IS FUNCTIONAL FOOD BENEFICIAL TO HUMAN BEING? A QUANTITATIVE STUDY OF PUNJAB PROVINCE, PAKISTAN

eISSN: 2957-840X
pISSN: 2957-8396

DOI: https://doi.org/10.36755/khaldunia.v2i1.44

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ABSTRACT

Recently area of FFs has gained popularity keeping in view their health benefits and has been investigated in the discipline of Foods and Nutritional Sciences globally. FFs provide best protection to human beings against many chronic diseases such as diabetes, cardiovascular disease, hypertension, cancer, arthritis, eye health, strokes, bowel health, hypertension bone health/osteoporosis and many more. The functional food products likely to help in maintaining the health of the skin and membranes, formation of red blood cells, improving in the development and maintenance teeth and bones, assisting building and repairing body tissues, building antibodies, lowering cholesterol level and promotes regularity. The prime objective of the study is to explore the consumers' understanding, knowledge and awareness about health benefits of FFs. A multistage purposive random sampling design was used to interview four hundred consumers of FFs selected from sixteen super stores from the four major cities of Punjab province, Pakistan. Fisher et al. (1983) approach was used for deciding a representative sample size for having reliable research findings. Descriptive statistics were used to analyze the collected data. Analysis demonstrates that internet, dieticians, television/radio, physicians, family and family friends, nurses were the main sources for acquiring information about FFs. Analysis indicates that consumers had trust on government, research institutes, food retailers for providing information and statement about FFs. Analysis also demonstrates that majority of the respondents had the knowledge about the health benefits of FFs. They viewed that FFs is primarily used for physical wellness and to minimize the risk of number of diseases such as hypertension, heart disease, cancer, diabetes, constipation, immunity. They also had knowledge that calcium is useful for strengthen bones, folic acid is used for reducing the risk of neural

defects with unborn children. Lycopene improves the skin protection against ultra violet radiation, Omega-3 fatty acids are beneficial for lowering cholesterol and dietary fibers minimize the risk of heart disease and colon cancer. It is suggested that useful information must be provided to customers and consumers which are provided by the trustworthy research institutes, medical doctors and nutrition consultants. As there is no regulatory mechanism to regulate FFs development in the country. It is difficult to identify whether it is a FF and is healthy. A healthy FF stamp of approval would help consumers about the safety and health benefits of FF and will reduce the confusion and increase knowledge and positive perceptions about the FF products.

KEYWORDS

Functional Food (FF), Health Benefits, Cross sectional survey, Punjab, Pakistan.

1. Introduction

It is seen globally that the relation of diet and health has been established and recognized now-a-days by the parents, families and the people to care them self and helping in caring others to reduce the risk of getting sick. The wellbeing and wellness are greatly affected by healthy lifestyle, including the quality and quantity of food. The important role of food products for example vegetables, fruits and cereals from whole grain reduces the disease, preventing and minimizing the risk of illness and chronic diseases has been recognized. Historical analysis of FFs indicates that in late 1960s, to reduce the cholesterol level in the blood Unilever developed such spreads which is high in polyunsaturated fatty acid.

Becel and Flora developed Spreads under its brand name, which was basically mechanistic understanding and the data showed clinical efficacy in it (Keys et al., 1965) and primarily they target those patients who were hyper-cholesterolaemic. Gradually developed these products successfully in the products mainstream for the consumers. This highlights that FFs can help in addressing the specific requirements of the consumer and be able to play an important role in improving the health and also minimize the risk of getting sick/diseases.

In almost all food categories the FFs have been developed, it has not been homogeneously distributed almost in all the food industry segments but in different markets the consumer preference maybe different. Comparison of food markets, basically FFs have been produced in soft drinks, confectionery, bakery products, dairy products and baby foods (Menrad, 2003; Kotilainen et al., 2006).

There are number of different FFs classification proposed in the literature. Sloan (2000), Kotilainen et al. (2006), and Spence (2006) has divided it into four categories of fortified food products which having extra added nutrients (label with fortified products) which are:

- Juices of the fruit which are fortified with multivitamin i.e. vitamins E, C, calcium, zinc and folic acid.
- Food having extra new components or nutrients normally not found in the normal routine particular foods (label with enrich products), i.e. prebiotics and probiotics.

