CHAPTER 2

REVIEW OF LITERATURE
2.1 OVERVIEW

The use of nutritional goals and indicators of participatory community nutrition approaches to design and monitor interventions would facilitate the development and implementation of nutritional interventions. (Khor 2008)

Sustainable Development Goals (SDGs) for 2015-2030 are uniformly applicable to all countries of the world.

SDGs concentrate on a universal sustainable development, and demonstrate an understanding that the environment is not in opposition to sustainable development, but rather the foundation that underpins all other goals.

With a shift from 2000-2015 Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) for 2015-2030, immediate attention has been drawn world-wide towards reduction in the prevalence of Non-Communicable diseases (NCDs) like obesity, hypertension, diabetes, ischemic heart disease, and atherosclerosis. (Al-Zu’bi & Radovic 2018)

A target of reduction of one third of premature mortality from NCDs through prevention and treatment has been listed as a goal in SDGs. Nutrition has been identified as a key player in preventive approach for reduction in the prevalence of NCDs.

2.2 CURRENT TRENDS OF NCDs

The World Health Organization (WHO) Global Status Report in 2014 showed that life style related NCDs are the highest leading cause of death both in the developed and developing countries. NCDs were a major cause of global mortality and contributed towards 38 million (68%) of the world’s 56 million deaths in 2012. About 16 million which was 40% of premature deaths under 70 years of age.

Premature deaths from NCDs range from 22% among men to 35% among women in developing countries. In India, impact of NCDs on younger age groups is causing premature loss of life and can be prevented. It is estimated that NCDs accounted for 53% of the total mortality and 44% of disability-adjusted life years (DALYs) lost, in 2005, which may increase
to 67% of the total mortality by 2030. Industrialization, urbanization, economic development has accelerated over the past decade which led to changes in diet and lifestyle of rural population. Effective preventive measures, including control risk factors like diet and physical activity along with tobacco, alcohol, obesity, blood pressure are much needed. (World Health Organization 2017)

The emerging nutritional transition is itself marked by a shift away from relatively monotonous diets of varying nutritional quality, based on the indigenous staple grain or root, local legumes, vegetables and fruits, and limited food of animal origin. (Popkin 2001) Different countries shows substantial variation in the manifestation of the nutrition transition.

2.3 CHANGES IN FOOD CONSUMPTION PATTERNS

Asian countries in economic and demographic transition have already shown dramatic changes in food consumption patterns (Shetty 2002). The rapid quantitative changes in dietary intake indicates an increase in per capita availability of food have been accompanied by qualitative changes in the diet (Horton 2002 & Popkin 1999).

There is a striking rise in the share of meat, milk and other animal products in the daily diet across Asia (FAO 2003) along with a declining trend in rice consumption per capita. It is important to note that the growth in mega-cities, in addition to its implications for the demand for food associated with the lifestyle in urban areas, also have supply side effects. Large urban markets create the scope for the establishment of large supermarket chains, with their implications throughout the food supply chain (Pingali 2004).

Over time, it is also expected that the expansion of agricultural trade and the progress in transportation and communications will contribute to a convergence of diets among groups of developing countries. Given the current trend towards globalization, there is a tendency for dietary structure to become increasingly similar across similarly developed countries. As income levels rise in developing countries the exposure and adaption to global western food is also increasing. (Regmi & Dyck 2001)

Change in dietary habits are also seen in smaller and poorer households, especially with increased availability of street foods as it also frees up time for income-earning activities.
Urban slums are often characterized by copycat street foods, that is, food stalls that seek to mimic the branded products of fast food outlets (Pingali 2007).

Also, urban areas are centres of economic opportunity and have a greater percentage of women working outside the home. Explains why there is increased demand in urban areas for certain foods that reduce the preparation time of food in general and are also associated with lifestyle and income improvements.

Urbanization appears to have a negative effect on rice, but a positive effect on wheat consumption in Asia. In general, what is seen is an increase in the consumption of ready-made meals, or meals that cut the long preparation time of traditional dishes. In addition, double income no kids working couples could lead to smaller families where preference is given to convenience processed food. (Pingali 2004).

2.4 PROCESSED FOOD

Any food which has been altered in form from its original state to retain–usability and convenience for an extended period of time can qualify as processed food. Processing of food for preservation and flavor enhancement dates back to prehistoric times with methods as sun-drying for dehydration, salt treatment, cooking methods such as roasting, clay oven baking etc. The broad shifts in food preparation and processing is presented in figure 2.1

![Figure 2.1 - Evolution of food processing (Weaver et al).](image)

Until recently, much preservation and pressing of food were done at home; only within the past 100 y has large-scale food processing became an industrial process. The fundamental process involved in preservation and processing and its impact on food quality, nourishment, and safety
are largely the same, irrespective of the fact that whether food is processed at home or commercially as shown in figure 2.2.

![Figure 2.2: Processing of foods home or in factory](image)

Food processing industry is one of the largest industries in India in terms of production, covering fruit and vegetables; spices; meat and poultry, water, high protein foods etc.. (Kachru 2010)

20th century saw the growth of ready to make soups, reconstituted fruit juices and ready to cook/pre-cooked meals such as MTR were developed.

### 2.5 HEALTH FOOD

India; with its dynamically changing economy, lifestyle and related health issues including NCD, forcing the population to mend the eating and lifestyle habits. And therefore, consumer market is undergoing a major transformation. A consumer survey (2010) conducted by Data monitor nearly 50% of all Indian adults in the 25-34 age group and 60% of those in the 35-44 age group "make conscious attempts to eat healthy". (Data monitor 2010)

With higher per capita income and increased health awareness and consciousness, there is a shift from curative to preventive approach towards food. A new category of food has flooded the market as Health food. With the growing awareness of lifestyle diseases in India, consumers are increasingly open to the benefits provided by health and wellness foods.
Consumers, especially urban affluent population, mostly nuclear families are increasingly getting interested in a diverse variety of health foods that claim health benefits and are safe and nutritious.

Health food is believed to be highly beneficial to health, that goes beyond a normal healthy diet. Foods considered "healthy" may be natural foods, organic foods, whole foods, Fortified foods, supplements or diet related products sold in health food stores or in the health/organic sections of supermarkets. Health food comes with a lot more responsibility as it caters to a specific target group or with the intent of creating that awareness.

To create the awareness of its importance and specific benefits, all kinds of communication techniques are being utilized.

These have led to the formation of an informed literature that could be made available to the consumer before or at the time of purchase aiding him/her in making a more informed purchase resulting in the development of label on a packaged food.

