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Study on most frequently consumed spices in households and the consumer's knowledge and preferences to organic spices in Coimbatore district, Tamil Nadu, India

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Abstract

Spices are considered to be the heart of Indian cooking. Spices are known as one of the most remarkable ingredients for its indigenous flavour, nutritional value and medicinal properties. The present study is aimed to identify the most frequently consumed spices at households and to assess the consumer knowledge and perception about organic spices in Coimbatore. The survey method using questionnaire was carried out to elicit the required information from 100 Household women respondents of different areas in Coimbatore district. The collected data was analysed using simple techniques such as descriptive statistics, Cross tabulation and Chi-square test using SPSS19.0. Eleven out of 109 spices were found to be most frequently consumed by more than 75% of households which include Cumin seeds, Mustard, Garlic and Turmeric. Results indicated that the consumers have limited knowledge about the organic food/spices. In comparison with conventionally grown foods, consumers hold positive attitudes towards organic foods. Statistical analysis revealed that monthly household income and education levels influence consumer perception on organic spice usage, trust credentials and cost persuasion. However, perceptions were not affected by age, occupation, education levels and monthly household income with respect to belief in medicinal properties. The findings indicated that only the educated consumer's exhibit interest in using organic spices for the betterment of their health, as they are free from chemicals and pesticides. It is mandatory to create awareness among the consumers towards Organic foods/Spices which are more advantageous to humans as well as the environment.

Keywords: Organic spices, consumer preference, consumer perception and consumer knowledge

1. Introduction

Spices play an important role as a flavouring agent in the diet and are used throughout the world. Spices refer to the dried part of a plant that contains volatile oils or aromatic flavours such as buds (cloves), bark (cinnamon), root (ginger), berries (black pepper), seeds (cumin, coriander) ^[1]. Consumption of spices is generally higher in Asian countries such as India, China, and Thailand; there has been an increasing trend in their intake in developed countries such as Europe and the USA, because of changing food habits and preference for ethnic and spicy food ^[3,4]. This trend leads to a growing demand for both conventional and organic spices in the market. The important factors which drive the demand for organic spices are (i) *Health*: Health consciousness is fast becoming and an important determinant in western lifestyles. (ii) *Medicinal*: Essential oils and spices that are used for phyto medicinal purposes are generally necessitated to be residue free. Only certified organic spices are 100 percent chemical free. (iii) *Food Processing*: Most food processing industries have come under stringent standards, testing inputs for various aflatoxins and residues are switching to organic spice inputs. (iv) *Lifestyle and diet*: With the changing culinary habits more consumers either purchase spices for at-home meal preparation or frequent restaurants which serve spicy cuisines. (v) *Competition*: Competition from artificial flavourings is also an important factor affecting the demand for natural spices ^[2].

The market for organically-produced food has expanded considerably in recent years. India has experienced phenomenal growth in production of organic foods in the recent decade and primarily focuses on the export markets. The country is best known as an exporter of organic tea, organic fruits, organic spices and organic rice. Over the past several years, the organic food industry in India has been experiencing an annual growth between 20-22 percent. In India, the organic agriculture has reached about 5.71 million hectares in the year 2015-16 and there are over 15,000 certified organic farms and the number is growing fast over the year. Apart from this, there are many small farmers growing organic food by using the organic practices. Over 70% of the 120,000 tonnes of organic products grown in the country are exported to the many countries worldwide each year.

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The growing interest in organic agriculture among stakeholders (such as policy analysts, consumers etc.) has prompted numerous studies comparing aspects of organic and conventionally produced foods. The future of organic agriculture will depend, to a large extent, on consumer demand. Thus, a consumer-oriented approach to understand organic agriculture is important not only in its own right but also in terms of shifting market dynamics. This could also vary depending on the region of the world. Thus, a clear understanding of consumer attitudes and the motivations underlying actions in responding to organically grown products are important [5].

As consumer knowledge and awareness are an important drive for growth in the organic food market, an investigation on consumers' attitude and behaviours towards organic food may help both consumers of organic interest and marketers of organic food. Awareness and knowledge about organic products are critical in the consumer purchase decision. If an individual cannot clearly differentiate between two alternative products, a price premium on the organic product can confuse and/or affect the individual's purchasing decision in favour of the cheaper product [5].

A review of selected studies on consumer awareness and knowledge about organic foods suggests that while there is general consumer awareness around the world, consumers (Sometimes within the same country) have inconsistent interpretations about what is 'organic'. For example, in a survey of consumers in three California counties, Jolly and co-authors [9, 12] found that respondents associated organic produce with no pesticides, no artificial fertilizer, no growth regulators and residue-free products [10]. In a more recent study for the UK, respondents described the organically produced food as food that is more natural and healthy, compared to conventionally produced food [11].

Further, the majority of such researches were carried out in developed countries, and hence the consumer awareness and preferences for organic food in developing countries are mostly unknown. Therefore, there is an urgent need to investigate the demand status of organic food particularly in developing countries such as India [6]. Thus, the present study is aimed to identify the most frequently consumed spices at households and to assess consumer knowledge and perception about organic spices using a semi-structured survey of 100 respondents in the Coimbatore district.

