

## Knowledge, Attitudes Toward Functional Foods among Adults Working in the National Research Center

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**Abstract:** A quantitative survey was conducted to explore adults knowledge and attitudes toward Functional foods. Self administered questionnaire focused on knowledge of the foods with specific health benefits and whether they are interested to learn more about functional foods. Questionnaires were hand delivered to 1340 subjects working in the National Research Center (NRC) and data collected over a one year period. Data were obtained from 820 participants (Response rate of 61.2%). Results indicate that 90.9% of respondents believe that food and nutrition play a great role in maintaining or improving overall health. The subjects had significantly lower knowledge 64.5%. Males are more knowledgeable than females (67.7% vs 62.1%). More than 85% believe in the health benefits of certain foods. 89.3% are interested to know more about functional foods. Cereals was the most common food group named by the respondents (48.5%) followed by fruits & vegetables (18.7%). Meanwhile Herbal drinks named by 10.9% of the participants. Scientific magazines were the main source of their knowledge. Older age group and highly educated ones are more positive about functional foods than others. Effective communication strategies for reaching consumers, health professionals, new media, and regulators based on sound science are needed.

**Key words:** Functional and healthy foods

### INTRODUCTIONS

As nutrition science is thought to be moving from the concept of "adequate nutrition" to "optimal nutrition", new food products, which are purported to have the potential to improve mental and physical well-being and may also reduce the risk of diseases, are being developed. Such products, known as "Functional Foods" are similar in appearance to conventional foods and are consumed as part of the usual diet.

The term "functional food" originated in Japan in the 1980s, when it was used by the industry to describe foods fortified with specific ingredients imparting certain health benefits, "Food for Specified Health Use" (FOSHU)<sup>[1]</sup>.

Functional Foods can be divided into 3 different groups Boija<sup>[2]</sup>, those with specific / increased content of fatty acids, vitamins, minerals or fiber, those in which substances which can cause allergy or intolerance have been eliminated and those with active components which are not traditional nutrients, but have an effect on immune defense and can influence cancer risk, mood or intestinal flora.

Food can be regarded as functional if it is satisfactorily demonstrated to affect beneficially one or

more target function in the body, beyond adequate nutritional effects in a way which is relevant to either the state of well-being and health or the reduction of the risk of a disease<sup>[3]</sup>.

A functional food is defined as any food or food ingredient that may provide a health benefit beyond that conferred by the nutrients the food contains<sup>[4]</sup>.

Functional foods, also known as nutraceuticals, medical foods or nutritional foods, are driving food markets around the world and are expected to be one of the emerging trends for the food industry in the new millennium<sup>[5]</sup>.

Functional food enters the concept of considering Food not only necessary for living but also as a source of mental and physical well-being, contributing to the prevention and reduction of risk factor for several diseases or enhancing certain physiological functions<sup>[6]</sup>.

Functional foods may contain significant levels of biologically active components that impart health benefits when consumed in optimal serving size.

Health claims for these foods influence consumer behavior and potentially affect public health<sup>[7,8]</sup>

There is a wide and growing range of functional foods on the market in Japan, Europe and the USA.

Overview of the Egyptian market situation of functional foods was presented by Taha<sup>[9]</sup>. In his report he presented almost all the available functional foods whether imported or processed in Egypt, i.e. , tea with lemon or vitamin C, Juices with vitamin C or minerals, powdered milk enriched with calcium, yogurt with less fat. Biscuits and brown bread for diabetic persons.

In addition to all the previous foods, supplements as Royal jelly and Tomax are available in pharmacies.

Meanwhile Wahba,<sup>[10]</sup> reported a detailed information about different soy-been products processed by the Egyptian Agriculture Research Center, but unfortunately very few know about these products because the market place is a very small shop nearby the Research Center.

**Aim of the Study:** The aim of this study is to examine the perceived knowledge and attitudes of adults working in National Research Center regarding Functional Foods.

**Subjects:** The study subjects were recruited from different sectors all over the National Research Centers (Individuals working in scientific research and others working in administration sector).

## MATERIALS AND METHODS

Survey was used to gather data. Self-administered Questionnaires were developed and distributed to individuals. The Questionnaire measures individual knowledge and attitudes about functional foods by introducing four Questions.

- 1- Do you have any idea about functional foods?
- 2- Do you believe in relationship between diet and health?
- 3- Do you believe that certain foods have health benefits beyond their basic nutrition? Name some,
- 4- Do you intend to know more about functional foods?

The subjects also provided detailed socio-demographic information as sex, education, employment, marital status, number of people in the household and number of children in the household. The questionnaire was tested before administration (by piloting it on 30 subjects) to ensure that the meaning of all the questions was understandable. Data Analysis by SPSS Windows (version 10. 0)<sup>[11]</sup> was performed.