Food labels plays an important role in communicating the specific nutrition information regarding the product. Health claims, allergen information, nutrient data, shelf life, manufacturing date etc. were made mandatory making the product as consumer friendly as possible. This led to the development of nutrition label and ongoing process of refining the label enhancing its interpretation by one and all in minimum words possible.

Health foods, dietary supplement foods, functional foods, and fortified foods are all enriched or fortified with nutrients that yield additional health benefits normally not delivered from the usual diet. (Rajasekaran & Kalaivani 2013).

Health foods provide diverse health benefits beyond basic nutrition, boost physical and mental abilities, decrease long-term health care expenses, and prolong healthy and active life (Siti 2011).

With increasing health and wellness awareness and consumers' food and beverage product choices which enables the New Product Development and marketing teams in Fat Moving Consumer Good (FMCG) companies to identify potential in terms of product formulation and packaging, and emerging consumer segments.
In the FMCG industry packaged and processed health food have taken the front space as it is coming up as a promising vertical. A research done by Neilson, 2015 showed that young consumers are more proactive about their diet and lifestyle than their previous generations.

**2.6 CURRENT SCENARIO OF PRE-PACKAGED FOODS INTAKES**

With liberalization of food trade, developments in food science and technology, improvement in transport and easy communication, food. Due to along with busy work schedules and independent lifestyles, pre-packed foods become an important part of the daily lifestyle. it becomes important at the same time to choose packaged foods which are ‘healthy and safe’ for consumption. Studies have established the role of these processed- packaged foods which are energy dense, nutrient poor and high in fat, salt or sugar- as a global driver of unhealthy diets in high, middle and low-income countries (Moodie et al, 2013; Stuckler, Ebrahim & Basu 2012).

Consumption of well-advertised packaged convenience foods which are shelf stable and require minimal processing, have been increasing in India at a rapid pace, more among the younger generation in the urban areas (Misra and Khurana 2008). This draws attention towards development of a population-based approach to take care of right food buying decisions at the consumer level.

Mechanization and open food trade has contributed majorly to mass production and distribution of processed foods. An increase in international food producing companies has brought a rise in processed food intake globally.

Euromonitor International, an independent market analysis company has gathered data on worldwide consumption of packed food using Passport, a global market analysis software platform. As per recent findings by Euromonitor International 2013, a hike in sales of packed snacks and beverages in high income as well as low-middle income countries has been observed.

According to this report, the years 1998-2012 showed a rise in per capita retail sales of ultra-processed foods including frozen products, snacks and soft drinks. (Retail sales were defined as sales intended for consumption at home) The relative annual growth in per capita retail sales
was 0.15% in high-income countries, 2.79% in upper-middle income countries and 5.45% in lower-middle income countries for processed snacks.

According to a survey done by Statista in 2018 the global health and wellness food market was valued at 707.12 billion U.S. dollars in 2016 and projected to increase up to 811.82 billion U.S. dollars by 2021. Growing adoption of healthy eating habits is a key factor driving market growth.

![Figure 2.3: Global Health food market trend](source: Statista 2018)

Technavio’s experts stated the increased awareness about organic food and healthy eating habits as the prime factors that will drive the wellness market. Increase in disposable These factors are part of the reason why the market is expected to grow at a CAGR of nearly 6%.
A similar higher relative annual growth in per capita retail sales of soft drinks was seen in lower-middle income countries than high-income and upper-middle-income countries (Monteiro et al, 2013). An analysis of caloric contribution of processed foods among Brazilians was done for periods 1987-1988 and 2002-2003. Where, it was observed that caloric contribution was greatest for biscuits (almost 100%), cheeses (100%), sausages (more than 100%) and soft drinks (more than 200%) (Monterio et al 2010). A similar analysis was made for American diets which showed a provision of ~ 1200 kcal/d of daily diet (Weaver et al 2014).

Moodie et al 2013 identified food companies like Nestle, PepsiCo, Danone and Kraft Foods having a major share in packed food sale worldwide. In India, the top producers of packaged foods were Gujarat Co-operative Milk, Britannia Industries, Nestle, National Dairy Development and Parle products. It has also been pointed out that production of such pre-packaged food has an advantage of having low production cost, longer shelf life and higher retail value hence a boon for most national and international food producing companies (Stuckler et al 2012).
The recent 68th report by NSSO (National Sample Survey Office) for the period July 2011-June 2012 gave details of household expenditure on processed foods. Out of total expenditure, the expenditure on processed foods accounted for 75% in rural India and about 82% in urban India. (Economic Times 2016)

Another survey by Euromonitor suggests that Healthy foods sale globally will reach $1 trillion by 2017.

Nielsen 2015 Health and wellness survey (figure 2.3 & figure 2.4) states that:

- Nearly half (49%) of global respondents in Nielsen’s Global Health & Wellness Survey said they were overweight, and 50% of the respondents reported to be actively trying to lose weight.
- Younger population has a higher willingness for premium health products.
- 3/4th of the global respondents who are trying to lose weight plan to achieve it through dietary changes and exercise. Comparatively, lesser percentages of respondents use other methods to lose weight. Eg. 1% say they take diet pill/bars/shakes, 7% use medicine prescribed by their doctor and 6% use other methods not described in the survey.
- More than half of global respondents (57%) are incorporating their diets with more natural, fresh foods, which is up from 55% reported three years ago.

![Figure 2.5: Nielsen 2015- Health and wellness survey](image-url)
Consumers increased interests in well-being and health have greatly contributed to the growing demand for health foods (Gehlhar et al 2009), resulting in a rapidly growing global market for health foods.

India; with its dynamically changing economy it’s consumer market is undergoing a major transformation. India is also experiencing a rapid health transition and in turn a “Dual burden” as an unfinished agenda of infectious diseases, nutritional deficiencies persist along with new
challenges of escalating epidemics of non-communicable diseases mostly due to over-nutrition. The rise in chronic diseases around the globe along with changes in lifestyle of global population is forcing the population to mend the eating and lifestyle habits. It’s mostly the youth and a younger demographic profile that relate to the Health and wellness category. A consumer survey (2010) conducted by Datamonitor states that nearly 50% of all Indian adults in the 25-34 age group and 60% of those in the 35-44 age group “make conscious attempts to eat healthy”.

