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PERCEPTIVE AND KNOWLEDGE ABOUT SOYA FOODS AMONG SELECTED HYPERCHOLESTEROLEMIA SUBJECTS

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Abstract

Soybeans have long been recognized as a plant food that, when compared with other plants, is relatively high in protein and have historically been called "meat of the field" or "meat without bones". But owing to controversies that it endangers health, the use of soya as a functional food has shrunk these days. Thus, the aim of the study was to assess consumer's perception and knowledge about soya foods. The study was conducted using a survey instrument designed by Moon et al. [8] among 100 hypercholesterolemic subjects aged 40-50 years. The results indicated that subjects need more awareness about soya foods and their perception towards soya products which were less acceptable.

Introduction

Soyabean - the 'miracle bean' has a protein content of about 40% [1]. Nutritionally, soy protein is the most balanced plant protein, high quality

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protein and is a fabulous source of incredible phytochemicals for hundreds of years and is currently a major source of protein in commercially produced foods. Consumption of soy foods has been linked with lower incidences of a number of chronic diseases indicated by epidemiological studies [2]. Soy-based foods have been consumed in Asian countries such as China, Japan and Korea for many centuries. The lower rates of several chronic diseases in Asia, including cardiovascular diseases and certain types of cancer, have been partly attributed to consumption of large quantities of soy foods [3].

A substantial upsurge in soy food ingestion occurred during the last decade of the 20th century because of the health benefits offered by the soy food. Infant formulas where milk solids have been substituted by soy products are well recognized. Soya protein isolate is the preferred soy ingredient in geriatric, tube feedings, post-operative feeding as well as in weight reduction diets [4].

Extensive research has been made towards identifying bioactive components in soy foods that are responsible for the health benefits. Among them, isoflavones and soy proteins are the two major groups of components that have received widespread attention [5].

Soy protein is also consumed as a component of traditional fermented and nonfermented soy foods, such as tofu, tempeh, and miso, as well as whole soybeans, soynuts, soymilk, soy yogurt, and soy cheese. Soy protein ingredients and soy protein-containing foods may partially replace or be used in addition to animal or other vegetable protein sources in the human diet [6].

Soybeans have long been recognized as a plant food that, when compared with other plants, is relatively high in protein and have historically been called “meat of the field” or “meat without bones” [7]. Unique peptides in soybeans like defensins, glycinins, conglycinins and lunasin, provides health benefits, including improved blood pressure regulation, better control of blood sugar levels, and improved immune function [8].

A number of cardioprotective benefits have been attributed to dietary isoflavones including reduction in LDL cholesterol, inhibition of pro-inflammatory cytokines, cell adhesion, proteins and inducible nitric oxide

production, potential reduction in the susceptibility of the LDL particle to oxidation, inhibition of platelet aggregation and an improvement in vascular reactivity [9].

Although soy foods have great potential for providing consumers with healthy diets, consumer awareness about soyabean and its health benefits is gloomy. There is a fallacy that it endangers health. Also consumers have the view that consumption of soy can leads to diarrhoea, indigestion and other gastric distresses. Availability, affordability and the bitter taste also adds to the dislike of soya by consumers. Increased knowledge and awareness of diet-disease links motivate consumers to reduce their intake of fat and cholesterol. General health-related factors such as health knowledge, motivation, and nutritional awareness may influence perceived soy health benefits or soy consumption behavior (Moon et al. [8]).

Thus, the objective of this study has been designed to assess perceptions and knowledge about soya foods among selected hypercholesterolemia subjects.

Methodology

The study was carried out in accordance with the guidelines of the Independent Institutional Ethics Committee of Women's Christian College, Chennai. A written informed consent was obtained from all the subjects. Descriptive method of survey was used to collect data by interviewing with structured questionnaires. Hundred hypercholesterolemic adults aged between 40-50 years (with serum cholesterol level between 200-240mg/dl) were selected by purposive sample method.

A survey instrument designed by Moon et al. [8] was used to elicit information regarding soy food consumption behavior and perceptions about various attributes pertinent to soy-based foods.

Results and Discussion

Soybeans can improve nutritional intake by:

- Replacing some high-calorie, high-saturated fat meats with soy meat-alternatives and soy/meat blends to reduce caloric and saturated fat content of meals.

- Increasing fiber intakes by adding soy pasta, soy nuts, soybeans, edamame or soy meat-alternatives to meals.

- Adding nutrient-dense soyfoods like frozen soy, soy smoothies, honey coated soy nuts and soy chips to diets to replace excessive amounts of high-calorie, low nutrient desserts [11].

Nutritional awareness refers to consumers' awareness of the importance of dietary choices in preventing diseases, perceived attributes of soy-based foods which include four broad attributes of soy food which are considered in this study: price, taste, convenience, and health benefits. The survey instrument incorporated questions measuring respondents' perceptions of these attributes. Respondents answered the items below using this scale: 1 = disagree strongly; 2 = disagree somewhat; 3 = neither agree nor disagree; 4 = agree somewhat; and 5 = agree strongly.

General health-related variables elicit the link between perceptions about soy-specific health benefits and soy consumption behavior.