2. Materials and methods

2.1 Study Area

The study is based on a primary survey of 100 respondents belonging to Coimbatore, a major city in the Indian state of Tamil Nadu. Located on the banks of the Noyyal River surrounded by the Western Ghats, it is the second largest city in the state after Chennai and 16th largest urban agglomeration in India. The city of Coimbatore was selected based on author's research direction of identifying best marketing technique for effective sales of organic products for Coimbatore customers. Farming community makes up the majority of the city population. This coupled with the rapid industrialization which creates the perfect blend of the consumer base who are not only health conscious but also has the diverse socio-economic background. This perfect population provides a solid base for analysing and understanding the general consumer behaviours and the methods of marketing to sell the organic products [7].

2.2 Data Collection and Analysis

The Survey method was used to elicit the required information from 100 Household women respondents of different areas in Coimbatore district. The Household respondents belonged to different socioeconomic and religious groups. A Semi-Structured questionnaire was designed to record the responses on most frequently consumed spices, awareness, knowledge, and preferences towards organic spices and effectiveness of sources for organic information. The socio-demographic profiles of the respondents were also recorded on the parameters such as Age, Gender, Educational Qualification, Occupation and Monthly Household Income. For easy recognition of various spices by the respondent, a chart showing samples of spices were shown to the respondent while administering the questionnaire. The collected data was consolidated and interpreted using simple data analysis techniques such as descriptive statistics; cross-tabulation. The Statistical Analysis and testing hypotheses were used to conduct all the analyses of this study with the level of significance $p < 0.05$ [13]. The comparison data between the organic foods attributes and socio-demographics were performed by Chi-square analysis using SPSS 19.0.

3. Results and Discussion

3.1 Socio-Demographic profile of respondents

All 100 respondents were females as they were the main individuals who performed cooking activities in the households. The majority of the respondents were married and Homemakers. Monthly Household Incomes evenly distributed across from 20000 to 50000 above. The respondents also cover both low and high-income groups as illustrated in Table 1.

Table 1: Socio-Demographic information of the respondents

Socio-Demographics	Criteria	Percent
Age	21-30 Years	19
	31-40 Years	36
	41-50 Years	26
	51-60 Years	15
	Above 60 Years	4
Education	Illiterate	03
	Upto 10 th Standard	37
	High School	11
	Under Graduation	24
	Post-Graduation	24
Occupation	Home Maker	72
	Business	06
	Salaried	22
Monthly Income	Upto 20000	41
	20000-50000	40
	Above 50000	19
Marital Status	Married	97
	Single	03

3.2 Most Frequently consumed spices

A Total of 11 spices out of 109 were most frequently used in South Indian Cuisines. Table 2 represents the selected spices along with their scientific names along with a number of household respondents preferred it. Spice intake survey in 100 Households showed that more than 50% consumed spices listed from 1 to 8 in Table 2 with 84 and 72 percent consuming cumin and mustard seeds respectively.

Table 2: Most Frequently used Spices in Households

Sr. No	Spices and Condiments	Scientific Name	Number of Households Preferred
1.	Cumin seeds	<i>Cuminum cyminum L.</i>	84
2.	Mustard seeds	<i>Brassica juncea L. Czern</i>	72
3.	Turmeric	<i>Curcuma longa L.</i>	70
3.	Garlic	<i>Allium sativum</i>	70
4.	Red Chillies	<i>Capsicum annuum L. & Capsicum frutescens L.</i>	69
5.	Coriander seeds	<i>Coriandrum sativum L</i>	67
6.	Fenugreek seeds	<i>Trigonella foenum-graecum L</i>	62
7.	Black Pepper	<i>Piper nigrum L.</i>	61
8.	Ginger	<i>Zingiber officinale</i>	60
9.	Asafoetida	<i>Ferula asafoetida</i>	45
10.	Cinnamon	<i>Cinnamomum zeylanicum Breyn</i>	42

3.3 Knowledge and Perception towards organic spices

Of all the respondents, 33% did not know about organic spices and 67% stated that they have heard but don't use organic spices and only 25% were using organic spices. This research also analysed consumers who claimed to know the meaning of organic spices.

Perception plays an important role in knowing the potential consumers' attitude and behaviours towards organic food. To do so, consumers were asked to state their agreement and disagreement on the five-point Likert scale (strongly disagree-1, disagree-2, neutral-3, agree-4, strongly agree-5) on a set of statements related to various aspects of organic food. The

statements include:

- Organic spices are free from chemicals, toxins and pesticides.
- Organic spices are safer and healthier than conventionally grown spices.
- Organic spices are free from adulterants.
- Consumption of Organic foods reduces the risk of cancer and other chronic diseases.
- Cost persuasion towards the purchase of organic spices.
- Trust credentials about organic foods.

