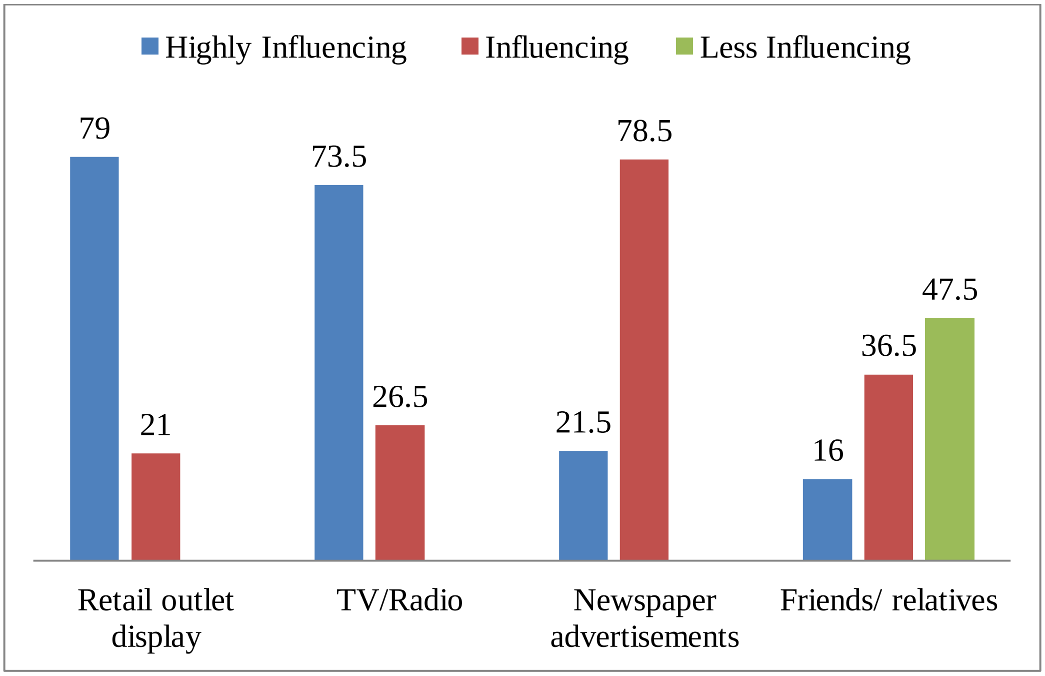
| S. No | Fortified Food Products | No. of respondents |
|---|---|---|
| 1 | Cornflakes | 200 (100%) |
| 2 | Multigrain atta | 200 (100%) |
| 3 | Fruit juices | 180 (90%) |
| 4 | Beverage drinks | 200 (100%) |
| 5 | Ice-creams | 60 (30%) |
| 6 | Fortified cooking oil | 160 (80%) |
| 7 | Iodised and iron fortified salt | 200 (100%) |

Out of the total 200 respondents, 100% of them were aware of fortified cornflakes, multigrain atta, beverage drinks and iodised and iron fortified salt, whereas 90% were aware of fruit juices, 80% were aware of fortified cooking oil and only 30% were aware of ice-creams.

Thus the analysis shows that the majority of the respondents are aware of fortified food products in the final product form due to good educational background, good income levels, increase in the advertisements and other promotional measures of the companies.

### 4.2.3 Promotional activities responsible for generating awareness of fortified food products

**Fig 4.1** Promotional activities influencing customers




Generating awareness about the product is the key for success of any business when products are introduced in the market. Each of the promotional measure generates different awareness levels of which some may show high influence and others may be of lesser intensity. Therefore to know the impact of promotional tools in generating awareness about fortified foods in the market, the data was analyzed.

From the Fig 4.1 it is evident that the retail outlet display (79%) and TV/radio (73.5%) were successful in bringing awareness among the customers and were the highly influencing factors. Newspaper advertisements (78.5%) and friends (36.5%) are moderately influencing the customers. 47.5% of the respondents mentioned that friends are less influencing factors.

As TV/Radio and hoardings and other display material are more catchy and attractive therefore they are highly influencing in generating customers awareness.

### 4.2.4 Frequency of fortified foods

**Table 4.5** Frequency of purchase of fortified food products by consumers in the selected area

| S. No | Products | Daily | Twice a Week | Weekly | Fortnightly | Monthly |
|---|---|---|---|---|---|---|
| 1 | Corn flakes | | | 12 (9.38%) | 46 (35.95%) | 70 (54.69%) |
| 2 | Multigrain Atta | | | | 52 (30.59%) | 118 (69.41%) |
| 3 | Fruit juices | 3 (2.23%) | 12 (8.95%) | 29 (21.64%) | 64 (47.76%) | 26 (19.40%) |
| 4 | Beverage drinks | | | | 47 (27.01%) | 127 (72.99%) |
| 5 | Ice creams | | 16 (22.22%) | 25 (34.72%) | 19 (26.39%) | 12 (16.67%) |
| 6 | Fortified cooking oil | | | 12 (8.51%) | 76 (53.9%) | 53 (37.59%) |

The frequency and quantum of purchase decides the level of demand for the product and their consumption pattern. From the table 4.5, it is clear that the frequency of purchase in the case of cornflakes is monthly by majority of the respondents (54.69%). Similarly, multigrain atta and beverage drinks are also purchased monthly by 69.41% and 72.99% of the sampled respondents respectively. Fruit juices and fortified cooking oil was bought by 47.76% and 53.9% of the respondents respectively, every fortnightly. The fortified ice-creams were purchased every week. Daily and bi weekly purchase was rare in most of the selected products.

Thus, the analysis indicates the consumption pattern of the consumers which would help in stocking the inventory by the business accordingly.