## RESULTS AND DISCUSSIONS

Socio-Demographic Characteristics of employees

**Table 1:** Socio-demographic characteristics of the subjects.

Sex	Male	N = 350	42.7%
	Female	N = 470	57.3%
Age	Mean ± SD		41.4 ± 10.5
	Range		19 - 71
Sons	Mean ± SD		2.53 ± 1
<b>Marital status</b>			
Single			16.8%
Married			78.4%
Others			4.7%
<b>Working Status</b>			
Scientific sector			64.4%
Administrator sector			35.6%
<b>Education level</b>			
# Mid - level			33.8 %
University			26.0%
Post - Graduate			39.8%
Missing			0.4%

### Participating In the survey

Questionnaires were hand delivered to 1340 subjects working in the National Research Center (NRC). Questionnaires were completed and returned by 820 of the employees (response rate, 61. 2%).

Table (1) Provides descriptive statistics on socio-demographic characteristics of participants. The age range was from 19-71 years with an average of 41. 4±10. 5 years. More than % of the subjects were married (78. 4%). The percentage of the employees working in scientific research was 64. 4% vs 35. 6% considered as administrator staff. About 40% of the subjects (39. 8%) had their post-graduate education (MSc, PhD), while one third (33. 8%) had got their mid-level education. Those who graduated from the University were 26%.

### Positive attitudes about food, nutrition and health:

Results of this study indicate that 90. 9% of respondents believe that food and nutrition play a great role in maintaining or improving overall health (Table2).

**Knowledge about functional foods:** The subjects had significantly lower knowledge 64. 5% (Table 2). Males are more knowledgeable than females (67,7% vs 62. 1%), 88. 4% of the participants are interested in learning more about functional foods.

### Knowledge and Beliefs about specific benefits of foods:

Knowledge about the specific benefits of Foods beyond basic needs is illustrated in (Table 2), More than 85% believe that certain foods have health benefits that go beyond basic needs. The most common foods named by the respondents are cereals (bran, brown bread) which named by 48. 5% of them. Fruits and vegetables (Tomatoes, green leafy vegetables, orange, orange Juice

**Table 2:** Existing believe, Knowledge and awareness of functional foods.

	Different responses			
	Yes %	No %	Don't know %	Missing %
Relationship between food et health	90.9	8.0	0.1	1.0
Functional foods	64.5*	32.9	-	2.6
Specific benefits of foods	86.8	13.1	-	-
Interested in learning more about functional Foods	88.4	6.8	-	4.8

\*( 67.7% for males vs 62.1% for females ).

**Table 3:** Different Foods named by the respondents as health –enhancing quality.

Foods	Respondents	
	Number No	Percentage %
Cereals (Bran, Brown bread)	397	48.5
Fruits & vegetables	153	18.7
Drinks ( Herbal teas )	86	10.9
Honey	7	0.9
Fermented milk	7	0.9
Omega – 3, ( Fish oil )	2	0.2

**Table 4:** Source of information.

Source	Respondents	
	Number No	Percentage %
Scientific Journals and book	355	43.3
News papers	134	16.3
Television	68	8.3
Magazines	25	3.1
Friends	23	2.8
Missing	215	26.2
Total	820	100

named by 18. 7%. Drinks as herbal teas (Anise, tea) named by 10. 9%. Fermented milk named by seven subjects and other two subjects mentioned fish oils as omega-3. (Table 3)

**Source of information:** It is important to understand how the subjects receive their information about food and health. Scientific Journals and books were frequently mentioned as the "top-of-mind" source of information specially by the scientific subjects (43. 3%). Meanwhile the media (magazines, news papers and television) were less likely mentioned by the respondents (16. 3%, 8. 3% and 3. 1% respectively). It is important to mention that there is 26. 2% who missed the answers, (Table 4).

**Key Demographic differences:** Younger respondents (age 19-34) are less likely to have ideas or information about functional foods (53. 6%), (Table5). However large percent-tage of-this group (89. 3%) said they are interested in learning more about functional foods. Middle age group (age 35-54) are more likely than others to know the term of functional foods but less likely to believe in health benefits of specific foods (78. 7%).

More than 85% of the older subjects (55+) are interested to know more about functional foods.

Regards to the Education level, it had the same impact, as far as the respondents are more educated their knowledge and believe about Functional foods and Foods with specific health benefits increased, (Table5). Among the subjects, 23. 7% of those age 55 and older named many different vegetables and fruits as foods associated with health benefits, compared with Just 15. 2% of (19-34 years olds) and 17%of(35-54 years old).

"Meanwhile 16. 2% of those with a post graduate, education reported different herbal teas and Juices as functional foods (Table 6).