- Such food items which have some harmful components have reduced, removed or modified with some other beneficial component (label with altered products), i.e. fibre as fat releaser in ice cream and meat.
- Food products that are naturally enhanced with one components (label with enhanced commodities), i.e. increased content in eggs with omega-3.

It may be a challenging environment for developing FFs and its marketing as compared to conventional food which already have a high health image in the mind of the consumers. FFs is different from conventional foods in so many ways. First, healthy conventional foods are basically presented in such a way that it contributes towards healthy diet such as high fibre products, vegetables and low fat products, without emphasizing any single product's role in it. Secondly in FFs, such specific components are directly linked with well-defined health benefits and physiological effects to a single FF product (Lähteenmäki, 2003). It is scientifically proved substantiation that FFs products have health effects and manufacturers developed such specific health effects in the functional products, while developing it.

FF and conventional food may be same in looking while using the functional foods its effect the consumers realized. The credibility of the basic product may be affect after the health effect is added in the basic product (Poulsen, 1999). It is the duty of the manufacture to highlight the correct information on the product for the consumers, while the information related to health affects is regularize by the government department/authorities (Diplock et al., 1999).

There are some other essential products of FF segments like beverages which are non-alcoholic and they are fortified with multivitamins i.e. vitamin A, C and E and with some other functional ingredients. While in this segments there are so many products available in the market but as compared to other countries European countries market is still small and fragmented.

Nowadays consumers not only think food as a mean for satisfaction of hunger and nutrients necessary for human health but also as a source to fight against nutritional related problems/diseases and get better physically and mentally. To this end, FF is believed to have an important role. Recently, demand for functional foods has increased because of increasing and high cost of health care, intentions to have long life expectancy and the desire to live a better life in old age (Menrad, 2003).

2. Literature Review

Recently area of FFs has gained popularity keeping in view the health benefits and has been investigated in the discipline of Foods and Nutritional Sciences globally. In a number of studies, it has been argued that FFs provide best protection to human beings against many chronic diseases such as diabetes, cardiovascular disease, hypertension, cancer, arthritis, eye health, strokes, bowel health, hypertension bone health/osteoporosis and many more. The functional food products likely to help in maintaining the health of the skin and membranes, formation of red blood cells, improving in the development and maintenance teeth and bones, assisting building and repairing body tissues, building antibodies, lowering cholesterol level

and promotes regularity (Milner, 1999; Crowe et al., 2013; Cheng et al., 2017).
Ruxton (2008) and Fangupo et al. (2019) pointed out that the FFs are of different categories with different health benefits. The high antioxidant foods primary includes a variety of brightly colored vegetables and fruits particularly barriers and leafy greens, oranges, black papers, papaya, broccoli, bell papers, carrots, sweet potatoes, sprouts This type of foods are best source of antioxidant and support in fighting against oxidative stress and cellular health. The category of green food is based upon sea vegetables and grasses such as chlorella spirulina, barley grass and wheat grass are full of vitamins and minerals and phytonutrients. The another category of foods are high fiber foods include vegetables, fresh fruits, avocado, coconut, whole grains, legumes, nuts and seeds these foods are very important and beneficial for gut health, digestive, appetite regulations and heart health. Pro-biotic foods which include cultured/fermented foods such as yogurt, kefir and these foods have tremendous role in protecting the lining of the gastrointestinal tract, preventing common digestive issues, helping in absorption and fighting against infections. The other category of food is prebiotic and this food includes garlic, onions, potatoes, bananas, gains, beans, asparagus and many other plant foods. Eating raw plant foods is best source for taking prebiotic along with digestive enzymes that help nutrient absorption. Omega-3 foods are another type of functional foods obtain from wild fish like sardines, salmon, halibut, mackerel, walnuts, flex seeds and chia seeds. Nuts and seeds are also important category of FFs, these foods are very useful in protecting heart and brain health and keeping hunger in check. The best source of that food includes cashews, almonds, chia, flax, walnuts and hemp etc. Tea, herbs and spices are an-other important FFs includes black tea, green tea, ginger, turmeric, cinnamon, parsley etc. These foods are best source of antioxidant contents and help flavor meals also anti-inflammatory having antimicrobial properties. Coffee and dark chocolates also important due to their fatty nutrients. Bone broth is FFs rich in amino acid like arginine, glycine and praline are useful source for vitamins and minerals. The main objective of the study is to know the sources of attaining information, usage of FFs and the consumers' understanding, knowledge and awareness about health benefits of FFs.