## 4.3 PERCEPTION OF THE CONSUMERS ABOUT FORTIFIED PRODUCTS VIS-À-VIS THE AVAILABLE BRANDS IN HYDERABAD METRO REGION

### 4.3.1 Preference of various brands of fortified food products purchased by the consumers

**Table 4.6** Consumer preference for various fortified food product brands in the selected area

| S. No | Product Category | Brand Name | No. of Respondents | Percentage |
|---|---|---|---|---|
| 1 | Cornflakes | Kellogs | 153 | 76.5 |
| | | Mohans | 27 | 13.5 |
| | | Nutricrisp | 20 | 10.0 |
| 2 | Multigrain atta | Ashirvaad | 85 | 42.5 |
| | | Pillsbury | 67 | 33.5 |
| | | Annapurna | 48 | 24.0 |
| 3 | Fruit juices | Tropicana | 105 | 52.5 |
| | | Real | 95 | 47.5 |
| 4 | Beverages | Horlicks | 81 | 40.5 |
| | | Boost | 53 | 26.5 |
| | | Bournvita | 43 | 21.5 |
| | | Complan | 23 | 11.5 |
| 5 | Cooking oils | Fortune | 67 | 33.5 |
| | | Saffola | 63 | 31.5 |
| | | Sundrop | 58 | 29 |
| | | Dhara | 12 | 6 |
| 6 | Dairy products | Amul | 159 | 79.5 |
| | | Mother dairy | 37 | 18.5 |
| | | Nido (Nestle) | 4 | 2 |

Brand preference is one of the parameter which determines the brand value of the company's products. An attempt was made to seek the choice of the customers for various brands listed under each product category. The results revealed that 76.5% of the consumers first choice under the cornflakes product category is the brand Kellogs, whereas Mohan brand was preferred by 13.5% of the people and only 10% of the sample respondents preferred Nutricrisp. As the Kellogs is the multinational brand, has long time presence in the market and spends money on promotional measures and therefore preferred by majority of the consumer's. Mohan brand is preferred due to its low price and local market hold. Among the fortified multigrain atta category, Ashirvaad brand of ITC is the first choice by majority of the respondents (42.5%) for its fortification with iron and vitamins followed by Pillsbury (33.5%) and Annapurna (24%). In the fruit juices category Tropicana followed by Real juice is preferred by 52.5% and 47.5% of the customers. Horlicks is the preferred brand in fortified beverages category accounting to 40.5% of the customers followed by Boost (26.5%), Bournvita (21.5%) and Complan (11.5%). In the oils category, the Fortune, Saffola and Sundrop are preferred by almost equal percentage of respondents. In the dairy sector, Amul brand is taking a lead with 79.5% of customers making it as their first choice followed by Mother Dairy and Nestle which is the first choice of 18.5% and 2% of the customers. Thus it can be inferred that the Kellogs, Ashirvaad, Fortune and Amul were the highest preferred brands in each of the product category of fortified foods.

### 4.3.2 Perception on fortified food products in the selected market

**Table 4.7** Consumers perception of fortified food products in the selected area

| S. No | Perception | Strongly Agree | Agree | Disagree |
|---|---|---|---|---|
| 1 | Fortified foods are enriched with vitamins & minerals | 162 (81%) | 38 (19%) | _ |
| 2 | Fortified foods are healthy | 128 (64%) | 72 (36%) | _ |
| 3 | Fortified foods are natural & organic | 25 (12.5%) | 112 (56%) | 63 (31.5%) |
| 4 | Fortified foods will control nutrient deficiency | 67 (33.5%) | 82 (42%) | 51 (25.5%) |
| 5 | Fortified foods are a more balanced diet | 12 (6%) | 66 (33%) | 122 (61%) |
| 6 | Fortified foods are expensive | 68 (34%) | 90 (45%) | 42 (21%) |
| 7 | Fortified foods are western concept | 104 (52%) | 63 (32.5%) | 31 (15.5%) |
| 8 | Fortified foods are status symbol | _ | 78 (39%) | 121 (60.5%) |
| 9 | Fortified foods are luxury | 25 (12.5%) | 63 (31.5%) | 112 (56%) |
| 10 | Fortified foods are for sick people | 21 (10.5%) | 37 (18.5%) | 142 (71%) |

An attempt was made to analyze the perception of the selected consumers about the fortified food products based on the 10 perception statements. The consumers were given the choice to either strongly agree or moderately agree or disagree with the statements given. The results are presented in the table 4.7. The table clearly reveals that 81% of the consumers strongly agree that fortified foods are enriched with vitamins and minerals. Similarly, 56% moderately agreed that fortified foods are natural & organic. About 64% of the respondents strongly believe that fortified foods are healthy. Fortified foods balance the nutritional deficiency was moderately agreed by majority of the customers (42%) whereas 33.5% strongly agree with the statement. A strong group of sample customers (61%) disagree with the statement that fortified foods are the balanced diet. Though majority of the customers strongly agree that it is a western concept (52%) but 60.5% do not agree that it is a status symbol or a luxury item (56%). Fortified foods is meant for sick people is also disagreed by majority of the selected respondents (71%). Thus the whole analysis concludes that majority of the consumers strongly agree that it is healthy, enriched with vitamins and minerals and is a western concept. Further majority of them also disagreed that it is a status symbol or is consumed by sick people or as a luxury.

### 4.3.3 Retailers view on sale of fortified food products

The quantum of turnover/sales of fortified foods across the counter of the retailers was ascertained in order to know the trend and also have a futuristic view. The analysis revealed that majority of them (40%) mentioned that sales are good, whereas 25% felt that sales are excellent and only 10% responded felt that sales of fortified products is poor. Thus, it can be inferred that the growth in sales are indicating an increasing trend and future projections also looked impressive for fortified foods in the study area.

### 4.3.4 Customer loyalty towards fortified food products from retailer's perspective

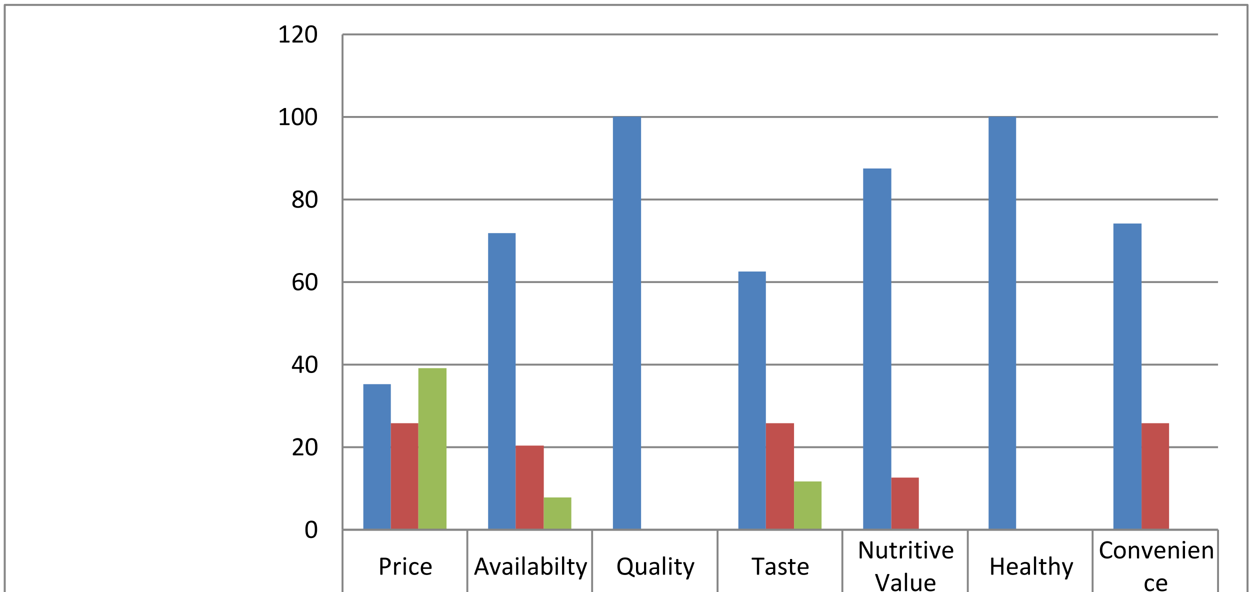
Out of the total surveyed retailers, 35% mentioned that consumer loyalty towards fortified foods is good, 30% felt that consumer loyalty is excellent, 25% consumer loyalty is average, whereas 10% have poor loyalty towards fortified foods.

