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Soniya Khinchi

M.Sc., Research Scholar,
Department of Food Science and
Nutrition, College of Community
and Applied Sciences, MPUAT,
Udaipur, Rajasthan, India

Dr. Sarla Lakhawat

Professor, Department of Food
Science and Nutrition, College of
Community and Applied
Sciences, MPUAT, Udaipur,
Rajasthan, India

Assessment of consumers knowledge towards organic food products in Udaipur city

Soniya Khinchi and Dr. Sarla Lakhawat

Abstract

The market for organic foods in India, which was estimated to be around USD 1238 million in 2022, is predicted to grow at a CAGR of over 22% between 2022 and 2028, reaching a value of roughly USD 4082 million. The sudden COVID-19 pandemic outbreak has also played an important role in the expansion of the organic food market. Organic food is defined as having been produced, cultivated, stored, or processed without the use of synthetically produced fertilizers, hormones, regulators, or other general changes. Consumers are aware of the food they eat and are more focused on quality than price. The present study was planned with the objective to study the knowledge of consumers towards organic food products. Five organic food shops were selected purposively for the study from five zones of Udaipur city. A total of 150 respondents between 20 to 50 years of age were selected, from each zone, 30 respondents were chosen for the study. A self-structured questionnaire was developed and collect data from the respondents. The scoring of questions was done on a two-point continuum i.e., correct or incorrect. Each correct response was awarded a score of one and incorrect a zero. The association of knowledge levels between different age groups and education qualifications and annual income was done using the Chi-square test. Results revealed that the majority of the consumers had good knowledge (64%) regarding organic food products. Whereas 23 percent of the consumers had average knowledge and Only 13 percent showed poor knowledge about organic foods. Most of the consumers knew (100%) the difference between organic and non-organic foods. Around 32 percent of respondents to get updated knowledge and information about organic foods are showing high interest in Internet sources. Using the chi-square test found that there was a significant association in consumers' knowledge level between different age groups, educational qualifications and annual income.

Keywords: Organic food products, knowledge, certifications, food safety, pesticides

Introduction

Organic food is defined as having been produced, cultivated, stored, or processed without the use of synthetically produced fertilizers, hormones, regulators, or other general changes. Organic foods are those that have been produced in line with organic production standards and are the result of holistic farming practices that emphasize biodiversity, soil health, chemical-free inputs, etc.

As more people become aware of the benefits of organic food products and the drawbacks of inorganic crops and food products, they are gradually shifting towards organic food products that have not undergone any type of chemical processing or treatment. Increasing consumer knowledge of organic foods is the first step in developing a market for organic products, according to Briz and Ward (2009) ^[11]. Today's consumer is more focused on quality than price. Organic food products are promoted differently by farmers and retailers than non-organic food products because they are healthier and better for the environment, in addition to concerns about the environment, health and lifestyle issues, product quality, and subjective norms Bublitz and Peracchio (2015) ^[12]. Madhya Pradesh has certified the most land for organic farming among all the states, followed by Rajasthan, Maharashtra, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, and Karnataka. Regarding certified organic products, India produced about 3496800.34 MT (2020–2021), which includes all types of food products such as oil seeds, fiber, sugar cane, cereals and millets, cotton, pulses, aromatic & medicinal plants, tea, coffee, fruits, spices, dry fruits, vegetables, processed foods etc. Producing organic cotton fiber, functional foods, and other items is also done in addition to the edible industry. The market for organic foods in India, which was estimated to be around USD 1238 million in 2022, is predicted to grow at a CAGR of over 22% between 2022 and 2028, reaching a value of roughly USD 4082 million.

Corresponding Author:

Soniya Khinchi

M.Sc., Research Scholar,
Department of Food Science and
Nutrition, College of Community
and Applied Sciences, MPUAT,
Udaipur, Rajasthan, India

The demand for organic foods in India is significantly influenced by the nation’s rising levels of health consciousness and Indian consumers have started to pay attention to the nutrients and quality of the food they consume. The sudden COVID-19 pandemic outbreak has also played an important role in the expansion of the organic food market. In India, the National Programme for Organic Production (NPOP), Participatory Guarantee System (PGS), and Jaivik Bharat (for organic food items) are used to certify organic products.

Numerous scientific studies have shown the benefits of antioxidant content, particularly when it comes to organic foods, which are free of foreign chemicals that frequently interact with vitamins, minerals, and organic compounds and lessen the necessary significant impact of antioxidants in food. Natural antioxidants found in organic foods are advantageous for reducing heart disease, cancer, eye problems, early ageing, and cognitive impairment. With antioxidant contents varying between 18 and 69 percent greater in organic crops, they have better antioxidant activity. This has already been linked to a reduced risk of conditions including cardiovascular and neurological diseases as well as some cancers. Increased vitamin and mineral content in organic food contributes to the human immune systems that are more robust.