3. Materials and Methods

A cross-sectional survey using multistage purposive random sampling design has been conducted in four major cities/districts Lahore, Faisalabad, Rawalpindi and Islamabad to interview four hundred consumers of FF. At the first stage four districts mentioned earlier purposively selected and at the second stage four mega/big/super stores were randomly selected from each of the city and from each super store twenty-five consumers were randomly interviewed to explore the research objectives. For ensuring representative sample Fisher et al. (1983) approach was used to decide the sample size. Prime reason for conducting study in four districts was to capture the maximum variations on FFs health benefit and for ensuring the reliability, consistency and un-biasness of research findings required to enhance the scope of the study. A pretested interview schedule consisting closed and open ended questions were used for getting meaningful information from the consumers on FFs and their health benefits. The survey was conducted to interview consumers selected from the 16 super or mega stores

located in Faisalabad (Metro cash and carry, S.B departmental store, Imtiaz super market, Al-Fatah departmental store), Lahore (Packages mall, Hyper-star, Emporium mall, Metro cash and carry, Islamabad (Best price store, Centaurus mall, GIGA mall, Al-Fatah departmental store and Rawalpindi Punjab (Cash and Carry, Sheikh mall, Madina cash and carry, Cosmo cash and carry). These are major urban centers of Pakistan. Descriptive statistics were used to analyze the gathered data.

4. Results and Discussion

Table 1: Distribution of the consumers according to their parent's (father and mother) education (Years of Schooling).

Consumers' Education (Years of Schooling)	**Frequency**	**Percentage**
0 – 12	81	20.3
13-14	61	15.3
15-20	258	64.5
Total	400	100.0
Mean: 15.03, Std. Deviation: 3.157		
Father Education (Years of Schooling)	**Frequency**	**Percentage**
No	28	7.0
2-10	107	26.8
12-14	135	33.8
15-20	130	32.5
Total	400	100.0
Mean: 12.2, Std. Deviation: 4.606		
Mother Education (Years of Schooling)	**Frequency**	**Percentage**
No Education	119	29.8
2-10	134	33.5
12-14	87	21.8
15-20	60	15.0
Total	400	100.0
Mean: 8.00, Std. Deviation: 6.1		
Consumers Income (PKRs.)	**Frequency**	**Percentage**
Up to – 45,000	153	38.3
45,001- 75,000	143	35.8
75,001- 5 lac	104	26.0
Total	400	100.0
Mean: 62715.00, Std. Deviation: 52381.852		
Consumer Occupation	**Frequency**	**Percentage**
Govt. Job	59	14.8
Business	66	16.5
Pvt. Job	56	14.0
Teaching	29	7.3
Any other (Students and House wife)	190	47.5
Total	400	100.0

Age (Years)	Frequency	Percentage
Up to- 25	189	47.3
26-35	105	26.3
36-58	106	26.5
Total	400	100.0
Mean: 30.1yeras Std. Deviation: 9.383 years		

Education is very important indicator influencing human attitude and behavior about all the aspects of life. A number of the scientists keeping in view the significance of education in relation to investigation of consumers' preference and buying behavior, they have included that variable in their studies (Lyly et al., 2007; Schickenberg et al., 2008; Siegrist et al., 2008; Annunziata and Vecchio 2010; Krystallis and Chrysochou, 2012; Loizou et al., 2013; Bechtold and Abdulai, 2014; Goetzke and Spiller, 2014; Salleh et al., 2015; Schnettler et al., 2015; Hung et al., 2016). Table 1 shows that as the education of the consumers is concerned 20.3 percent of the consumers had attained education up-to 12 years, while 15.3 percent consumers had 13-14 years schooling. Majority of the consumers had education 15 to 20 years. The mean years of schooling was 15 years with standard deviation 3.16 years.