Thus the analysis says that the consumers are becoming increasing loyal towards the fortified foods as they are purchasing more of those foods regularly and are satisfied with the product.

## 4.4 FACTORS INFLUENCING THE CONSUMERS PURCHASE DECISIONS FOR FORTIFIED PRODUCTS

### 4.4.1 Factors considered while purchasing fortified products

**Fig 4.2** Factors considered while purchasing of fortified food products (cornflakes)

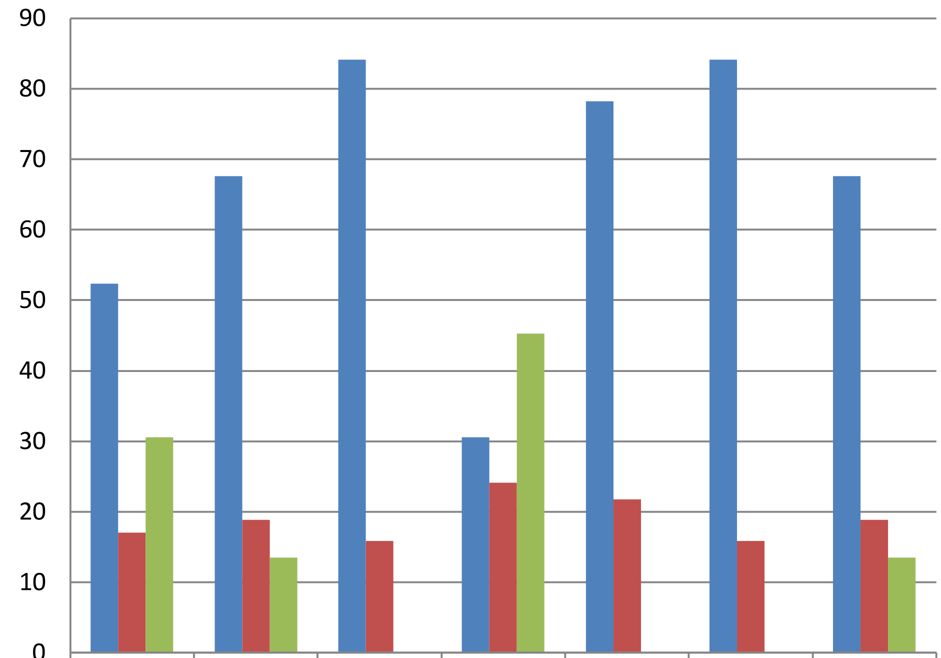



| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenience |
|---|---|---|---|---|---|---|---|
| Highly Considered | 35.15 | 71.87 | 100 | 62.5 | 87.5 | 100 | 74.21 |
| Moderately Considered | 25.78 | 20.31 | | 25.78 | 12.5 | | 25.78 |
| Weakly Considered | 39.06 | 7.81 | | 11.7 | | | |

The consumers purchase decisions of fortified foods is influenced by several factors. These factors will be of lot of use to the businesses in formulating their strategies and in channelizing their efforts. Therefore an attempt has been made to identify the influencing factors in the consumer decision making process for various product categories.

The results of analysis for the cornflakes product revealed that quality and health benefits were the influencing factors expressed by 100% of the customers. Nutritive value and convenience were also the prime factors for 87.5% and 74.21% of the consumers. Price, taste and availability were the factors which has influenced the limited number of consumers in their purchase decision of fortified foods to the extent of 35.15%, 11.71% and 7.81% respectively. Thus it can be inferred that quality and health benefits are the most important parameters considered while making purchase decisions.

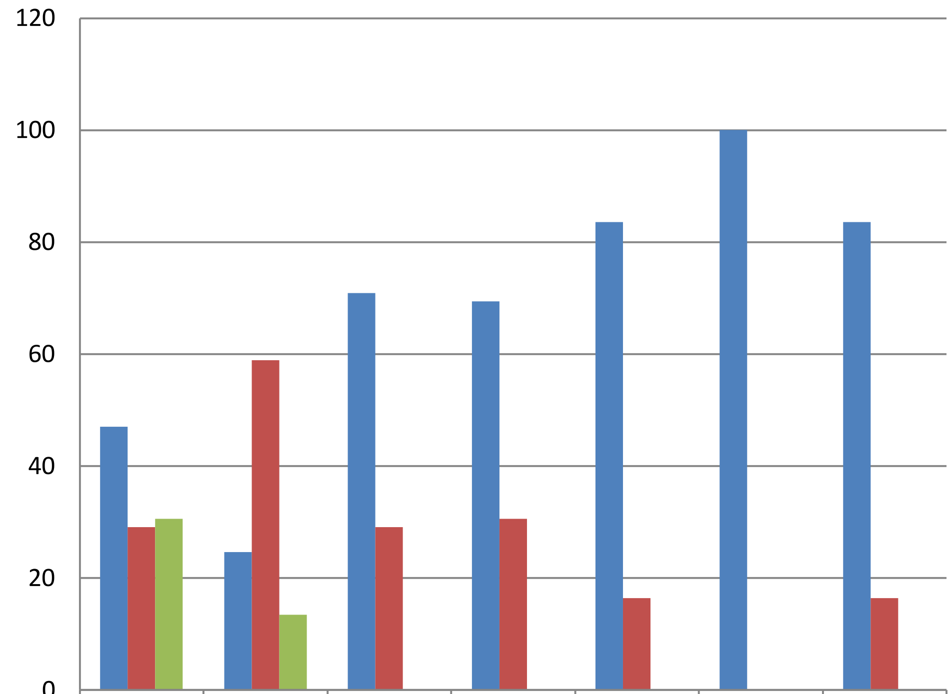
**Fig 4.3** Factors considered while purchasing of fortified food products (Multigrain Atta)




| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenience |
|---|---|---|---|---|---|---|---|
| Highly Considered | 52.35 | 67.64 | 84.12 | 30.59 | 78.23 | 84.12 | 67.64 |
| Moderately Considered | 17.05 | 18.82 | 15.88 | 24.11 | 21.77 | 15.88 | 18.82 |
| Weakly Considered | 30.58 | 13.52 | | 45.3 | | | 13.52 |

