



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(7): 3163-3167  
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[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 28-05-2022  
Accepted: 30-06-2022

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## A study on factors influencing consumer preference towards moringa value added products in Coimbatore city

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### Abstract

Moringa is an important vegetable and almost in all the backyards in rural area have a moringa tree, unlike in urban area. Moringa used to protect and nourish skin, hair and it is used to cure all the ailments. Even though moringa tree is available in rural areas in plenty, its presence in urban area is limited. The people in urban area have no time to process moringa so they seek for moringa value added products. The varieties of moringa value products are available in market but consumption of moringa product was low in market (Milla, P *et al.*, (2021)). Hence the present study proposed with the objective of accessing the awareness level, satisfaction and factors influencing the consumer preference for moringa products. A sample of 180 moringa consumers were selected purposively from Coimbatore district and data was collected by using structured interview schedule. Percentage analysis, relative important index and Garrett score were used to analyse the data. Majority of the consumers were satisfied with the value-added products of moringa. Nutritional benefits were major factor influencing consumers towards moringa value added products. The major constraints faced by consumer to consume moringa value added products were due to lack of adequate information on diversity of Moringa value added products, distance and price to Moringa products in market.

**Keywords:** Consumer awareness, consumption, preference, moringa value added products

### Introduction

One-third of the world's population suffers from micronutrient deficiencies, usually as a result of inadequate food intake (Fiedler and Macdonald, 2009) <sup>[4]</sup>. India provides (41%) the most to the world's production of drumsticks, which is followed by other tropical regions of the world such as western Africa (33%) and the Philippines (12%), China (8%) and Venezuela (6%) (Zirmire 2018) <sup>[12]</sup>. The Miracle tree known as moringa is extremely nutritious and has a number of potential uses across the world (Nadeau and Zakaria, 2012) <sup>[7]</sup>. More than 80% of the Moringa products demand is fulfilled by India. It is essential to develop a roadmap to engage its potential for the well-being of humankind. All of the parts of the unkempt-looking moringa tree (*Moringa oleifera*) are edible. Malnutrition and malaria can be treated with moringa leaf, a powerful immune booster, detoxifier, and natural anthelmintic (Thilza *et al.*, 2010) <sup>[11]</sup>. Consumers have become more concerned about the nutrition and quality of food they eat (Gil *et al.*, 2000) <sup>[5]</sup>. Moringa value added product domestic consumption is too low compared to export, because of the nutritional and therapeutic potential of moringa. Which is locally accessible in both India and other nations and its demand for moringa and its value-added products are rising as well as creating a need for year-round supply. Sandeep *et al.*, (2018)

### Problem statement

In India, demand for value added products of Moringa had risen due to consumer preference towards healthy products to boost immunity. Among the healthy products, now value-added products of Moringa are used as substitute and supplement due to its medicinal properties and health benefits. It also has antifungal, antiviral, anti-depressant and anti-inflammatory properties and it's streaming a wider market scope at increasing level. There are only very few studies addressing consumer. Growing awareness regarding the medicinal benefits of moringa-based products is projected to propel industry growth as consumer are inclined more for potential benefits to overcome malnutrition, lactating mothers, general weakness, depression,

menopause, osteoporosis and arthritis. Shift in consumer's preference towards herbal cosmetic products which in turn may accelerate the overall market demand. As moringa is seasonal crop and most of the people have it in garden backyard they have less inclination towards the moringa value added products. It is considered as supplement vegetable only so in this context. The people in urban area have no time to process moringa so they seek for moringa value added products. Consumers are in need of brand driven products in urban market for meeting their awareness, expectations, preference, consumption and satisfaction. Hence, this study focuses on analyzing the consumer awareness and preferences towards value added products of Moringa, assessing the consumption pattern and the major factor influencing them to purchase the value-added products of Moringa.

### Moringa value added products

Some of the Moringa value added products are as follows Moringa Leaf Powder, Moringa leaf sauce, Moringa capsules & Tablets, Moringa Leaf Scrub, Moringa Honey, Moringa Flower, Moringa Pickle, Moringa pod powder, Moringa oil, Moringa Soap, Moringa roasted Seeds, Moringa oil Cake, Moringa pod, Moringa Gum, Moringa serum, Moringa Rice Mix Powder, Moringa Tea, Moringa Energy bites, Moringa Hot Chocolate, Moringa Bio Booster, Moringa Noodles, Moringa mayonnaise.

### Objectives

1. To study the awareness level of consumers towards moringa value added products of moringa.
2. To study the factors influencing the consumption of moringa products among the consumers of Coimbatore city.
3. To assess the satisfaction level and constraints faced by consumers in consumption of value added products of Moringa.

### Methodology

#### Sampling area

Coimbatore city was purposively taken as a study area, because it is rich with consumer diversity, surrounded with moringa cultivation area and connected with moringa value addition products.