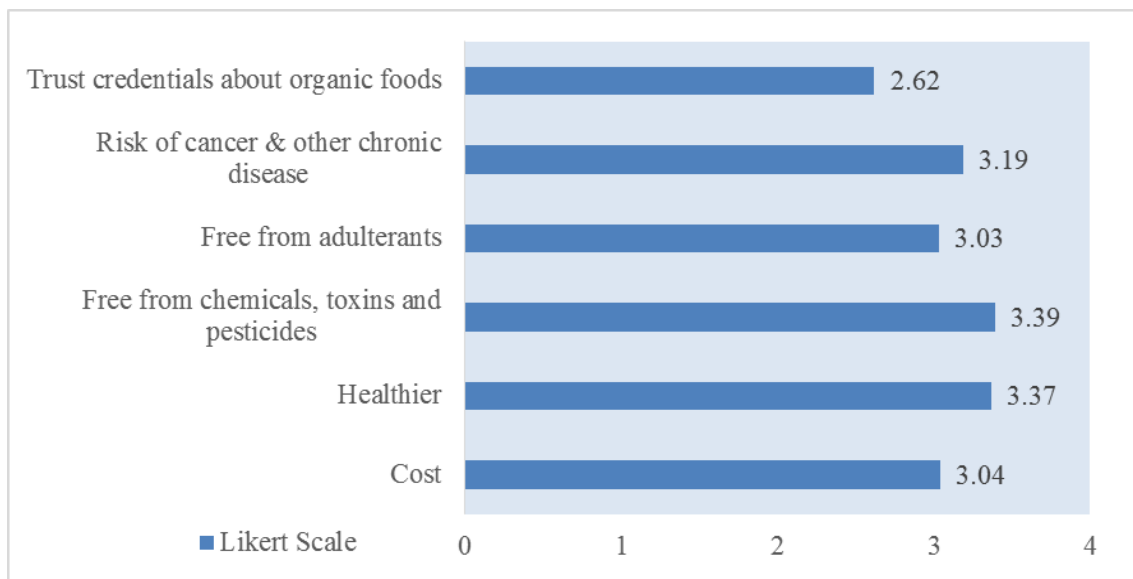
**Fig 1:** Respondents perception towards organic spices

Figure 1 shows the mean of people's perceptions towards the attributes of organic spices in comparison with conventionally grown spices. The highest score was 3.39 for freedom from chemicals, toxins and pesticides, the second highest 3.37 for healthy and followed by 3.19 for reducing the risk of cancer and other chronic diseases on consuming organic spices upon conventionally grown spices. The score 3.04 was given to price, indicating that respondents perceived that organic was expensive in comparison with conventionally grown. Respondents are relatively unsure about organic spices being free from adulterants as the score given was only 3.03. Consumers generally perceive an organic label as assurance that the product is organic^[8].

3.4 Comparison of Consumer perception upon socio-demo graphs

Data analysis revealed that people's demographic background had a significant impact on their perceptions towards some of

the attributes of organic foods. Age and Occupation had no significant differences in people's perceptions towards the attributes of organic food. Regarding education, the higher the level of education, more the number of people perceiving organic products (as shown in Table 2). Significant differences were also found across the attributes of awareness, free from Adulterants, health risks as well as cost persuasion. As for as occupation and income level of the consumers are concerned, the majority of the respondents belong to the service class and higher income levels, were more aware to organic food products than respective counterparts. People's income was found to affect people's perceptions on Awareness, cost persuasion, safety and trust credentials about organic foods.

Table 2: Different organic food attributes across demographics

Socio-demographics	Awareness about Organic Spices	Cost persuasion	Free from Adulterants	Organic foods are safer	Reduces the risk of cancer and other chronic diseases	Trust credentials about organic foods
Age	0.092	0.337	0.141	0.434	0.785	0.284
Occupation	0.573	0.721	0.748	0.229	0.228	0.477
Education	0.016	0.041	0.004	0.451	0.007	0.006
Monthly Income	0.001	0.008	0.898	0.001	0.166	0.009

Statistically significant at 5% level

Conclusion

The need for organic food is steadily increasing in the highly developed countries while developing countries still need to go a long way. The untapped potential markets for organic foods in the countries like India need to be realised with organised interventions which require a better understanding of the consumer's preference for food. Therefore, an analysis of consumer 'awareness on several features of organic products may be conceived as a significant background to build the markets for organic food in the initial phase of market development. However, growing domestic market for organic foods necessitates analysing the consumer 'awareness and knowledge level of organic foods to better target the potential segments.

The results of the study indicated that only the educated consumers exhibited interest in using organic spices for the betterment of their health, as they are free from chemicals and pesticides. These types of study compel immediate action on the loss of traditional knowledge and medicinal values of spices and condiments. Consumer education is highly recommended as a contribution to protecting the health, safety, economic and legal interests of society. It is mandatory to create awareness among the young aged consumers towards Organic foods/Spices which are more advantageous to humans as well as the environment.

As awareness and knowledge of various attributes of organic foods are fundamental for creating market demand for organically grown products, this study explores the level of understanding among the consumers on different aspects of organic foods. It may also help the government to design strategies for consumer education on the benefits of going organic.

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