The above diagram clearly indicates that nutritive value, quality and health benefits as the most important influencing factors for majority of consumers. Taste, availability and convenience were influencing purchase decisions to a lesser extent. It can be concluded that the consumers are becoming more health conscious and less price conscious.

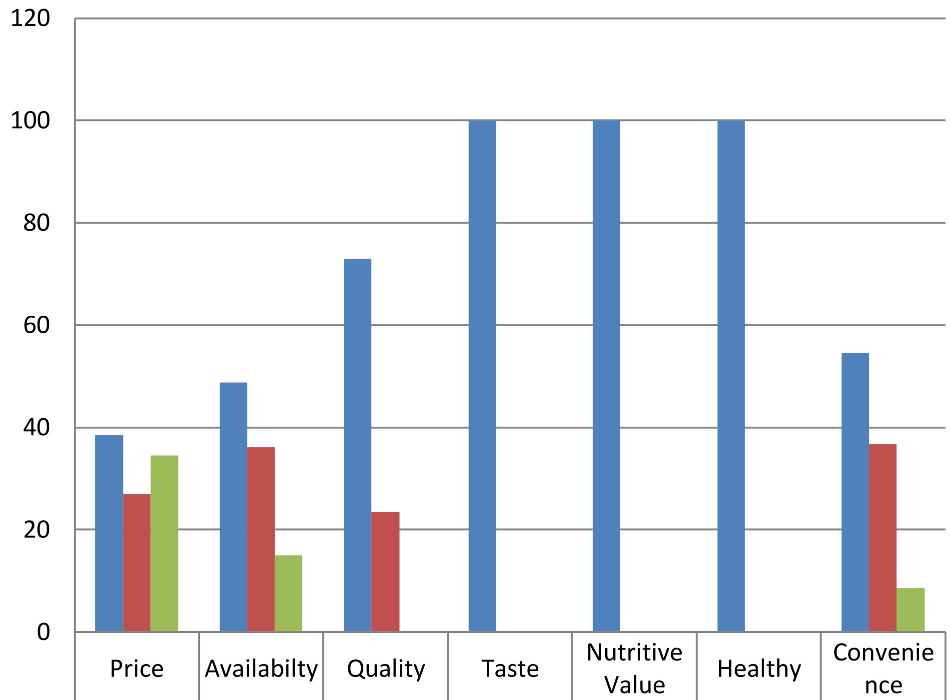
**Fig 4.4** Factors considered while purchasing of fortified food products (Fruit Juices)




| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenience |
|---|---|---|---|---|---|---|---|
| Highly Considered | 47.01 | 24.62 | 70.89 | 69.4 | 83.59 | 100 | 83.59 |
| Moderately Considered | 29.1 | 58.95 | 29.1 | 30.59 | 16.41 | | 16.41 |
| Weakly Considered | 30.58 | 13.52 | | | | | |

Fruit juices have a short life span and therefore apart from the nutritive value and taste which are considered by 100% of the consumers, the factor of convenience is also one of the important influencing factors. Price is the least effective factor during purchase decision.

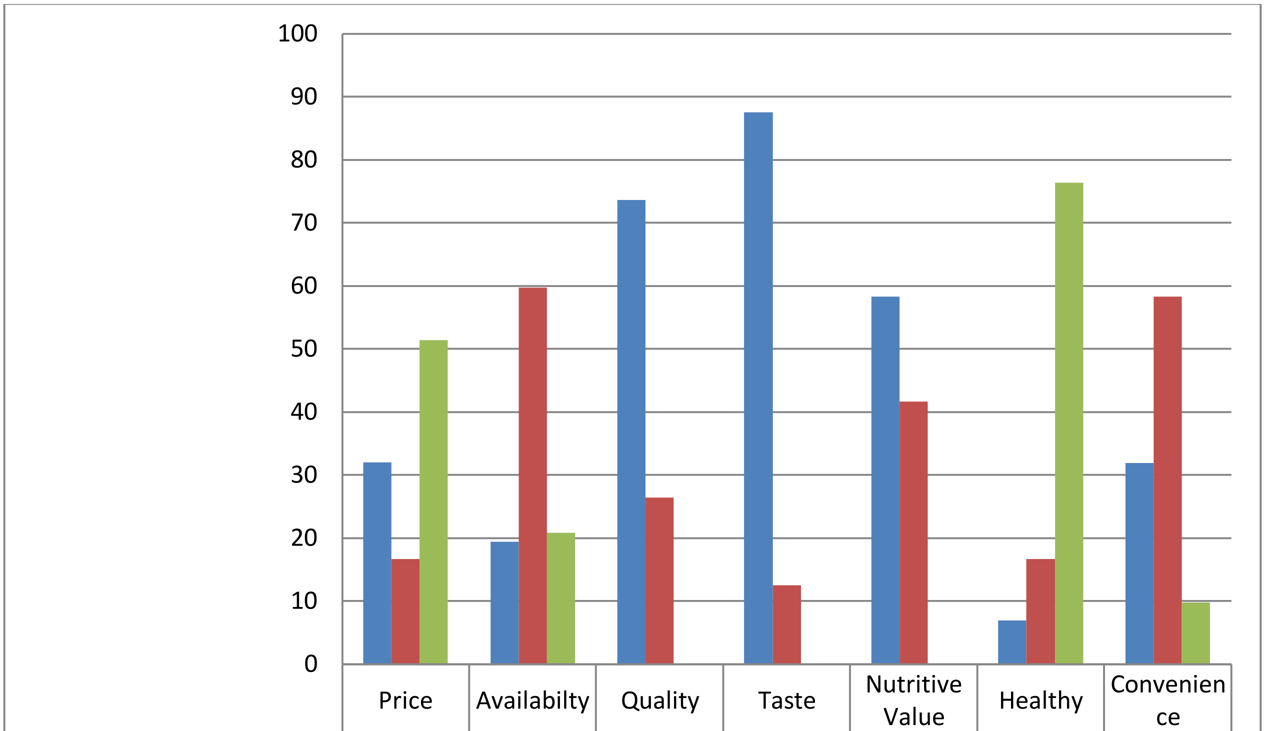
**Fig 4.5** Factors considered while purchasing of fortified food products (Beverage Drinks)




| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenie nce |
|---|---|---|---|---|---|---|---|
| Highly Considered | 38.56 | 48.85 | 72.99 | 100 | 100 | 100 | 54.6 |
| Moderately Considered | 27.01 | 36.2 | 23.5 | | | | 36.78 |
| Weakly Considered | 34.48 | 14.94 | | | | | 8.62 |