With higher per capita income and increased health awareness and consciousness, there is a shift from curative to preventive approach towards food. The attitudes and consumption behaviours of Indian population are catching eye worldwide. With the growing awareness of lifestyle diseases in India, consumers are increasingly open to the benefits provided by health and wellness foods. Consumers, especially urban affluent population, mostly nuclear families are increasingly getting interested in a diverse variety of health foods that claim health benefits and are safe and nutritious.

Study done by Hirogaki 2013 observed that consumers are more willing to pay for health claims and interested in aspects like nutrition, food quality and health. They are no longer wants to satiate their appetite but look for maintenance of good quality of life and food quality of the foods they consume and no longer seek to simply satiate their appetites. Technological advancement, marketing strategies, laws and legal systems leads to emerging new food product development. These food claims become an attractive cue for consumers and promotion tools for food makers. A study among Japanese students in choice-based conjoint (CBC) experiment revealed that for health claims, the consumers’ marginal willingness to pay (WTP) is high. Also, they rate the country of origin of the food product highly while purchasing. Therefore, WTP for foods of Japanese origin is high.

Wills et al 2012 studied the attitude and understanding of nutrition and health claims among European consumers. As per Legislation in the European Union the claims must be understood by the average consumers. The health claims are positively linked to a product with positive health image, like in some of the studies there is higher perceived credibility of products with general health claims (like DHA and brain development) as compared to other disease risk reduction claims (like flax seed to reduce risk of heart disease). Also, consumer familiarity with the use of functional ingredient and its claimed health benefits seems to have more positive attitude towards health claim on the product.
As per 19th Annual World Symposium by International Food & Agribusiness Management Association, 2009 on Consumer Behaviour for Food Products in India at Hungary. It was analysed that there is different perspectives of consumer behaviour for food products in India. Hygiene and cleanliness, pesticides-free, fresh, safe for health are important attributes, rated highly while buying food products by people in India.

2.7 CONSUMER BEHAVIOUR TOWARDS DIFFERENT FOODS

A study by Salleh et al 2010 among Canadian consumer’s shows that health consciousness motivates the purchase intentions towards organic food products. Kulikovski and Agolli 2010 studied the consumption of organic food in Greece, which shows that the consumption behaviour of the people was generally influenced by quality & food safety.
Another survey by Bredahl 2001 in countries like Germany, Denmark, Italy and the United Kingdom on consumer attitudes and purchase decisions on GM foods. The consumer had more general attitude in particular towards nature and towards technology. Further it is influenced by risk perceived and benefits in using technology. Another study was done by Suprapto & Wijaya 2012 among Indonesian mothers buying intention towards organic food.

The healthy consumption lifestyle predicts an attitude for buying behaviour of organic food also makes consumer care for environment and friendly consumption to maintain good health. The organic food consumption in China is largely affected by a study on organic food consumption among China. The factors like income, price, degree of acceptance & trust on organic food & self-health concern. The other factors like age, level of education & concern for environment has less influence in the buying behaviour of Chinese consumers (Yin, Wu and Chen 2010)

An expert survey on organic food purchase in India by Somnath Chakrabarti in 2010 suggested health motivation was the highest motivating factor. The other factors like attitude (utility of organic food, store reputation, process related certified information), innovativeness of organic food, other consumers opinion, praise & affective commitment of the store affects the consumer purchase behaviour.

As per Joshi and Hioki 2012 a case study on organic bazaar consumers in India revealed that the economic growth in India had increased the consumers concern for safe and healthy food. It has great impact on changes in demographic variables and purchasing behaviour. There is a major change in income, social status, awareness on food safety & demand for organic foods in India which should be pesticide-free. Education, cost of organic food products, availability of organic bazaars also affects the organic markets development and purchasing behaviour of the consumers.

Gil, et al, 2000 did the study on Spain consumer willingness to pay for organic products suggested that consumers are more concerned more about healthy lifestyle and environmental degradation therefore they are more to buy organic food and to willing pay high premium. The organic characteristics are more seen for perishable products like organic fruits, vegetables and meats for premium consumers.
Brozina’s (2009) studied the cultural impact on consumption of organic food among western European countries. It was observed along with cultural impact; the health is a prime motive for consumption among these population. Roitner-Schobesberger et al. (2008) studies health consciousness as among Thailand consumers as min reason for purchasing organic food. People were more concerned about residues of synthetic chemicals and pesticides. A study by Honkanen et al. 2006 suggested Norwegian consumers showed Environmental consciousness, ethical motives, environmental and animal rights had great influence on attitude for organic food. Therefore, consumers who are more concerned, positive attitude will more likely to buy organic food.

Nowadays parents are taking more interest in buying healthy food for their family especially organic foods which shows dramatic change in eating habits of the family (Hughner et al, 2007). Zepeda and Deal in 2009 did consumer buying behaviour of organic and local foods with existing theoretical frameworks like Attitude-Behaviour-Context (ABC) theory and Value-Belief-Norm (VBN) theory. The Attitude Behaviour Context (ABC) theory (Guagnano, Stern & Dietz 1995) can be characterized as an environmental model, as it accommodates for the surroundings of the consumer. The ABC theory builds upon the framework of a standard means-end theory, meaning that the consumer acts upon expected functional and psychological gain from a given behaviour (figure2.8). (Eide 2106)

![Conceptual framework of Alphabet Theory](image_url)
VBN considers altruistic considerations as measures to predict behaviour. This model is especially constructed to deal with issues concerning environmental behaviour. The theory was introduced in order to develop a conceptual framework to predict individual conservationist action (Stern 2000). It was noted that organic food buyers are highly motivated by values, beliefs, norms. Also, attitude, knowledge, information seeking behaviour also help consumer in choosing organic and local foods.

2.8 EVOLUTION OF FOOD LABELING

Food is one of the most basic necessities of life and for an individual’s healthy living it is important that he/she acquires elaborate information on what is being consumed. This notion was identified as the primary reason behind drawing attention towards labelling of foods. For many it was seen as a policy tool for motivating change in consumer behaviour and for others as an encouragement of good production practices. Thus, food labelling implies a consumer’s right to adequate and safe food, right to information and right to health.

Thousands of years ago, the International Food Trade has existed which helped in trade of food internationally. It has grown exponentially, and helps in possible travel of quantity and variety of food across the globe today.

An intergovernmental body i.e. Codex Alimentarius Commission (CAC) with over 170 members, within the framework of the Joint FAO/WHO Food Standards Programme established by the Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO). Its purpose is to protect the consumers health and fair practices in the food trade. The CAC also promotes coordination of all work done in the field of food standards by global private and government organizations.