Mother and father education plays pivotal role in the socialization of the children. Educated parents take logical and rational decision about their children life. What the values, and traditions the parents posses more likely transfer these values to the children. Table 1 indicates that 7 percent of consumers' fathers had no schooling while 26.8, 33.8 and 32.5 percent of the consumers' fathers had 2 to 10, 12 to 14 and 15 to 20 years of schooling respectively. The mean years of schooling of the consumers father was 12.2 with standard deviation 4.6 years of schooling. It can be said that the majority consumers' fathers had higher level of education and that may be contributing factor in shaping their children attitude and behavior towards FFs.

It is established fact that mother education is an important factor among all the socio-economic dimensions which has direct impact on children socialization and influencing their cognitive development. Even mother education is regarded as contributing factor for family, locality and national development. The nation which has higher level of women education had attained the height of level of development. Napoleon Bonaparte said that "Give me educated mother, I shall promise you the birth of civilized, educated nation" (Bourne and Sloane, 1911). Table 1 shows that about 30 percent of the consumer's mother had no education. The values attached with girls schooling have been entirely changed now. There were days when the women mobility outside of the household was restricted. Families and society do not like to impart education to their girls. Now these values are entirely changed and even in the higher educational institutions there is co-education, the females are almost equal in number to males. Table also indicates 33.5, 21.8 and 15 percent of the consumer's mother years of schooling were 2 to 10, 12 to 14 and 15 to 20 respectively. The mean years of consumer's mother education was 8 years with standard deviation 6.1 years. Comparison

of consumer's father and mother education reflects that father had slightly more than 4 years of schooling than consumer's mother. The studies indicate the effect of social capital of parents upon the socialization of their children. The key contributing factor is the education of the parents in relation to the study of consumers preference and buying behavior towards FFs (Urala and Lähteenmäki, 2007; Siro et al., 2008; Saaksjarvi, et al., 2009).

Table 1 shows that monthly income, 38.3 percent of the consumers had monthly income PKR up-to 45,000. Table also reveals that 35.8 and 26 percent of the consumers had monthly income from 45,001 to 75,000 and 75,001-5 lac respectively. The mean monthly income was PKR 62715.00 with standard deviation PKR 52381.85. It can be said that mostly consumers belonged to those families which have better economic conditions. There are number of evidences highlighting the significance of income in the context of exploring consumers' preference and behavior towards FFs (Cranfield et al., 2011; Lalor et al., 2011a,b; Krystallis and Chrysochou 2012; Loizou et al., 2013; Yu and Bogue 2013; Goetzke and Spiller, 2014; Hur and Jang, 2015). Table 1 indicates that distribution of the consumers according to their occupation as table indicates 14.8, 16.5, 14.0 and 7.3 percent of the consumers had occupation of government job, self-business, private job and teaching respectively. A substantial number of the consumers were students or housewives. Occupation determines the economic ability of the consumers towards decision making process. Keeping in view that influence of occupation the different studies highlighted the importance of that variable in explaining FFs behavior (Niva, 2006; Ali and Rahut, 2019**)**.

Regarding consumers' age, table 1 indicates that 47.3 percent were up-to 25 years, slightly higher than 26 percent of the consumers were in each group of 26 to 35 and 36 to 58 years. It reveals from the table that mean age of the consumers was 30.1 years with standard deviation 9.38 years. The selection of the relevant variables yields meaningful findings and capture maximum variation to explain the response variable, in the present study behavior towards FFs. Krystallis and Chrysochou (2012), Yu and Bogue (2013), Tobin et al. (2014), Goetzke and Spiller (2014), Kraus (2015), Stratton et al. (2015) and Vecchio et al. (2016) included the variable of age in their studies to explore the consumers' preference and behavior towards FFs.

Table 2: Distribution of the consumers according to the family members living together (adult and minor members).