From the above figure we observe that the main factors that a consumer looks while buying a product is health benefits (100%), nutritive value (100%) and taste (100%). They weakly consider the factors like price (34.48%), availability (14.94%) and convenience (8.62).

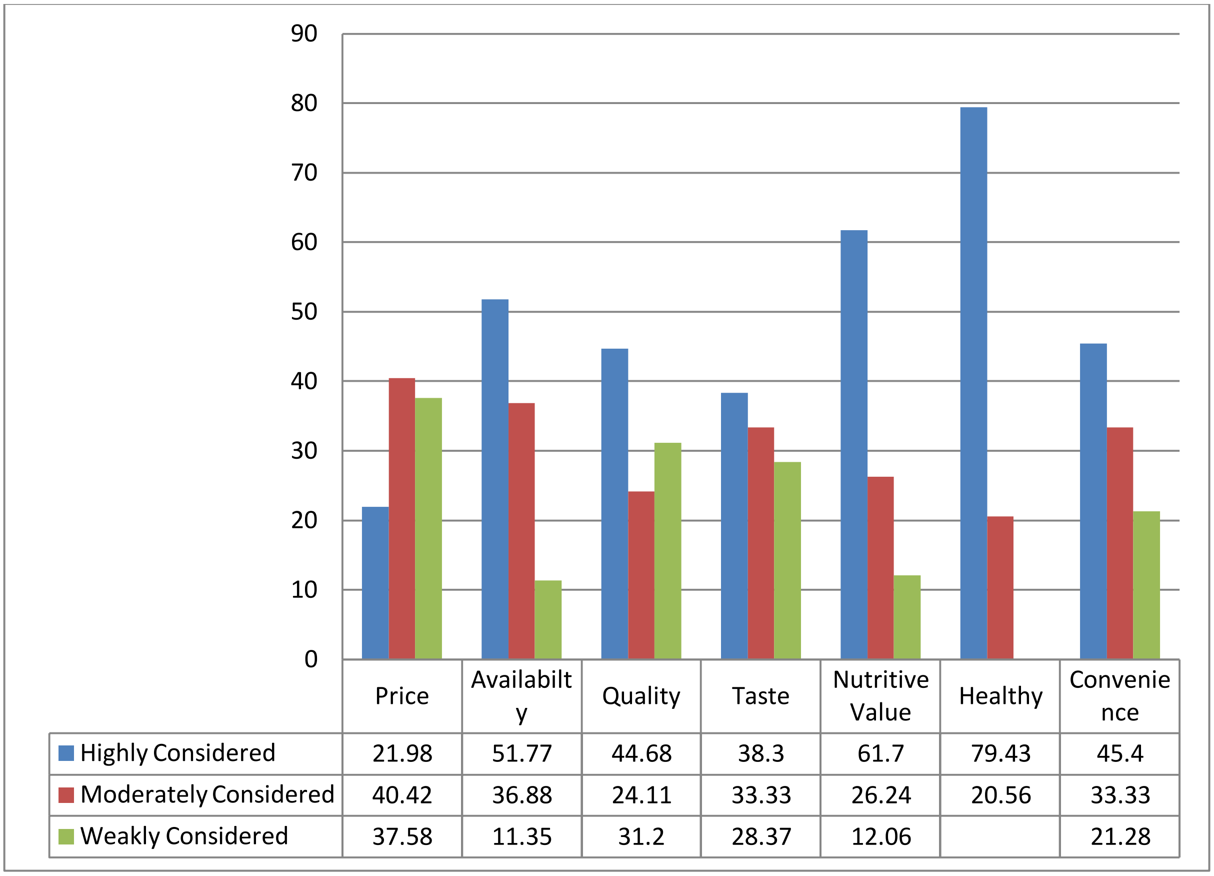
**Fig 4.6** Factors considered while purchasing of fortified food products (Ice-Creams)




| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenience |
|---|---|---|---|---|---|---|---|
| Highly Considered | 31.94 | 19.44 | 73.61 | 87.5 | 58.33 | 6.94 | 31.9 |
| Moderately Considered | 16.7 | 59.72 | 26.39 | 12.5 | 41.67 | 16.7 | 58.3 |
| Weakly Considered | 51.39 | 20.83 | | | | 76.39 | 9.72 |

Ice – creams are directly consumed by children and adults. It is a delicacy in the food product category. Fortified ice-creams has increased popularity amongst the children and therefore taste and quality were the prime influencing factors to as expressed by 87.5% and 73.6% of the consumers. Similar to the other products, price, convenience and availability are the less influencing factors in the purchase decisions of the consumers for fortified ice – cream.

**Fig 4.7** Factors considered while purchasing of fortified food products (Fortified Cooking Oil)




| | Price | Availabilty | Quality | Taste | Nutritive Value | Healthy | Convenience |
|---|---|---|---|---|---|---|---|
| Highly Considered | 21.98 | 51.77 | 44.68 | 38.3 | 61.7 | 79.43 | 45.4 |
| Moderately Considered | 40.42 | 36.88 | 24.11 | 33.33 | 26.24 | 20.56 | 33.33 |
| Weakly Considered | 37.58 | 11.35 | 31.2 | 28.37 | 12.06 | | 21.28 |

In the fortified cooking oil, about 79.43% of consumers are most influenced by the health benefits and 61.7% consumers are influenced by nutritive value. Price, availability, quality and taste are the factors which are influencing the moderate number of consumers.

Therefore, the overall analysis of the consumers purchase decision influencing factors for almost all the product categories have been the health benefits, nutritive value and quality. These are the factors which the consumers will consider during their purchase decisions.