Countries can be grouped into two broad categories based on their statutory regulations on nutrition labelling:

1. **Mandatory**: Those which make nutrition labeling mandatory even in the absence of a nutrition or health claim. These include European Union (EU) member states, United States, Canada, Mexico, Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Uruguay, Israel,
India, Indonesia, China, Hong Kong, South Korea, Malaysia, Taiwan, Australia and New Zealand. They define which nutrients must be listed and on what basis (e.g. per 100 g/per serving). They also allow voluntary initiatives to provide additional nutrition information.

2. **Voluntary**: Countries which provide state-approved guidelines to be followed voluntarily. These include Gulf Cooperation Council countries, Venezuela, Turkey, Singapore, Philippines, Thailand, Japan, Kenya, Mauritius, Nigeria and South Africa. It has to define what all nutrients should be listed and on what basis, labelling is not mandatory unless a health or nutrition claim is made or unless the food is for special dietary use.

### 2.9 MANDATORY NUTRITION LABELING TREND

In recent years, the global trend has been a move toward mandatory nutrition labeling regardless of whether a health or nutrition claim is made. In reflection of this trend, the Codex guidelines were amended in 2012 to recommend that nutrition labeling should be mandatory even in the absence of health claims (Codex Alimentarius Commission 2012).

Many countries that had voluntary guidelines in place have put in place mandatory nutrition labeling. For example, China, which previously had voluntary nutrition labeling, adopted a national standard for mandatory nutrition labeling, which took effect on 1 January 2013. In addition, the EU adopted in September 2011 a Regulation on Food Information to Consumers, which makes nutrition labeling mandatory as of 13 December 2016. In January 2013, the European Commission issued guidelines on the implementation of this regulation. The inconsistent presence of nutrition labeling on food and drink products fuelled the European debate which led to this decision.

Nutritional Labelling is the provision of information about the nutritional content of individual food products. Mostly applied to packaged or pre-packaged food products which comes in different forms like Nutritional claims, Health claims, Functional claims etc.
Table 2.1: A Typical Nutrition Label

*This pack contains 1 serving of 500 g*

<table>
<thead>
<tr>
<th>NUTRITION INFORMATION</th>
<th>Per serving</th>
<th>Per 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>750 kcal</td>
<td>150 kcal</td>
</tr>
<tr>
<td>Protein</td>
<td>35 g</td>
<td>7 g</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>55 g</td>
<td>11 g</td>
</tr>
<tr>
<td>Of which sugars</td>
<td>10 g</td>
<td>2 g</td>
</tr>
<tr>
<td>Fat</td>
<td>40 g</td>
<td>8 g</td>
</tr>
<tr>
<td>Of which saturates</td>
<td>15 g</td>
<td>3 g</td>
</tr>
<tr>
<td>Fibre</td>
<td>1.5 g</td>
<td>0.3 g</td>
</tr>
<tr>
<td>Sodium</td>
<td>1 g</td>
<td>Trace</td>
</tr>
</tbody>
</table>

2.10 COMPONENTS OF A FOOD LABEL

Every food label of packaged food has the following components:

➤ **Name of the Food:** This includes the trade name of the product or description of the food contained in the package.

➤ **List of Ingredients:** This includes a list of all the ingredients that have been used in the preparation of the food product. All the ingredients are listed in descending order of their composition by weight or volume. The first ingredient to be listed contributes the largest amount and the last ingredient listed contributed the least. In some cases, the class name of the food ingredient is mentioned in place of specific name of the ingredient. For example if the food product contains 2 or more spices such as turmeric, chilies powder or pepper, then in place of mentioning the names of all spices used, the class name as ‘Spices and Condiments’ is mentioned. FSSAI, 2011 has given a set of class names for different food products. In some cases, percentage of the ingredients added is also mentioned.

➤ **Nutritional Information:** The Nutritional Information Labeling is a description intended to inform the consumer of the nutritional properties of the food. The nutritional facts on the label provides detailed information about macro and micro nutrients, such as amount of Protein, Carbohydrates, Fat and Calories in the food product. This information enables the consumer to compare the nutritional value of similar food products to make a healthy food choice. FSSAI,
2011 requires the packaged food product to mention Nutritional Information or Nutritional Facts per 100 gm or 100 ml or per serving of the product for:

- Energy value in Kcal
- Amount of protein, carbohydrates (including Sugars) and fat in gram or milliliters.
- Amount of any other nutrient for which a nutrition or health claim is made

➢ **Declaration regarding Vegetarian and Non-Vegetarian:** India has a large audience for both vegetarian and non-vegetarian foods where the consumption of food is restricted due to religious beliefs, personal preferences as well as health issues. Therefore, to safeguard the interests of the people, the label of the food product must have the identification mark for vegetarian and non-vegetarian category. A brown circle indicated the presence of non-vegetarian ingredients in the food item while a green circle indicates that the food item is vegetarian.

➢ **Date of Manufacturing/Packaging:** Information about date of manufacturing of pre-packaged foods is a valuable source of information about the shelf life of the product. Under this, the date, month and year in which the commodity is manufactured, packed or pre-packed is given. The month and year of manufacture is given if the ‘Best Before Date’ of the product is more than three months. Regulations by FSSAI, 2011 makes it mandatory to give information about the ‘Date of manufacture or packaging’ and ‘Best Before or Use by Date’ to be mentioned on the label of the package of the food product. The regulations define ‘Date of manufacture’ as the date on which the food becomes the product, ‘Date of packaging’ as the date on which the food is placed in the immediate container in which it will be ultimately sold, ‘Best before’ as the date which signifies the end of the period under any stated storage stage of the food safe for consumption, and ‘Use by date’ as the date which signifies the end of the estimated period under any stated storage conditions after which the food product losses the quality and safety attributes expected of the product.

➢ **Net Quantity:** The net quantity of contents is the statement on the label which provides the actual amount of food in the container. FSSAI, 2011 requires every pre-packaged food product to carry information regarding Net quantity by weight or volume or number on the label. If the food is packed in a liquid medium, then the net quantity along with the drained weight of the food product is mentioned on the label.

➢ **Identification Batch/Code/Lot number:** It is a mark of identification by which the food product can be traced in the manufacturing and distributing unit. All packaged food product having the same batch/ code/ lot number are considered to be having the same substance, of the same nature, quality in all respects. Every food manufacturer has to define and mention
Batch, code, lot number on all containers of the product to be referred under incidents of examination on suspicion by the regulatory body or on action upon consumer complaints.