#### Sampling design

The purposive sampling technique was used to collect the data from respondents. In this study, 180 samples were collected by using well-structured interview schedule.

### Statistical tools

#### 1. Percentage analysis

Percentage analysis, relative important index and Garrett Ranking technique were used to analyses the data for this study. Percentage analysis was used to analyses the demographic characteristics of consumers, satisfaction and awareness level towards moringa value added products among consumers. To arrive a valid result, the percentage of these attributes was determined by using the formula mentioned below

$$\text{Percentage analysis} = \frac{\text{Number of respondents}}{\text{Total number of samples}} \times 100$$

### 2. Garret ranking technique

Garrett ranking techniques was used to measure "which is the major factor in group of factors". Garrett ranking technique was calculated by using this formula:

$$\text{Per cent position} = \frac{100 \times (\text{Rij} - 0.5)}{N_j}$$

Where,

Rij = Ranking given to the  $i^{\text{th}}$  attribute by the  $j^{\text{th}}$  individual.

Nj = Number of attributes ranked by the  $j^{\text{th}}$  individual.

Ajith *et al.*, (2022) <sup>[1]</sup> Garrett ranking technique was used to analyses the constraints faced by farmers. In this study, Garrett ranking was used to identify the constraints for consumers willing to pay for moringa products. Garret Table is used to convert the percent position into scores. The score assigned by each individual for each factor is summed and total value and scores of mean values are calculated. The most significant factor will have the highest mean value.

### 3. Relative important index (RII)

Relative Importance Index (RII) is used to determine the relative importance of quality factors involved. The points of likert scale used are equal to the value of W, weighting given to each factor by the respondent. The Relative Importance Index (RII) was calculated by using equation

$$\text{RII} = \frac{\text{Sum of weights (W}_1 + \text{W}_2 + \text{W}_3 + \dots + \text{W}_n)}{A \times N}$$

where W = weights given to each factor by the respondents and will ranges from 1 to 5 where '1' is less significant and '5' is extremely significant. A = highest weight (i.e. 5 in this case) and N = total number of respondents.

Azman *et al.*, (2019) <sup>[2]</sup> studied the quality factors of IBS using relative important index. In this study, relative important index was used to find the major factor influencing consumer preference towards moringa value added products. The Likert 5 scale items were used to collect the data from respondents by using list of questions. After collecting response from 180 consumers, the following formula was used to calculate the RII.

$$\text{RII} = \frac{(5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1)}{(A * N)}$$

where,

n5 = Number of sample consumers who Strongly agree.

n4 = Number of sample consumers who Agree.

n3 = Number of sample consumers who was Neutral.

n2 = Number of sample consumers who Disagree.

n1 = Number of sample consumers who Strongly Disagree

A (highest weight) = 5.

### Results and Discussion

The results for study on factors influencing consumer preference towards moringa value added products in Coimbatore city, is carried out by using responses of 180 consumers by using methods and tools like percentage analysis, relative important index and garret ranking technique. Data is categorized into tables and graphs as Demographic characteristics of consumers, Awareness level towards moringa value added products, Satisfactions level towards moringa value added products, Factors influencing the consumer preference towards moringa value added products, and Constraints faced by consumer in using value added products.

### Demographic characteristics of consumers

Demographic details are the basic requirement for any consumer-based study. The demographic characters include gender, age, education, family type, and occupation. The demographic details of the sample respondents are given in Table 1.

**Table 1:** Demographic characteristics of consumers

Gender	No of respondents (n=180)	Percentage (100%)
Male	128	71.11
Female	52	28.88
<b>Age (Years)</b>		
<30 years	161	89.44
31 – 45	12	6.66
46 – 60	7	3.88
<b>Marital status</b>		
Unmarried	154	85.55
Married	26	14.44
<b>Family type</b>		
Nuclear	134	74.44
Joint	46	25.55
<b>Educational status</b>		
Primary school	2	1.11
Higher secondary	4	2.22
Graduation/PG and above	174	96.66
<b>Occupation type</b>		
Administrator/office worker	4	2.22
Business	7	3.88
Employee/self-employee	24	13.33
Home maker	1	0.55
Health officer	1	0.55
Graduates	120	66.66
Teacher	15	8.33
Unemployed	8	4.44

It indicated that the majority of the sample were male (71.11 per cent) followed by female (28.88 per cent). In the age category, the majority of the sample respondents were belonged to < 30 years of age (89.44 per cent) followed by 31 to 45 years (6.66 per cent), and 46 to 60 years (3.88 per cent). In marital status category, unmarried (85.55 per cent) and married (14.44 per cent). In the case of education, the majority of the sample respondents were Graduation/PG and above (96.66 per cent) followed by higher secondary (2.22 per cent) and diploma (7.72 per cent) and Primary school (1.11 per cent). In the case of the Occupation type, the majority of the sample respondents were Graduates and about 66.66 per cent followed by Employee/self-employee (13.33 per cent), Teacher (8.33 per cent), Unemployed (4.44 per cent), Business (3.88 per cent), Administrator/office worker (2.22 per cent), Employee/self-employee ((0.55 per cent) and Home maker (0.55 percent). The marital status of respondents is distributed as unmarried (85.55 per cent) and married (14.44 per cent).