Adult Member	**Frequency**	**Percentage**
1-4	230	57.5
5	60	15.0
6-15	110	27.5
Total	400	100.0
Mean: 4.7 adults, Std. Deviation: 2.4 adults		
Minor Member	**Frequency**	**Percentage**
No	113	28.3
1-2	113	28.3
3	73	18.3

4-25	101	25.3
Total	400	100.0
Mean: 2.6 children Std. Deviation: 3.3 children		

Table 2 indicates frequency and percentage distribution of the adult members of the family. 57.5 percent of the consumers belonged to the families had 1-4 adult members while 27.5 percent of the consumers had 6-15 adult's members. 15 percent of the consumers had 5 adult members. Although there is shift from large family to small family still many people like to have large families. Table also reveals that the mean number of adult members was 4.7 with standard deviation 2.4 persons.

Table 2 also shows that 28.3 percent of consumers had no minor members because they will more likely be unmarried or just married. 28.3 percent of the consumers had 1-2 minors and 18.3 percent had 3 minors. There were substantial numbers of the consumers i.e. 25.3 percent, who had many minors. It is interesting to know that there was a family who had 25 minors. It is more likely that family will be extended and many brothers likely to live together with their families under one roof. Table 2 also indicates the mean number of minors was 2.6 with standard deviation 3.3 children. A number of studies indicate the influence of socio-cultural factors in explaining FFs behavior, the presence of children at home is one dimension of socio-cultural aspect. Barrena and Sánchez (2010), Lalor et al. (2011a,b), Krystallis and Chrysochou (2012), Bechtold and Abdulai (2014), Schnettler et al. (2015), Annunziata et al. (2016) and Vecchio et al. (2016) studied the effect of number of children on FFs behavior.

Table 3: Distribution of the consumers according to the sources for acquiring information about FFs.

From where/whom to like have Information about FF	YES	
	Frequency	Percentage
Physician	26	10.0
Dietitian	33	12.7
Nurse	20	7.7
Pharmacist	20	7.7
Naturopathic Doctor	15	5.8
Chiropractor	7	2.7
Food Label	22	8.5
Books, Newspapers or Magazines	18	6.9
Television/Radio	29	11.1
Internet	50	19.2
Family and/or Friends	20	7.7
Total	260	100

Table 3 indicates that 10.0, 12.7, 7.7, 7.7, 5.8, 2.7, 8.5, 6.9, 11.1, 19.2 and 7.7 percent of the consumers were of the opinion that they would like to receive information about FF from physicians, dietitians, nurses, pharmacists, naturopathic doctors, chiropractors, food label, Books, Newspapers or Magazines, television/radio, internet and family and/or friends respectively. It emerges from the table that the most important source for acquiring information was internet followed by dietitians and television. In other words, in this era of modern technology the social media like Facebook, YouTube, Instagram etc. play vital role for providing information about FFs and their health benefits.

Table 4: Distribution of the consumers according to trust-ability upon the institutions/persons regarding functional food to their action or statement.

Institutions/Persons	Frequency	Percentage
Government	60	15.0
Food Industry	90	22.5
Research Institutes	80	20
Food Retailers	50	12.5
Medical Doctors	40	10.0
Nutritional Consultants	30	7.5
Do Not Know	50	12.5
Total	400	100

Table 4 indicates that 15.0, 22.5, 20.0, 12.5, 10.0 and 7.5 percent, of the consumers were of the opinion that government, food industry, research institutes, food retailers, medical doctors and nutritional consultants are trustable as institutions/persons regarding their action and statement about FF while 12.5 percent of the consumers were of the view point that no one institutions/persons are trustable about FFs (Poortinga and Pidgeon, 2003; Christensen and Lægreid, 2005; Chen, 2008; De Jonge et al., 2008; Chryssochoidis et al., 2009; Tetteh, 2017).

Table 5: Distribution of the consumers according to three FF products currently consuming and considering them to consume.