- **Instructions for use:** In order to ensure correct utilization of the food, FSSAI 2011 regulations require the manufacturer to mention the ‘Instructions for use’ on the food label of the pre-packaged product. The instructions include directions regarding reconstitution or dilution of the product before use, wherever applicable.

- **Declarations:** According to FSSAI regulations, 2011, it is mandatory for a food manufacturer to declare the presence of food additives, including food colors, artificial sweeteners, flavoring compounds, edible oils and infant foods on the label of their food product.

- **Nutrition and health claim:** Nutrition claims should be consistent and support national health and nutrition policy and should be backed by scientific evidence to substantiate the claim, provide truthful and non-misleading information to aid consumers in choosing healthful diets and be supported by specific consumer education. The impact of health claims on consumers’ eating behaviors and dietary patterns should be monitored, in general, by competent authorities.

Nutrition claim means a representation suggesting that the food has the claimed nutritional properties. Nutrients Content and Comparative claim along with Non-addition claim are categories under nutrition claim.

Health claim means any representation that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health. Nutrient function claims, Other function claims, Reduction of disease risk claims are categories under health claim.

Energy, protein, carbohydrate, and fat and its components, fibre, sodium and vitamins and minerals are the nutrients for which claims can be made and for which Nutrient Reference Values (NRVs) have been laid down in the Codex Guidelines for Nutrition Labelling.
### Table 2.2: Conditions for Nutrient Claims as Per Codex

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CLAIM</th>
<th>CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>NOT MORE THAN</strong></td>
</tr>
<tr>
<td>Energy</td>
<td>Low</td>
<td>40 kcal (170 kJ) per 100 g (solids) or 20 kcal (80 kJ) per 100 ml (liquids)</td>
</tr>
<tr>
<td></td>
<td>Free</td>
<td>4 kcal per 100 ml (liquids)</td>
</tr>
<tr>
<td>Fat</td>
<td>Low</td>
<td>3 g per 100 g (solids) or 1.5 g per 100 ml (liquids)</td>
</tr>
<tr>
<td></td>
<td>Free</td>
<td>0.5 g per 100 g (solids) or 100 ml (liquids)</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>Low</td>
<td>1.5 g per 100 g (solids) or 0.75 g per 100 ml (liquids) and 10% of energy</td>
</tr>
<tr>
<td></td>
<td>Free</td>
<td>0.1 g per 100 g (solids) or 0.1 g per 100 ml (liquids)</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Low</td>
<td>0.02 g per 100 g (solids) or 0.01 g per 100 ml (liquids)</td>
</tr>
<tr>
<td></td>
<td>Free</td>
<td>0.005 g per 100 g (solids) or 0.005 g per 100 ml (liquids) and, for both claims, less than:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 g saturated fat per 100 g (solids) or 0.75 g saturated fat per 100 ml (liquids) and 10% of energy of saturated fat</td>
</tr>
<tr>
<td>Sugars</td>
<td>Free</td>
<td>0.5 g per 100 g (solids) or 0.5 g per 100 ml (liquids)</td>
</tr>
<tr>
<td>Sodium</td>
<td>Low</td>
<td>0.12 g per 100 g</td>
</tr>
<tr>
<td></td>
<td>Very Low</td>
<td>0.04 g per 100 g</td>
</tr>
<tr>
<td></td>
<td>Free</td>
<td>0.005 g per 100 g</td>
</tr>
<tr>
<td></td>
<td><strong>NOT LESS THAN</strong></td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>Source</td>
<td>10% of NRV per 100 g (solids) or 5% of NRV per 100 ml (liquids) or 5% of NRV per 100 kcal (12% of NRV per 1 MJ) or 10% of NRV per serving</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2 times the values for “source”</td>
</tr>
<tr>
<td>Vitamins and Minerals</td>
<td>Source</td>
<td>15% of NRV per 100 g (solids) or 7.5% of NRV per100 ml (liquids) or 5% of NRV per 100 kcal (12% of NRV per 1 MJ) or 15% of NRV per serving</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>2 times the value for “source”</td>
</tr>
</tbody>
</table>
Food Safety and Standards Authority of India (FSSAI) is an autonomous body in India established under the Ministry of Health & Family Welfare, Government of India in August 2011 under Food Safety and Standards Act, 2006. Its primary aim is to protect and promote public health through the regulation and supervision of food safety. It has been created for creating scientific standards for food and to regulate their production supply chain to ensure availability of safe and wholesome food for human consumption. The colour coding and traffic light labels as part of measure to address obesity-related NCDs is being reviewed in India.

To prevent the unproven demands by the manufacturers of health food, Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food, FSSAI has outlined structured guidelines in Regulations 2016.

Health supplement may be used to supplement the normal diet of the person above 5 years of age. It shall contain concentrated source of one or more nutrients, namely amino acids, enzymes, minerals, proteins, vitamins, other dietary substances, plants or botanicals, prebiotics, probiotics and substances from animal origin or similar substances with known and established nutritional or beneficial physiological effect, which are presented as such and are offered alone or in combination.

The quantity of nutrients added to the articles of food shall not exceed the recommended daily allowance as specified by the Indian Council of Medical Research and in case such standards are not specified, standards laid down by the international food standards body namely, Codex Alimentarius Commission shall apply.

2.11 IMPORTANCE OF FOOD LABELING

Labeling of food is an important aspect in food processing chain. It is the first point of contact between a consumer and the producer. It helps us in identifying one product from another and also about purchasing decision of the product. The label should be attractive and eye catching while at the same time being informative. Important information like ingredients list, manufacturers address, veg & non-veg logo, nutritional information, cost etc. should to be there in the label. It also helps to judge whether the product if fresh or stale through best before date, any allergenic component in the product and also to evaluate the health or nutrition claim of
the product. Dirty, confused, untidy label will not help consumers in buying the product. Therefore, every food processor should aim to label their products with the best label they can obtain or afford in relation to the value of the product and as per law.

The food label helps in following ways:

- Choosing trusted brand or manufacturer by comparing different brands of products.
- Vegetarian and non-vegetarian logo identification.
- Product freshness through best before date and date of manufacturer.
- Identification of ingredient list might be allergic to ingredients like egg, wheat, milk, peanuts & soya.
- The presence of other ingredients like trans fats, saturated fat, high salt, preservatives, artificial colours, sweeteners etc. which are harmful for health.
- Helps in choosing the food products giving desirable nutrients like protein, vitamins, fibre, calcium, zinc, iron, iodine etc.
- Through nutritional information it provides number of calories and other nutrients present in the packed food.
- Helps in selecting appropriate serving size with requirement levels.