## 4.5 IDENTIFY THE CONSTRAINTS IN PURCHASING AND MARKETING OF FORTIFIED FOODS

### 4.5.1 Constraints for purchasing of fortified foods in the study area

**Table 4.8** Constraints in purchasing of fortified foods by consumers in the selected area

| S. No | Constraints | Corn flakes | | | Multigrain atta | | | Fruit juices | | | Beverage drinks | | | Ice-creams | | | Cooking oil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **MC** | **MiC** | **NC** | **MC** | **MiC** | **NC** | **MC** | **MiC** | **NC** | **MC** | **MiC** | **NC** | **MC** | **MiC** | **NC** | **MC** | **MiC** | **NC** |
| 1 | Lack of awareness | | | | 19 (63.3) | 11 (36.6) | | | | | | - | | 79 (61.7) | 49 (38.2) | | 37 (62.7) | 22 (37.3) | |
| 2 | Not easily available | | | | | | | | | | | | | 67 (52.3) | 39 (30.4) | 22 (17.2) | | | |
| 3 | High Price | 13 (18 ) | 17 (23.6) | 42 (58.3) | 7 (23.3) | 23 (76.6) | | | | | 5 (19.2) | 16 (61.2) | 5 (19.2) | 34 (26.5) | 15 (11.7) | 79 (61.7) | 27 (45.7) | 32 (54.2) | |
| 4 | Dislike for the product | | | | | | | 23 (34.8) | 37 (56) | 6 (9.1) | | | | | | | | | |
| 5 | Limited brands | 12 (16.6) | 23 (31.9) | 37 (51.3) | | | | 15 (22.7) | 42 (63.6) | 9 (13.6) | | | | 93 (72.6) | 35 (27.3) | | | 15 (25.4) | 44 (74.6) |
| 6 | Less tasty | | | | | | | | | | | | | | | | | | |

(Figures in parenthesis indicate percent to sample size)

**Note: MC – Major Constraint,**

**MiC – Minor Constraint**

**NC– Not a Constraint**

An attempt was made to analyze the constraints faced by the consumers while purchasing of fortified food products. From the table 4.8 it is seen that lack of awareness was identified as a major constraint in the case of multigrain atta, ice – cream and cooking oil as expressed by 63.33%, 61.71% and 62.71% respectively. In the case of ice-creams, majority of the respondents (52.3%) felt that it is not easily available. Constraint such as high price is placed as minor constraint in the case of multigrain atta, beverage drinks and cooking oil and is not a constraint in the case of cornflakes and ice-creams. The dislike for fortified fruit juices is marked as minor constraint by majority of consumers. Availability of limited brands was marked as major constraint in the case of ice-creams and minor constraint for fruit juices and as not a constraint for cornflakes and cooking oil products.

### 4.5.2 Constraints in marketing of fortified foods by the retailers in the study area

**Table 4.9** Marketing constraints of fortified food products

| S. No | Constraints | MC | MiC | NC |
|---|---|---|---|---|
| 1 | Lack of Publicity | 12 (60%) | 6 (30%) | 2 (10%) |
| 2 | Limited Brands | 3 (15%) | 7 (35%) | 10 (50%) |
| 3 | High price | 6 (30%) | 10 (50%) | 4 (20%) |
| 4 | Misconception about these products | 4 (20%) | 9 (45%) | 7 (35%) |
| 5 | Inclination towards traditional foods | 9 (45%) | 8 (40%) | 3 (15%) |

**Note:** MC- Major Constraint, MiC- Minor Constraint, and NC – Not a Constraint

An attempt was made to analyze the marketing constraints of fortified products. The retailers were asked to respond to the identified constraints as a major or minor or not a constraint and the results are presented in the table 4.9. From the results it is clear that lack of publicity has been identified by majority of the retailers (60%) as the major constraint as they feel that enough awareness is not created about the benefits of fortification of that product by the companies manufacturing them. Inclination towards traditional food items without any value addition is also preferred by many customers and therefore 45% of the retailers felt this as a major constraint. Some of the consumers have a wrong perception that fortification is artificial and not a natural process and therefore their belief that old is gold is strong enough for not preferring fortified foods and therefore is a major constraint to the marketers. Dosa's, idly's, chapathis is more preferred over the fortified cornflakes by the certain segment of people. About 30% of the retailers expressed high price as a constraint. The earlier consumer survey indicated that consumer is ready to pay high price for quality product therefore majority of the retailers (50%) felt it as a minor constraint. Misconception about the product is also acting as a minor constraint as expressed by 45% of the retailers. Limited range of brands was not at all a constraint as expressed by 50% of the retailers but was indicated by 35% of the retailers as a minor one. Thus the analysis indicates lack of right publicity and the competition from traditional foods as a major marketing constraint and high price and misconception about fortified food as a minor one.

### 4.5.3 Sales performance of fortified food products in the study area

**4.10** Garrett ranking scores for sales of fortified food products

| S. No | Products | Mean Score | Garrett Rank |
|---|---|---|---|
| 1 | Corn Flakes | 75.71 | II |
| 2 | Multigrain Atta | 69.28 | III |
| 3 | Fruit Juices | 50.71 | IV |
| 4 | Beverage Drinks | 81.42 | I |
| 5 | Ice - creams | 22.14 | VI |
| 6 | Fortified Cooking Oil | 27.85 | V |
| 7 | Others | 20.71 | VII |

From the above table 4.10 the sale of beverage drinks were given rank I because consumer acceptability is high, cornflakes were given rank II due to increase in dual income groups and time constraint for the working women who are preferring breakfast cereals over traditional foods. Multigrain atta is given rank III due to increasing consumer's awareness through publicity whereas Fruit juices were given rank IV as consumption of fresh fruits and juices is a common practiced and more preferred in India over packed fruit juices. Fortified cooking oil is ranked V as the awareness level is still in the nascent stage, Ice-creams were given rank VI as the consumers are indifferent about these products.

Chapter V

# SUMMARY AND CONCLUSION

## 5.1 SUMMARY

More than two billion people worldwide suffer from micronutrient deficiencies because they are not meeting their daily requirements for essential vitamins and minerals. These deficiencies not only affect an individual's long term health but can also raise societal and public health care costs and potentially depress a nation's economic productivity (WHO/FAO). According to the World Health Organization and the Food and Agriculture Organization of the United States, food fortification is the practice of deliberately increasing content of an essential micronutrient in a food, so as to improvise the nutritional quality of the food supply and provide a public health benefit with minimal risk to health. The global market for fortified foods is $72 billion (Rs.335,337 crores). Of this, the functional beverage market itself is $10 billion (Rs.46,578 crores). So, be it food companies, cola majors or confectioners, all are queuing up to launch products supplementing regular diet.