The table 1 indicates demographic characteristics of consumers towards moringa value added products. Majority of consumers age under 30 (89.44%). Majority of consumers were male (71.11%) as well as unmarried (85.55%). Nuclear type (74.44) was major family type among respondent consumers. Majority of consumers were degree holders (96.66). Majority of consumer's occupation type was Graduates (66.66%).

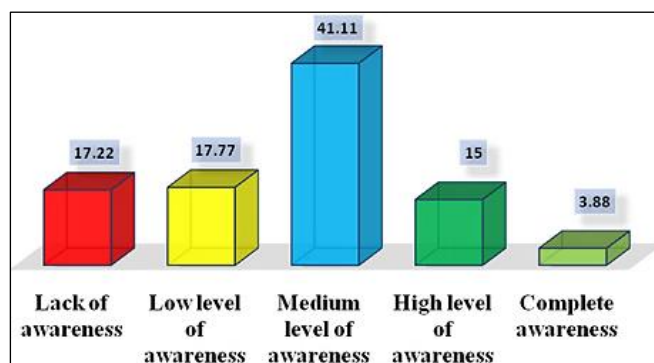
### Awareness level towards moringa value added products

Awareness level of consumer is important determining factor for studying the consumer buying behavior in terms of

consumption pattern, preference, satisfaction and expectations about moringa value added products. Awareness level of consumer is classified as following Lack of awareness, Low level of awareness, Medium level of awareness, High level of awareness and complete awareness. The scale developed and validated by Eski (2010) (Tolga Eski *et al.*, 2020) [3].

**Table 2:** Awareness level towards moringa value added products

S. No.	Awareness level	No of respondents	Percentage
1	Lack of awareness	31	17.22
2	Low level of awareness	32	17.77
3	Medium level of awareness	83	41.11
4	High level of awareness	27	15.00
5	Complete awareness	7	3.88
Total		180	100



**Fig 1:** Awareness level

The table 2 indicates awareness level towards moringa value added products. Majority of the consumers have medium level of awareness (41.11%) followed by low level of awareness (17.77%), lack of awareness (17.22), high level of awareness (15%), complete awareness (3.88%).

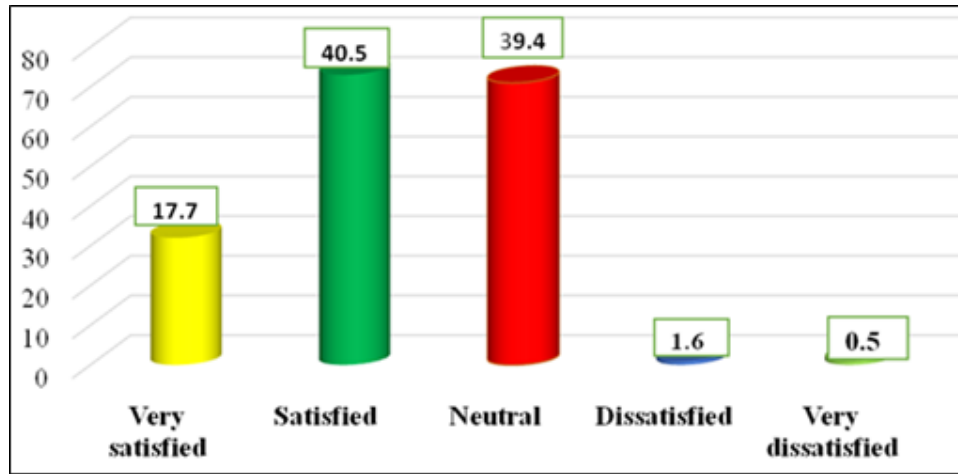
The result indicates majority of consumer's awareness level between medium level to low level of awareness. Obayelu 2015 [8] concludes that medium to low level of awareness among consumers towards moringa products. As many consumers are only aware of few products of moringa like moringa pod, flower, leaves only but awareness level is lacking in majority consumers on many moringa products like oil, soap, gum, jam, noodles etc.