2.12 FOOD LABEL USE AND MANAGEMENT OF CHRONIC DEGENERATIVE DISEASE

Due to increase prevalence of chronic degenerative diseases like obesity, diabetes, hypertension, heart disease. Both policymakers and consumers wanted to seek and spread nutrition information on healthy food choices. Nutrition labels act as an important instrument in promoting healthy food choices and eating habits (Cowburn & Stockley 2005). The nutrition labels give the nutritional facts of the food product. It also provides additional information like serving size, no. of servings per pack, ingredients and calories and nutrients present in the product. As a health education intervention, mandatory nutrition labels have broad reach and are present at the point of purchase, as well as when food is prepared or consumed. (Feunekes et al 2008).
2.13 LABELING USE IN INDIA AND AROUND THE WORLD

Thousands of years ago, the International Food Trade has existed which helped in trade of food internationally. It has grown exponentially, and helps in possible travel of quantity and variety of food across the globe today. (Temple 2014)

![Traffic Light Approach](image1)

![Front of the pack labelling](image2)

Figure 2.9: Traffic Light Approach  
Figure 2.10: Front of the pack labelling.

Wide variety of labelling formats are in place and there is an emerging trend toward standardization, particularly in ASEAN countries. Codex Alimentarius guidelines are often used as a basis for standardization. Earlier the governments were considering whether to introduce FOP labels and in which format, a different variety of FOP labels were launched by NGOs, international organisations, industry associations and individual companies for making nutrition information accessible to consumers. Some of the labels present the nutritional quality through colour-codes (like “traffic lights”) or a symbol “health logo” based on specific nutritional criteria (e.g. heart symbol, “Green Keyhole”), while others present the information in the overall diet context, such as GDAs.

The proliferation of different formats prompted towards harmonization in some countries and regions. The European Union in 2011, adopted new Regulation on Food Information to Consumers and allowed for voluntary FOP labelling following specific formats. The label is based on GDA format, but the term “reference intakes” will have to be used instead of GDAs. The other additional forms of expression and nutrition declaration i.e. colours, symbols and graphical forms are permitted in certain conditions in the regulation.

The government-endorsed FOP nutrition labels are being implemented in other countries (e.g. Australia, New Zealand, India, Chile, South Africa). Under key considerations whether FOP
labels need to be made mandatory and whether it should emphasize the judgement of nutritional quality. In this regard, the countries like Australia and New Zealand, for example, opted for a star rating system and combined with a nutrient icon component which was applied voluntarily.

In France, voluntary nutrition label “simple and accessible for all” was included in the 2014 draft health law. For example, a label using five colours to rate foods was evaluated and received majority of support from public health and safety bodies, as well as researchers. In Europe, colour coding has been gaining ground. The UK opted government-endorsed voluntary scheme which combines colour coding and text.

In the country like Sweden there is interest in Keyhole logo and voluntary nutrition labeling developed new criteria, which allows its applicability to additional food groups (like gluten-free products).

Colour coding has been proposed in the country like South Africa, where voluntary traffic light label for energy (in kJ), total sugar, fat, saturated fat and total sodium or salt equivalent per serving proposed in the regulations. Thailand became the first country to introduce mandatory FOP nutrition labels in 2011, which was initially applied to five snack categories and subsequently extended to other snack foods like biscuits, chocolate, cakes, bread and other categories. The same year South Korea was the first Asian country which provides recommendations for voluntary traffic light labels on children’s food.

Sri Lanka propose traffic light-FOP labelling for sugar in ready-to-drink (RTD) products while Indonesia, opted for warning statement on certain processed or fast foods with the information on content of sugar, salt and/or fat.

For United States, the Food and Drug Administration’s priority was to review the Nutrition Facts Panel (NFP) on BOP before making recommendations on FOP labels. The focus was also on inclusion of a separate line for added sugars into the NFP, with final recommendations from experts. However, research from the International Food Information Council (IFIC) Foundation indicated that a separate line on added sugars may not provide clear and useful information to applied appropriately by the majority of consumers (Laquatra et al 2015).
Bix et al, 2015 studies the effect of Front of Pack (FOP) Nutrition Labels on consumer attention to nutrition information. Front of Pack labelling increases the attention span of consumers particularly during market survey for evaluating the health component of the food. It conveys nutrition information to wider population; therefore, policy makers or regulators must carefully design standardized FOP Nutrition Label. However, there is a gap that it decreases the attention span of consumers to more comprehensive nutrition information.

Koenigstorfer et al 2013 studies the behavioural effects of directive cues on front-of-package nutrition information and observed that the use of health marks and traffic light colours to nutritional information produces favourable effect from public health perspective.

2.14 THEORETICAL FRAMEWORK OF FOOD LABEL USE

Food label use is affected by various factors. Numerous studies have been done in the west, where Packaged food including health food is common with high awareness level of western consumers due to of the prolong exposure. Report indicates that consumer’s use of food label being affected by his/her age, gender, educational status, income level and even residential area in many cases. Scientists have devised various theoretical frameworks to understand the composite role of different factors affecting use of food labels by consumers. One such framework was given by Drichoutis, Lazaridis & Nyga 2006. (Fig 1.1).

This model emphasizes on the important effects of socio-demographic, behavioral and attitudinal, product involvement and other factors like use of claims on label use. These factors have been shown to have a direct contribution on a consumer’s purchasing behavior as well as diet. The authors have given special importance to the motivational factor which has not been counted her various situational, behavioral and attitudinal factors. It can also be seen that a bi-directional direct link between label use and nutrition knowledge has been shown i.e. adequate nutritional knowledge has a positive relation to use of labels and the use of labels improves nutritional knowledge.
Similarly, another framework was suggested by Jacobs et al, 2010 based on the works of Balasubramanian and Cole, 2002, Drichoutis et al 2005, Gracia, Loureiro & Nyga 2007 and Schiffman and Kanuk, 2012 (Fig 1.2). This model in addition to factors covered by previous model, also talked about factors like consumers’ racial ethnicity and health status. According to this model, a consumer’s use and understanding of food labels is a continuous process driven by need, information search, understanding, information comprehension, use and food buying decisions. This process is affected by socio-demographic factors on one side and external factors like food-labeling regulations, food manufacturer’s role and food label information. It has also been pointed out that the process of using food labels to make healthy food choices also has an effect on external factors discussed above.