The study was undertaken with the following specific objectives:

- To study the level of consumer awareness and acceptability of the fortified foods in the selected market.
- To analyze the perception of the consumers about fortified products vis-à-vis the available brands in Hyderabad metro region.
- To find out the factors influencing the consumers purchase decisions for fortified products in the selected area.
- To identify the constraints in purchasing and marketing of fortified foods.

To fulfill the objectives of the study both purposive and random sampling techniques were used in selection of the study area, respondents and retailers. The study was conducted in the Hyderabad Metro. The areas such as Rajendranagar, Attapur, Malakpet, Santhoshnagar, Banjarahills, Ameerpet, Bowenpally, Kukatpally, Chikkadpally and Dilshukhnagar were purposively selected representing different regions of Hyderabad.

A total of 200 households/consumers and 20 retailers were selected to study their awareness, perception and acceptability of the fortified food products.

Analysis of collected data was done by various tools and techniques. Tabular analysis was done by working out simple averages and percentages. The Garrett ranking technique was used to study the opinion of the retailers on sale of fortified food products.

## MAJOR FINDINGS OF THE STUDY

### Socio economic profile

The majority of the respondents and their spouses are educated with graduate and post graduate qualification. The average size of the family was 4 members. The respondents who were interviewed, majotiry of them were housewives (44%). Further, of all the respondents, 46% belonged to middle income category.

### Awareness of consumers on fortified foods

It is observed that majority of the respondents were aware of fortified products in the final product form due to good educational background, good income levels, increase in the advertisements and other promotional measures of the companies. TV/Radio and hoardings and other display materials are more eye catching and attractive therefore they are highly influencing in generating customers awareness. It is observed that most of the customers stock purchases are monthly. Daily & bi weekly purchases are rare in most of the products. As in the present days, most of the consumers are aware of fortified foods and becoming health conscious, consumers prefer a particular brand mainly because of its quality, advertisements and the health benefits.

Kellogs for corn flakes, Fortune for edible oil, Ashirvaad for atta and Amul for ice-creams were the highest preferred brands in the fortified foods category by the consumers.Further, majority of the consumers strongly agreed that fortified foods are healthy, enriched with vitamins and is a western concept. Majority of them also disagreed that it is a status symbol or consumed by sick people.

From the retailers perspective it is known that the sales for fortified foods are good indicating that an increasing trend & future projections and the loyalty towards these products is good as increasing loyalty leading to purchase of more of these products.

## Factors influencing customers in purchase of fortified food products

It is observed that the consumers purchase decisions influencing factors for almost all the product categories have been the health benefits, nutritive value and quality.

## Constraints in marketing of fortified foods

Lack of right publicity to generate awareness among the consumers and the competition from traditional food preparations is acting as a major marketing constraint. High price and misconception about fortified food is regarded as minor constraint by majority of the retailers.

The sale of beverage drinks were given rank I because they are fast moving and acceptability rate is high, cornflakes were given rank II due to dual income groups and time constraint among working women and therefore prefer breakfast cereals over traditional foods, multigrain atta is given rank III due to increasing consumer's awareness about health. Fruit juices were given rank IV since consumption of fresh fruits and juices is is still preferred in India and at present the consumption of packed fruit juices generally increasing. Fortified cooking oil is ranked V as awareness should still reach the consumers. Ice-creams were given rank VI because much awareness is not their about these products among consumers.

## 5.2 CONCLUSIONS

It can be concluded from the study that there is increasing awareness among the consumers regarding the fortified food products and the health benefits from them. Companies have to gear up by increasing publicity and bringing awareness among different classes of consumers. The focus should be on the health benefits and quality. Price also should be kept low so as to be affordable to larger group of people. Products which can be complemented with traditional dishes should be introduced for improving the acceptability. All the misconception can be eradicated with proper publicity and advertisements.

## 5.3 SUGGESTIONS

1. The government may initiate measures for compulsory fortification of some of the common food products with required vitamins and minerals specially in malnourished areas.
2. Companies may also go for voluntary fortification of the food products in the interest of the societal health and other benefits.
3. A symbol or logo on the packing material in case of fortified foods will help in building identify and benefit the consumers in purchasing such products.
4. As the rural market for fortified foods is untapped that there is a large scope and need in such areas. Therefore food industries may address to such.
5. The retailers may also place the fortified food in separate shelves so as to project them as something different from normal products.
6. More promotion and campaigning will generate awareness and expand its market.
7. A detailed information on the type of fortification with vitamins or minerals should be printed on the pack in the consumers interest.
8. Retailers may also participate along with the manufacturers in promotion of the products.
9. Products which may complement with traditional dishes may be brought in the market.
10. The mid day meal programmes for children and other programmes for pregnant and lactating mothers may have fortified foods in their menu.

## Steps initiated by the government through its various policies and development plans

- The food fortification project, aimed at reducing malnutrition, anemia and blindness and also to curb maternal and infant mortality rates, is actively being implemented in Rajasthan state. Food materials like milk flour and oil are made nutritious under the programme.
- Besides, small flour grinding mills in the tribal-dominated Salumbar and Sarada regions in Udaipur district are also supplying fortified flour to consumers.
- Indian leaders turned to the Washington-based non-governmental organization Harvest Plus and its use of biofortification, breeding more vitamins and minerals in staple food crops, to address micronutrient deficiency. Last year, after a decade of research, Harvest Plus released an iron-enriched pearl millet seed to farmers in the western Indian state of Maharashtra.
- AP Foods is manufacturing and supplying fortified nutritious food to 400 ICDS projects benefiting 53.77 lakhs of children between the age group of 7 months to 6 years throughout the state.
- The Government has provided guidelines on food fortification for Government run -programs like the Public Distribution system (PDS), the Integrated Child Development Services (ICDS) and the mid-day meal (MDM).
- The vehicles were identified depending upon the food habits, diversity and intake among different segments of population in India. The identified vehicles included salt, whole wheat atta and maida, rice, vegetable oil and milk. The vehicles were aimed at a market-driven fortification.

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# CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS

(Data to be used for academic purpose only)

## Customer Schedule

1.Name of respondent : ………………………………………

2.Address : ……………………………………………….

3.Phone Number :…………………………….