### Satisfactions level towards moringa value added products

Satisfaction level of consumers is perceived level of utility a consumer derives after consumption of moringa value added products over period of consumption. Level of satisfaction can be classified as Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied (Tansakul N *et al.*, 2020) [10]. A sufficient number of target customers 180 taken to get proper data of their opinions on satisfaction levels that they feel toward the moringa value added products. Satisfaction levels from 1 to 5 common. This research applies the 1 to 5 Likert satisfaction scale to represent the satisfaction levels.

**Table 3:** Satisfactions level towards moringa value added products

S. No.	Satisfaction level	No of respondents	Percentage
1.	Very satisfied	32	17.7
2.	Satisfied	73	40.5
3.	Neutral	71	39.4
4.	Dissatisfied	3	1.6
5.	Very dissatisfied	1	0.5
Total		180	100



**Fig 2:** Satisfaction level towards moringa value added products

The table 3 indicates satisfaction level towards moringa value added products. Majority of consumers were satisfied (40.5%), while using moringa value added products followed by neutral (39.4%) and 32 consumers were very satisfied towards moringa value added products. Only 1.6% and 0.5% consumers were dissatisfied and very dissatisfied towards moringa value products respectively, while using moringa value added products.

**Factors influencing the consumer preference towards moringa value added products**

Consumer is under the influence of factors that determine his expectations and preferences in consumption of moringa value added products. Some of the factors that influence the consumer preferences towards moringa value added products are as follows Nutrition benefits, High quality, Taste, Package and colour, Availability of products and price.

**Table 4:** Factors influencing the consumer preference

S. No.	Factors	RII Score	Rank
1.	Nutrition benefits	0.824	I
2.	High quality	0.817	II
3.	Taste	0.734	III
4.	Package and colour	0.743	IV
5.	Availability of products	0.400	V
6.	Price	0.392	VI

The table 4 indicates factors of consumer preference towards moringa value added products. Major factors influencing the consumer preference was nutrition/ health benefits with RII score of 0.824. This was followed by high quality was second major factor influencing the consumers preference towards moringa value added products. The taste was the next to quality with score of 0.734, followed by, package & colour (0.743), availability of products (0.400), price (0.392).

**Constraints faced by consumer in using Moringa value added products**

Consumer preference for purchasing, consumption and level of satisfaction are influenced by many challenging constraints from product side, they are as follows Lack of adequate information on Moringa products role in nutrient benefits, Lack of Moringa products in market, Distance/Access to markets for Moringa products, Taste of Moringa products, Prices of Moringa products are high, Chemical residues in Moringa products, Freshness of Moringa products, Package of Moringa products, Lack of trust in the label, and

labelling/certification of Moringa products. Each constraint is ranked 1 to 10 by consumers based on their perception so by using garret ranking technique all constraints are ranked based by garret score.

**Table 5:** Constraints faced by consumers

S. No.	Constraints	Garrett score	Rank
1.	Lack of adequate information on diversified Moringa products role in market	96.13	I
2.	Lack of Moringa products availability in market	95.24	II
3.	Distance/Access to markets for Moringa products	92.27	III
4.	Taste of Moringa products	92.07	IV
5.	Prices of Moringa products are high	90.51	V
6.	Chemical residues in Moringa products	89.39	VI
7.	Freshness of Moringa products	88.93	VII
8.	Package of Moringa products	87.62	VIII
9.	Lack of trust in the label	84.87	IX
10.	Labelling/certification of Moringa products	79.37	X

The table 5 indicates constraints for consumers willing to pay for moringa products. Major Constraints for consumers willing to pay for moringa products was lack of adequate information on Moringa products role in nutrient benefits (96.13). The second major constraint was lack of Moringa products in market (95.24) followed by Distance/Access to markets for Moringa products (92.27), taste of moringa products (92.07), prices of moringa products are high (90.51), chemical residues in moringa products (89.59), freshness of moringa products (88.93), package of moringa products (87.62), lack of trust in the label (84.87) and labelling/certification of moringa products (79.37).

**Conclusion**

- Majority of consumers have medium level of awareness on few products and lack of awareness on diversity of moringa value added products.
- Majority of consumers were satisfied while using the moringa value added products.
- Nutrition benefits were major factor influencing the consumer preference towards moringa value added products.
- Lack of adequate information and availability about diversified Moringa products in market is major constraints for consumers willing to pay for moringa

products.

### Recommendation

- Consumers having lack of awareness about moringa value added products. So moringa value added products producers should arrange campaigns and free stalls in local market for consumers. The producers should promote the products through social media, advertisement, newspaper etc.
- As moringa is seasonal crop and most of the people have it in garden backyard they have less inclination towards the moringa value added products. It is considered as supplement vegetable only so in this context Value added products of moringa need brand drive with its nutrition benefits through Government policies.
- Many moringa products are available with diversity are get into market but consumer reach is low as it is not available for medium and small-scale consumers so the price regulation and product driving into local market has to be increased by supporting startups and FPOs in Moringa value addition products.

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