Figure 2.11: Antecedents and Consequences of Label Use Based on Literature Review
2.15 SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH USE OF FOOD LABELS

➢ Gender

Studies have shown gender variation in the use of food labels. While most studies have pointed towards women being more interested in reading food labels than men, findings have not been very consistent. Recent studies by Sharf et al 2011; Besler et al 2012 and Saha et al, 2013 have found women paying more attention towards food labels than men. Females have been reported as more diet and weight conscious and hence draw more attention towards the sugar, fat and caloric content of a packed food.

A study by Worsley in 2003 conducted on South Australians to assess their trust in various sources of nutritional information, found that majority of women trusted the nutritional information given through food labels. However, many studies have reported no major role of gender towards motivation of reading food labels (Nayga 2000; Vijaykumar et al 2013). In fact, a study conducted by Ali and Kapoor, 2009 reported a higher likelihood of males reading the food labels than females in India.
Age

Age has been also found as a major factor affecting one’s interest in reading food labels. Evidence suggests a link between a person’s age and his/her ability to understand the food label content. Therefore, many studies have shown a positive food label reading habit among the middle aged group. According to a study conducted by Gorton et al, 2009, participants within the age-group of 25-39 years had higher odds of reading food labels as compared to those within the age-group of 18-24 years. Similarly, in another study by Sinclair et al, 2013, those within the age-group of 25-34 years were found to be more significantly able to understand the food labels than those within a higher age group of 35-64 years. Contrastingly, a study by Satia, Galanko & Neuhausser 2005 reported an increase in food label use with increase in age, where population in the age group of 50 to 70 years were found to be more health conscious regarding dietary cholesterol and fat intakes.

However, many studies report no particular association between age and reading of food labels (Hess, Visschers and Siegrist 2012).

Education

Higher educational status has been found to be strongly associated with more frequent use of food labels. A well-educated consumer tends to search for more food related information and thus use food labels (Katona and Mueller 1995). A Consumer with a higher educational status also tends to better understand food and nutrition related terminology present on food labels. In a study by Jacobs et al, 2010, participants with a higher educational status were better able to perform food label reading tasks than those with a comparatively lower educational status. Similarly, in a study by Bleich and Wolfson, 2015, a higher use of nutrition facts panel, ingredients list and serving size was reported for participants having an educational level above high school education.

It must be pointed out here that it cannot be concluded that those with a lower educational level are less likely to use food labels. Evidence suggests that consumers with a lower educational status do read food labels but the information that they look for differs from those with a comparatively higher educational status. A study by Ali and Kapoor, 2009 reported consumers with a low educational level concentrated mostly on the price information on the food label, those between high school and graduate preferred to look for ingredients list, instructions for preparation and any precautions for children.
It was also reported that consumers with an education level equivalent to graduation or above were found to be interested in reading health-risk, serving size and vegetarian/non-vegetarian indication related information.

➢ Income status

Higher income status has shown a positive role towards use of food labels. Studies have reported that consumers with a lower income status in most cases concentrate on price and flavor on a food label while buying pre-packed food (Pettigrew & Pescud 2013). A rise in interest in other components of a food label like ingredient list, serving size, nutrition acts etc. has been seen with a rise in income levels (Barreiro-Hurlé, Gracia & De-Magistris 2010). Researchers have also associated a higher income status with a higher educational status.

A study by Sinclair et al 2013 reports that the ability to read labels correctly increases with increase in income levels, where people with a household income between $40,000 and $79,999, and ≥ $80,000 were more likely to correctly calculate calories provided by a packed food than those who had an income of ≤ $39,999. Similar findings have also been reported by Nayga 2000 where the author concludes that income level affects the level of education, hence indirectly affecting use of food labels.

➢ Area of residence

Few studies support any relation between a consumer’s residential area and their use of food labels. A study by Chopera et al, 2014 reports a higher consideration for net weight/volume among rural consumers whereas urban consumers held high importance for ingredients and date of expiry. According to a study by Ali and Kapoor, 2009, consumers from urban areas considered information regarding nutritional quality as more important, while rural consumers mostly concentrated on the product’s serving size, manufacturing details and indications of vegetarian/non-vegetarian.

Other factors

➢ Knowledge

Evidence suggests that prior information/knowledge positively affects a consumer’s use and understanding of food labels. Knowledge can be subjective or objective. Subjective knowledge is the self-reported knowledge of what is understood from the information present on food
labels. Objective knowledge is the actual interpretation of the information being conveyed through a food label which may differ from the consumer’s perceived subjective knowledge (Hess et al. 2012). Food label use is based on a cyclic process of attention, comprehension, memory and finally decision making (Fig 1.3) and knowledge supports this cognition process.

According to this model, a prior food product or nutritional knowledge can draw a consumer’s attention towards important aspects like nutritional information, ingredients list, serving size etc. This knowledge also helps in easy understanding and comprehension of the information provided through food labels and thus helps a consumer in making healthy food choices. Numerous studies by Marietta et al, 1999; Satia et al. 2005; Barreiro-Hurlé et al. 2010 support this model. Studies also report that consumers who are nutritionally knowledgeable may not always translate their knowledge into behavior/practice of making healthy food choices. But such strong nutritional knowledge background has been found to be better than those without one (Nayga 2000).

**Motivation**

Motivation has been marked as the most important factor of trans theoretical model of health-behavior change (Prochaska 2007). Knowledge together with motivation has been identified important for cognitive processing of information found on food labels. (Balasubramanian and
Cole 2002). Motivation for specific health related factors is necessary for understanding, comprehension and application of the information obtained. Thus, motivation to read food labels is essential to understand and use the food related facts. Grunert et al. 2010 a suggests that a consumer’s ability to make healthy food choices is less likely to depend on his understanding of provided information but more on his motivation to choose healthy. A study conducted by Jacobs et al. 2010 also showed the presence of motivational factor in making healthy food choices, wherein the participants were motivated enough to choose healthy by associating the perceived health risk to the consumption of a particular food product.

Understanding

Mixed evidence has been reported for the extent of understanding of food labels. Research has evaluated consumer’s understanding of food labels by testing them on various food label reading tasks. These tasks included selecting the healthier option from a given set of packed foods or calculating a nutrient consumed per serving size. When consumers were asked if they understood the contents of a food label, most studies reported a positive response, however this subjective understanding may differ from the objective understanding (Sharf et al. 2012; Grunert et al. 2010b). Studies have also linked higher cognitive abilities and educational status with better understanding of food labels (Jacobs et al. 2011; Barreiro-Hurlé et al. 2010).