The primary objective of the survey was to recruit representative sample from both scientific and administrator sectors. As with any sample of subjects participating in a survey there is the possibility that some individuals refused to participate, (refusal rate was 38. 8%). That is because the individuals are not interested in this type of research<sup>[12]</sup>.

Participants understood very well the relationship between diet and health where diet was perceived to be the most important factor by 90. 9%, whereas 70% of respondents in Germany, 68% of. UK respondents and 55% of French respondents agreed that diet is the most important to health contribution<sup>[13]</sup>.

Consumer data have indicated that 50% of American adults especially older age groups not only have read or heard about natural substances in Foods that may help prevent chronic diseases, but they also believe that these substances really do work, Wrick<sup>[14]</sup>.

Cathro and Morris<sup>[15]</sup> conducted a Quantitative research on consumer attitudes by means of 500 Face-to-Face interviews in the UK. Another Qualitative study was conducted by Morris<sup>[16]</sup>. Results indicated that, consumers were concerned about general health and their belief that functional food can influence one's own health and they became aware and knowledgeable of the Foods/ingredients that are supposed to be of benefit. our results revealed that 90. 9% think that food and nutrition play a great rule in maintaining or improving overall health, while 80% of the Canadian consumers did. At the

**Table 5:** Association between socio-demographic factors and the existing believe , Knowledge and awareness of functional foods.

Existing knowledge and believe	Age groups			Education levels		
	Young group (19-34)	Middle group (35-54)	Old group (\$55)	# Mid level	University	Post-graduate
Relationship between food et Health	92.4	90.1	91.2	92.4	94.6	95.1
Functional foods	53.6	69.4	64.7	59.9	63.8	69.0
Specific benefits of foods	83.0	78.7	84.3	73.6	8.4	88.3
Interested in learning more about functional Foods	89.3	88.3	86.3	84.1	88.7	91.3

**Table 6:** Different Foods named by the respondents according to their age and Education level.

Food	Age groups			Education levels		
	Young group (19-34)	Middle group (35-54)	Old group (\$55)	# Mid level	University	Post-graduate
Cereals	48.7	45.3	44.2	49.5	50.6	44.9
Fruits et vegetables	15.2	17.0	23.7	14.5	12.8	28.7
Drinks	5.6	11.5	14.5	8.6	7.0	16.2

same time 86. 8% of our respondents vs 63% of the Canadian consumers. agreed strongly that certain foods have health benefits. Stewart *et al*<sup>[17]</sup>, meanwhile 81% of the US shoppers (they were women) believe that foods can offer health benefits and they were interested in functional nutrition<sup>[18]</sup>. A large number (88. 4%) of our respondents showed an interest in learning more about functional foods while 80% of Canadian consumers did<sup>[17]</sup>

The concept of functional food is entirely new to our community. Although there are considerably many foods in the market with functional quality as milk fortified with Calcium Taha<sup>[9]</sup>. Respondents expressed confusion and Frustration about the term "Functional Foods", This became clear and obvious when we asked about foods with specific functions (64. 5% vs 86. 8%).

A certain amount of confusion still exists, however, when it comes to identifying one or more precise food / function connection.

Our consumers have not become familiar with the term "Functional Food", this agreed with the qualitative study conducted by Newsholme<sup>[19]</sup> in the UK where he found that the term functional foods was universally unfamiliar to participant. On the other hand Hilliam<sup>[20]</sup> recorded that consumers had become familiar with terms such as bifidus, soluble fiber and beta - Carotene.

Less than half of our respondents (48. 5%) named cereals as a disease preventive properties, while 18. 7% mentioned fruits and vegetables, meanwhile over half (55%) of the adult US population believes in the health benefits of natural foods such as fruits, (2. 1) vegetables and cereal grains<sup>[21]</sup>.

Stewart *et al*<sup>[17]</sup> mentioned that 77% of consumers were able to name foods with health benefits, the most

"top-of-mind" examples were brokli, milk, vitamin, orange juice, green leafy vegetables and garlic.

Scientific journals and books were listed by 43. 3% as the main sources of information where as health care professionals and media were the most believable sources of information in Canada<sup>[17]</sup>.

Not surprisingly, younger age group and the less educated level (# mid level) are less likely to know the term "Functional Foods". But the youngest group is anxious to know more, where as the middle age Canadian consumers (age 35-54) are more likely to be interested in learning more about the functional foods.

**Recommendation:** Effective communications strategies for reaching consumers, health professionals, new media, and regulators based on sound science (safety and health claims) are needed<sup>[22,23]</sup> Incorporating Functional foods into nutrition counseling and educational programs will become increasingly important<sup>[24,25]</sup>

Much scientific research needs to be conducted before we can begin to make science- based dietary recommendations<sup>[26]</sup>.

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