Three food forms as FF	Current		Further	
	Frequency	Percentage	Frequency	Percentage
Modified cereals, Oats, Bread	105	26.25	120	30
Modified cereals, Bread, Canola oil	80	20	80	20
Orange juice, Grape juice, Green tea	60	15	44	11
Modified yogurt, Milk fortified with vitamin D, Energy drinks.	85	21.25	72	18
Bread, Modified yogurt, Milk	70	17.50	84	21

fortified with vitamin D				
Total	400	100	400	100

The general perception and attitude have been important for the considering the use of FFs highlighted in many studies (Carrillo et al., 2013; Kljusuric et al., 2015; Hung et al., 2016; Schnettler and Grunert, 2016; Vecchio et al., 2016;). Table 5 indicates the current consumption pattern and their consideration for using FF. It reflects from table 5 that 26.25 percent of the consumers currently consumed modified cereals, oats, bread, while they also had the consideration to consume that food items and their percentage was 30 percent. The percentage of current consumption pattern of modified cereals, bread, canola oil was 20 percent. The same percentage of the consumers responded that they have consideration to use these items in future. In other words, they like to continue the use of these FF items. 15 percent of the consumers currently consumed orange juice, grape juice, green tea, but their consideration to use these FF items decreased to 11 percent. 21.25 percent of the consumers responded that they are currently consuming modified yogurt, milk fortified with vitamin D, energy drinks, the FF items while their consideration to consume these FF items decreased by 3.25 percent. The FF items bread, modified yogurt, milk fortified with vitamin D were currently consumed by 17.50 percent of the consumers while the consideration of the consumers for the continuation of the FF items was increased to 21 percent. It is worth mentioning here that canola oil, ginger and turmeric are the FF items which are used in cooking regularly on daily basis.

Table 6: Distribution of the consumers regarding the functional substances and their possible efficacies onto health.

Functional Substances	F	%	Functional substances	F	%
Calcium.			**Lycopene.**		
Abates rheumatism.	20	5.0	Prevents thyroid gland diseases.	83	20.8
Enhances strong bones.	213	53.3	Abates headaches.	30	7.5
Encourages the growth of beneficial bacteria in the gut.	100	25.0	Improves the skin's protection against ultraviolet radiation.	157	39.3
Do not know.	67	16.8	Do not know.	130	32.5
Folic Acid.			**Omega 3 Fatty Acids.**		
Eases digestion.	81	20.3	Improve mental balance.	64	16.0
Reduces the risk of neural tube defects with unborn children.	181	45.3	Prevent anemia.	50	12.5
Improves the power of concentration.	61	15.3	Lower the cholesterol level in the blood.	207	51.8
Do not know.	77	19.3	Do not know.	79	19.8
Probiotic Cultures.			**Dietary Fibres.**		
Encourage the growth of beneficial bacteria in the gut.	220	55.0	Improve sight.	18	4.5

Improve sight.	46	11.5	Reduce the risk of heart diseases.	129	32.3
Enhance the body's capacity to absorb calcium.	46	11.5	Reduce the risk of colon cancer.	129	32.3
Do not know.	88	22.0	Do not know.	124	31.0

The consumers' knowledge about functional substances that address the human health or efficacies on the health. In this table 6 shows the responses of the consumers indicate that the calcium functional substance is linked with enhancing strong bones expressed by 53.3 percent while 25 percent of the consumers indicated that calcium substance encourages the growth of beneficial bacteria in the gut.

Regarding the folic acid substance 45.3 percent viewed that folic acid primarily useful in reducing the risk of the neural tube defects with unborn children. 20.3, 15.3 percent of the consumers viewed that folic acid substance eases digestion, improves the power of concentration respectively. As far pro-biotic culture substance is concerned 55 percent of the consumers were of the opinion that pro-biotic culture encourages the growth of beneficial bacteria in the gut. 11.5 percent equal in percentage of the consumers reported improve eye sight and enhance the body capacity to absorb calcium is the character of pro-biotic culture.