4. Age:……

5. Sex:…….

6. Family Particulars:

| Gender | Adults | Children |
|---|---|---|
| Male | | |
| Female | | |

7. Education level of the respondent

 Intermediate  Graduation  Post Graduation  PhD

8. Educational level of the spouse

 Intermediate  Graduation  Post Graduation  PhD

9. Occupation of the respondent

 Govt Employee  Business  Self Employed  Doctor  House Wife  Engineer

 Professional  Banker

10. Occupation of the spouse

 Govt Employee  Business  Self Employed  Doctor  House Wife  Engineer

 Professional  Banker

**11. Annual Income of the family: Tick the relevant column**

| Sl.No. | Income | Tick |
|---|---|---|
| 1 | < 2 lakhs | |
| 2 | 2-5 lakhs | |
| 3 | 5-10 lakhs | |
| 4 | >10 lakhs | |

12. Are you aware about the fortified food products: □ Yes □ No

13. If yes? Which products are you aware of.

a) Corn flakes
b) Multi grain atta
c) Fruit juices
d) Beverage drinks
e) Ice creams
f) Fortified cooking oil
g) Others

14. Frequency of purchase of fortified foods

| Products | Daily | Twice a Week | Weekly | Fortnightly | Monthly |
|---|---|---|---|---|---|
| Corn flakes | | | | | |
| Multi grain atta | | | | | |
| Fruit juices | | | | | |
| Beverage drinks | | | | | |
| Ice creams | | | | | |
| Fortified cooking oil | | | | | |

15. Which brands do you prefer the most ( most preferred, moderately preferred, least preferred)

| Brands | Cereals | Oils | Beverages | Milk & milk products | Ice creams |
|---|---|---|---|---|---|
| Kellogs | | | | | |
| Mohan’s | | | | | |
| Nutricrisp | | | | | |
| Pillsbury | | | | | |
| Ashirvaad | | | | | |
| Annapurna | | | | | |
| Nature Fresh | | | | | |
| Tropicana | | | | | |
| Real | | | | | |
| Horlicks | | | | | |
| Boost | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Bournvita | | | | | |
| Complan | | | | | |
| Saffola | | | | | |
| Dhara | | | | | |
| Fortune | | | | | |
| Sundrop | | | | | |
| Nido (Nestle) | | | | | |
| Mother dairy | | | | | |
| Amul | | | | | |

16. What is your perception about fortified foods. Which statement do you believe as characteristic of fortified food (strongly agree, agree, disagree)

| **Perception Statements** | |
|---|---|
| Fortified foods are enriched with vitamins & minerals | |
| Fortified foods are healthy | |
| Fortified foods are natural & organic | |
| Fortified foods will control nutrient deficiency | |
| Fortified foods are more balanced diet | |
| Fortified foods are expensive | |
| Fortified foods are western concept | |
| Fortified foods are status symbol | |
| Fortified foods are luxury | |
| Fortified foods are for sick people | |

17. What factors do you consider while purchasing fortified products? ( rate them accordingly 3= highly consider, 2 = moderately consider, 1 = weakly consider)

| **Reasons** | **Corn flakes** | **Multi grain atta** | **Fruit juices** | **Beverage drinks** | **Ice creams** | **Cooking oil** |
|---|---|---|---|---|---|---|
| Price | | | | | | |
| Availability | | | | | | |
| Quality | | | | | | |
| Taste | | | | | | |
| Nutritive Value | | | | | | |
| Healthy | | | | | | |
| Convenience | | | | | | |
| Any other | | | | | | |

18. What are the constraints for not purchasing these products? ( major constraint, minor constraint, not a constraint)

| Reasons | Corn flakes | Multi grain atta | Fruit juices | Beverage drinks | Ice creams | Cooking oil |
|---|---|---|---|---|---|---|
| Lack of awareness | | | | | | |
| Not easily available | | | | | | |
| High Price | | | | | | |
| Dislike for the product | | | | | | |
| Limited brands | | | | | | |
| Less tasty | | | | | | |
| Any other | | | | | | |

19. How did you know about these products (rate them accordingly, 3-Highly influencing, 2-influencing, 1- less influencing)

| Source | Rating |
|---|---|
| Retail outlet display | |
| TV/Radio | |
| Newspaper advertisements | |
| Friends/ relatives | |
| Any other | |

# CONSUMER AWARENESS, PERCEPTION AND ACCEPTABILITY OF FORTIFIED FOODS – A CASE STUDY OF HYDERABAD METRO CONSUMERS

(Data to be used for academic purpose only)

## RETAILERS QUESTIONNAIRE

1. Name of the retailer & Address:

Mobile number:

2. Educational status:
   a) Upto SSC b) Upto Degree

   c) Above Degree d) Not Educated

3. Experience of the retailer in the Business?

   a. < 1 year b.1-5 years c. 5 -10 years d. > 10 year

4. Do you sell fortified food products? ☐ Yes ☐ No

5. If yes what are they?

   a. b. c.

   d. e.

6. Which fortified food product sells more? (ranking 1-7)

| Products | |
|---|---|
| Corn flakes | |
| Multi grain atta | |
| Fruit juices | |
| Beverage drinks | |
| Ice creams | |
| Fortified cooking oil | |
| Others | |

7. Which brand of fortified food products sells more? (High sales, moderate sales, low sales )

| **Brands** | **Cereals** | **Oils** | **Beverages** | **Milk & milk products** | **Ice creams** |
|---|---|---|---|---|---|
| Pillsbury | | | | | |
| Ashirvaad | | | | | |
| Annapurna | | | | | |
| Nature Fresh | | | | | |
| Tropicana | | | | | |
| Real | | | | | |
| Saffola | | | | | |
| Dhara | | | | | |
| Fortune | | | | | |
| Sundrop | | | | | |
| Horlicks | | | | | |
| Bournvita | | | | | |
| Complan | | | | | |
| Boost | | | | | |
| Nido (Nestle) | | | | | |
| Mother dairy | | | | | |
| Amul | | | | | |

8. What are the constraints for marketing of fortified food products? ( major constraint, minor constraint, not a constraint)

| **Constraints** | **Major** | **Minor** | **Not a Constraint** |
|---|---|---|---|
| Lack of publicity | | | |
| Limited brands | | | |
| High price | | | |
| Misconception about these products | | | |
| Inclination towards traditional foods | | | |

9. How do you rate their sales from your point?

(a) Excellent (b) Good (c) Average (d) Poor

10. In your opinion, how is the customer loyalty towards fortified food Products?

(a) Excellent (b) Good (c) Average (d) Poor