Health, diet-disease relationship

Research reports a linear relationship between food label use and healthy dietary intake. Several studies have evidenced associations between food label use and lower dietary fat and higher fruits and vegetable consumption (Neuhouser et al. 1999; Graham and Laska 2012; Cooke and Papadaki 2014). A recent study by Jasti and Kovacs 2010, also showed greater significance between non-food label users and more consumption of foods high in trans-fat. Hess et al. 2012 also found a positive relation between thinking process of healthy eating and food label use. A link between some diseased conditions and food label use has also been established by many studies. A study by Hong et al, 2014 investigated the association between the use of nutrition labels and the presence of various chronic diseases (hypertension, diabetes mellitus, and hyperlipidemia). The study showed that the patients with chronic diseases were less likely to use these nutrition labels than those without chronic diseases. Therefore, food label use is higher among people who are already conscious about their health and diet.
Label design and content

In the present scenario, food labels have been criticized for being illegible to read and understand due to small font sizes or too complex terminology. Difficulties in understanding of numeral figures (serving size/nutritional values) and jargons of ingredients list have also been reported (Rimperkool et al. 2015). Many initiatives have therefore been taken to improve the design and content of food labels. FoP (Front of pack) nutrition labels have been introduced in Europe to present important nutritional information through visual symbols. These include guideline daily amounts (GDA), traffic lights (TL) and health logos (HL) (Hodgkins et al. 2012). Evidence suggests that the presence of FOP has positively contributed towards a consumer’s healthy food related decisions, but its success is yet to be established (Hodgkins et al. 2015). Similarly, the concept of emo-labeling has also been tested among certain population groups where foods are labeled using emotional correlates of health (happy = healthy; sad = not healthy). One such study by Privitera et al. 2015 showed an increase in ability to choose healthy among kindergarten children.

2.6 Approaches towards promotion of food labels

Time and again, attention has been drawn towards the need of promoting food label use among populations. Numerous studies have reported about consumers’ ordeal in dealing with quantitative data on food labels; RDAs (Recommended dietary allowances), percent daily values, serving size, manufacturing and expiry dates etc (Hess et al. 2012; Cha et al. 2014; Mandle et al. 2015). Similarly, studies report many times consumers may understand the information being provided but may have problems in processing and using it (Cowburn and Stockley 2005). Researchers have therefore stressed upon introduction of educational interventions to educate consumers not only in reading food labels, but also using this information in making healthy food choices.

According to the NNLM (National Network of Libraries of Medicine), a consumer can be provided guidance either through technological access or by providing the information through easy to read materials.

In recognition of the Nutrition Labelling and Education Act, 1990, the U.S. Food and Drug Administration (FDA) created a ‘Spot the block’ campaign in 2007 for children 9-13 years to create awareness regarding importance of checking nutrition facts panel and serving size on
the food label. Later this campaign was extended into ‘Read the Label’ youth campaign. This youth campaign is based on creating play activities to guide children in using the nutrition information panel and therefore help them in making healthy food choices. Guidance material has been provided for parents and health educators to promote this campaign. Keeping in mind the interests of the youth, this campaign also came up with a rap song ‘Spot the block’.

Various studies have been undertaken to assess the impact of different educational interventions towards promotion of food label use. A study by Block and Peracchio, 2006 educated pregnant and lactating women on reading %DV. The results showed a considerable rise in their post-intervention calcium statuses mean (M = 1429.78) in comparison to their pre-intervention calcium statuses mean (M = 1010.25; t = 3.48, p <0.001). Similarly, a study attempted to improve food label knowledge among patients with diabetes mellitus. The study showed a greater improvement in knowledge and reduction in barriers to diabetes management among the experimental group provided with the intervention (Miller et al. 2002).

Vemula et al. 2013 study the use of food label information by urban consumers which shows that the information on food labels needs to be made more consumer friendly as nutritional information on labels are too technical to understand. Also school curriculum should include reading food labels as part of nutrition education and creating public awareness of the same.

Miller and Cassady 2015 studies the effects of nutrition knowledge on use of food label. It was observed that as per cognitive processing model, prior knowledge of nutrition labels among consumers plays an effective role in identification of salient information, proper interpretation of the content on food labels. It improves effective nutrition communication and healthy decision-making situations.

![Figure 2.14: Cognitive processes underlying use of food labels](image-url)
Prathiraja and Ariyawardana 2003 did study on effect of nutritional labelling on consumer behavior. The study was done in supermarkets and it was observed that individuals in the age group of 36-50 years, tertiary education, special dietary status were more willing to pay for nutritional labels. Therefore, nutrition label on the package will enhance the demand for food products and appropriate strategy to motivates local food processors.

Packaging plays an important role in communicating the main characteristics and inference of the products (Carneiro et al. 2005). The design of the package strongly affects the attention of the consumers. It affects sensory expectations and helps in future product experiences (Ares & Deliza, 2010). Varela et al. 2014 studies the consumer attentional capture and packaging attributes for different food products through use of mobile eye tracker and projective mapping. It helps in comprehensive analysis of consumer perception on packaging attributes. The use of eye tracking has helped in identification of different ways to modify label designs & increase utilization of nutrition information from the label (Graham et al. 2012).

Kempen et al. 2011 studied the influence of Food label on South African consumers purchasing behavior. The participants use to read label & assess the nutritional, health benefits and product quality. Some of the indirect consideration factors like situational factors (e.g. family), extrinsic (e.g. price) and intrinsic (e.g. taste) also affects the purchasing behaviour of some consumers.
Food labels play an important role in communicating nutrition information and also have potential which influence food choice and dietary behaviour pattern (Mackison 2010).

2.7 Justification of the study

Several changes are taking place in the current dietary patterns all over the world and particularly in the developing countries, due to rapid urbanization and industrialization. As a result of this, people today have a greater purchasing power and can therefore afford a variety of newer kinds of foods.

Moreover, advancement in technology has also played a very important role in making novel foods available to us. Studies have shown that dietary habits of individuals have undergone a lot of changes with varied effects on different age groups. Today eating out is more common than it used to be a few years back. But at the same time, the changing food habits might have
some important health implications. There has been an increase in the number of various degenerative disorders like hypertension, diabetes at a younger age. Therefore, food labelling came into picture to generate awareness among population to choose health and good quality of foods to prevent these chronic degenerative diseases and maintain healthy lifestyle.