The consumers were of the view that lycopene substance is useful for improving the skin protection against ultra violet radiation (39.3 percent) followed by 20.8 percent of the consumers who viewed that lycopene prevent thyroid gland diseases. Regarding the omega 3 fatty acid 51.8 percent of the consumers viewed that this substance lowers the cholesterol level in the blood while 16 percent and 12.5 percent told that omega 3 fatty acid substances improve mental balance and prevent anemia. Dietary fibers are also very important substance in improving human health, 32.3 percent equal in percentage of the consumers were of the opinion that this substance reduces the risk of heart diseases and the risk of colon cancer substance (Chema et al., 2006; Marette et al., 2010; Krystallis and Chrysochou, 2012; Loizou et al., 2013; Kraus, 2015).

Table7: Distribution of the consumers according to health area(s) addressed or would consider to be addressed by consuming functional foods.

Heath Areas	Yes		No	
	F	%	F	%
Arthritis	175	43.8	225	56.3
Cancer	162	40.5	238	59.5
Constipation/Bowel Health	184	46.0	216	54.0
Diabetes	252	63.0	148	37.0
Heart Disease	339	84.8	61	15.3
Eye Health	133	33.3	267	66.8
Hypertension	289	72.3	111	27.8
Immunity	242	60.5	158	39.5

Osteoporosis/Bone Health	190	47.5	210	52.5
Others	39	9.8	361	90.3

It has been argued in different studies that FF minimizes the risk of number of chronic dieses like cardiovascular dieses, hypertension, cancer, bone dieses etc. It has been asked from the consumers that they described the different health areas which they would like to address by consuming FF. In table 7 the distribution of the consumers according to different health areas indicates that the most important diseases for which the consumers consumed FF that are heart diseases (84.8 percent) and hypertension (72.3 percent). 60.5 percent of the consumers viewed that immunity is key factor to keep the human health better and safeguard from many diseases. 43.8, 47.5, 46.0, 43.8, 40.5 and 33.3 percent of the consumers reported that they considered consuming the FF for addressing bone health (osteoporosis) for considering bowel health (constipation), arthritis, cancer and high health. The different researchers conducted researches on the different health areas addressed by the use of FFs (Ares and Gambaro, 2007; Cornish, 2012; Marina et al., 2014 Hur and Jang, 2015; Je Zewska-Zychowicz and Krolak, 2015).

5. Conclusion and Recommendations

Growing health issues are serious challenges to the global community which required a lot of human, financial and infrastructural resources to address these challenges. Even developed countries have financial constraints, the financial conditions of developing world are worsening facing difficulties in managing their health care system. No doubt medicines are important for treating patients but lifestyle which mainly defined on eating habits is even more important for improving physical, psychological and mental health and wellness. The functional foods have promising health benefits through minimizing the risk of chronic diseases such as diabetes, cardiovascular disease, hypertension, cancer, arthritis, eye health, strokes, bowel health, hypertension bone health/osteoporosis and many more. Consumers identified the possible efficacies upon health of different functional substances more than 50 percent viewed that calcium enhances strong bones. 45.3 percent identified the reducing the risk of neural tube defects, more than 50 percent viewed that probiotic culture encouraged the growth of beneficial bacteria in the guts, about 40 percent identified that lycopene improved the skin protection against ultra violet radiation. More than 50 percent identified the efficiency of omega 3 fatty acids in lowering cholesterol level in the blood. The equal in number of the consumers slightly higher than 30 percent that Dietary Fiber substance reduces the risk of heart diseases and colon cancer.

Fruits, vegetables, high fiber foods, omega fatty acids, prebiotic and post-biotic foods, nuts and seeds (dry fruits), tea, herbs and spices, coffee and chocolate have the substantial health benefits. There is a need to promote healthy eating style for improving individuals and families' wellness and national health status. Surely this policy option will help in minimize the financial and human resource burden on the national health care system. The collaboration

of food scientists, food technologists, media, food industry, research institutes and policy makers is essentially important for providing trustworthy information about healthy eating style, development of healthy functional food products, marketing of FFs and framing national policy on functional foods.

Acknowledgement: The researchers are highly grateful to the National Natural Science Foundation of China, Research Project Title" Bio-fortification Impact on Nutrition and Health", Grant numbers: 71273106, 71561147001 for supporting this research activity.

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