Perceived knowledge and attitude towards soy is presented in Table 1:

Table 1. Perceived knowledge and attitude towards soy

	Mean	SD
Soy general-health knowledge		
I am aware of the term 'isoflavone'	2.6	1.3
I am aware of health claims on soy-based food packages in grocery stores	3.2	1.5
I am aware that the FDA allows health claims for soy foods that satisfy certain criteria	3.1	1.4

Nutrition concern		
I am actively trying to consume less cholesterol in my diet	2.3	1.5
I am actively trying to consume less fat in my diet	2.1	1.4
I have changed my diet in the past to reduce the risk of certain diseases	2.2	1.5
I eat a well balanced diet that is low in cholesterol	2.2	1.5
I eat a well balanced diet that is low in fat	2.2	1.6
I eat a well balanced diet that is low in sodium	2.4	1.6
I am concerned about the amount of salt in my diet	2.4	1.6
I am concerned about linkages between diet and chronic diseases	2.0	1.4
I am concerned about nutrition	2.5	1.5
I read nutritional labels on food packages very carefully	2.2	1.5
I try to prevent health problems before I feel any symptoms	2.8	1.6
Soy-related personal beliefs		
Soy-based foods pose health risks to me	3.1	1.5
Soy-based foods are not good for me	2.0	0.9
Only vegetarians eat soy-based foods	3.8	1.1
Food products made from genetically engineered soybeans present health risks	3.3	1.2
Personal attitude toward soy		
I like the texture of soy	3.5	1.1
I like the taste of soy	3.5	1.0
I have a favorable attitude toward soy	3.5	1.3
Soy-based foods are convenient to cook	3.1	1.2
Soy-based foods are convenient to eat	3.1	1.3
I know how to prepare soy-based foods	2.2	1.4

Results on perceived knowledge and attitude of the subjects towards soy indicate that majority of the subjects responded “disagree somewhat” and “neither disagree or agree” to most of the questions related to perceived knowledge and attitude towards soy. Results indicate the need for increased awareness on health benefits of using soy products.

In Table 2, correlation analysis indicates that soy related personal belief is positively correlated with the income status of the subjects $(p < 0.05)$. Those with positive personal beliefs on soy were found to have higher knowledge on health benefits of soy $(p < 0.01)$. Results of correlation analysis also indicate that perceived knowledge and attitude towards personal attitude and health benefits of soy has a significant positive correlation with sensory attributes of soy such as texture and taste; convenience in cooking, eating and recipe preparation.

The relatively stronger impact of perceived taste, texture and convenience over health benefits and personal attitude of soy consumption behavior eloquently highlights the key dynamics in the current soy market. Although this market is growing fast, the majority of consumers appear to avoid soy food because of its perceived unattractive taste and inconvenience. Soy-specific health knowledge has a positive and significant impact on soy consumption behavior. Results suggest that dissemination of information about soy-related health benefits via health claims is an effective approach to stimulate demand for soy-based foods.

Additionally, findings reported by [12] also affirm the importance of health claims for soy foods. They found that individuals may not necessarily link the attribute-level knowledge they possess with self-relevant consequences. Therefore, the health claims for soy products may encourage consumers to establish and reinforce such links.

Table 2. Correlation between perceived knowledge and attitude towards soy and consumption behaviour

	Income	Knowledge	Nutrition concern	Personal beliefs	Texture	Taste	Attitude	Convenient-cooking	Convenient-eating	Preparation
Income	1	0.090	0.178	0.435*	0.131	0.213	0.061	0.084	-0.016	-0.149
Knowledge	0.090	1	0.281	0.771**	0.458*	0.545**	0.421*	0.557**	0.511*	0.475*
Nutrition concern	0.178	0.281	1	0.400	0.132	-0.041	0.187	0.165	0.165	0.282
Personal beliefs	0.435*	0.771**	0.400	1	0.464*	0.503*	0.465*	0.621**	0.548**	0.449*
Texture	0.131	0.458*	0.132	0.464*	1	0.826**	0.737**	0.478*	0.466*	0.504*
Taste	0.213	0.545**	-0.041	0.503*	0.826**	1	0.729**	0.633**	0.617**	0.587**
Attitude	0.061	0.421*	0.187	0.465*	0.737**	0.729**	1	0.514*	0.526**	0.633**
Convenient-cooking	0.084	0.557**	0.165	0.621**	0.478*	0.633**	0.514*	1	0.974**	0.745**
Convenient-eating	-0.016	0.511*	0.165	0.548**	0.466*	0.617**	0.526**	0.974**	1	0.793**
Preparation	-0.149	0.475*	0.282	0.449*	0.504*	0.587**	0.633**	0.745**	0.793**	1
*Correlation is significant at the 0.05 level (2-tailed)										
**Correlation is significant at the 0.01 level (2-tailed)										

Conclusion

The study evaluated the effects of perceived attributes, of respondents which included health benefit of soy food products, convenience in consumption and preparation, tastefulness and price. The health benefits of soya like cardioprotective, bone protective, weight reduction, against type 2 diabetes, in the production of Vitamin K should be brought into light by researches.

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