Methodology

The research work was conducted in the Udaipur city of Rajasthan. Five organic food shops were selected purposively for the study from five zones of Udaipur city namely Jevik Junction (Bapu Bazaar, North Zone), Hygienic Sabziwala (Farmlix) (Panchwati, West Zone), Oratrad Organics (Surajpole, Central Zone) Shivay organic (Nokha, Hiran Magri Sector-4, East Zone) Arawali organics (Hiran Magri sector-14, South Zone) so that information from different areas of the city can be collected. Each organic food store has a wide variety of organic food products available. A total of 150 respondents between 20 to 50 years of age were selected purposively from Udaipur City. From each zone, 30 respondents were selected for the study. A self-structured questionnaire was developed and collect data from the respondents. The questionnaire included: General background information and questions regarding aspects and existing knowledge of respondents about organic foods i.e., concept, source of information, food safety, food brands, advantages, logo and certification The scoring of questions was done on a two-point continuum i.e., correct or incorrect. Each correct response was awarded a score of one and incorrect a zero. The total score was divided into 3 knowledge levels; poor, average and good. The association of consumers knowledge levels between different age groups and education qualifications and annual income was done using the Chi-square test. The data were analyzed by using the statistical analysis frequency, percentage, mean, standard deviation and chi-square test.

Results and Discussion

The data was collected and analyzed in order to examine extensive, complete, and contextual information about all respondents and draw significant conclusions. The results of the study were as follows:

General background information

The findings of the study revealed that the majority (35.33%) of the respondents were in the age group of 35 to 45 years,

whereas only a few (10.67%) were in the age category of 20-25 years. Most of the respondents (53.33%) were postgraduates followed by 42.67 percent were graduates. 59.33 percent were professional occupations. According to the data, 42.67 percent of respondents were female and 57.33 percent were male. 82.67 percent were married. The majority of the respondents had nuclear family (59.33%) and 56.67 percent of respondents belong to small-sized family (2-4 members). Most of the participants 38.67 percent were in the category of 6-12 lakh followed by 38 percent were in the category of 3-6 lakh. Majority of the respondents were vegetarian (82%).

Table 1: Distribution of the consumers on the basis of background information

| S. No. | Parameters | Variables | f | % |
|--------|----------------|----------------------|-----|-------|
| 1. | Age | <25 years | 16 | 10.67 |
| | | 25-35 yrs. | 35 | 23.33 |
| | | 35-45 yrs. | 53 | 35.33 |
| | | >45yrs. | 46 | 30.67 |
| 2. | Occupation | Professional | 89 | 59.33 |
| | | Clerical/Shop/Farm | 15 | 10.00 |
| | | Skilled worker | 28 | 18.67 |
| | | Unskilled worker | 18 | 12.00 |
| 3. | Gender | Male | 86 | 57.33 |
| | | female | 64 | 42.67 |
| 4. | Marital status | Married | 124 | 82.67 |
| | | Unmarried | 25 | 16.67 |
| | | Divorcee | 1 | 0.67 |
| | | Widow | - | - |
| 5. | Family type | Nuclear | 89 | 59.33 |
| | | Joint | 61 | 40.67 |
| 6. | Family size | Small (2-4 members) | 85 | 56.67 |
| | | Medium (4-8 members) | 55 | 36.67 |
| | | Large (>8 members) | 10 | 6.67 |
| 7. | Education | Primary | - | - |
| | | Middle | 2 | 1.33 |
| | | Secondary | 2 | 1.33 |
| | | Senior Secondary | 2 | 1.33 |
| | | Graduation | 64 | 42.67 |
| 8. | Annual income | Post-Graduation | 80 | 53.33 |
| | | 3-6 lakh | 57 | 38.00 |
| | | 6-12 lakh | 58 | 38.67 |
| | | 12-18 lakh | 23 | 15.33 |
| | | above 18 lakhs | 12 | 8.00 |
| 9. | Food habits | Vegetarian | 123 | 82.00 |
| | | Non-Vegetarian | 23 | 15.33 |
| | | Ovo vegetarian | 4 | 2.67 |

Consumer knowledge level

Knowledge was categorized into poor, average and good based on the total score of the knowledge test (total score was 59).

Using the equidistant formula, an individual with a score within the range of 51-59 was considered to have a good level of knowledge, scores ranging from 41-50 represented average knowledge and scores from less than 40 denoted poor level of knowledge.

Fig. 1 depicts that the majority of the consumers had good knowledge (64%) regarding organic food products. Whereas 23 percent of the consumers had average knowledge. Only 13 percent had poor knowledge about organic foods. The similar result shown by Anushka and Kumari (2022) [6] revealed that measure of the consumer awareness level which clearly indicates that most of the youth are aware of organic food products. Arun *et al.* (2023) [8] found that the majority of the

respondents are aware of organic products. Altarawneh (2013) [4] revealed that 69% of respondents have an awareness level of organic food products. Kumar and Ali (2011) [18] measured the level of understanding about different aspects of Organic foods among consumers. 117 respondents have reported knowledge of organic foods i.e., 58.5 percent of total respondents.

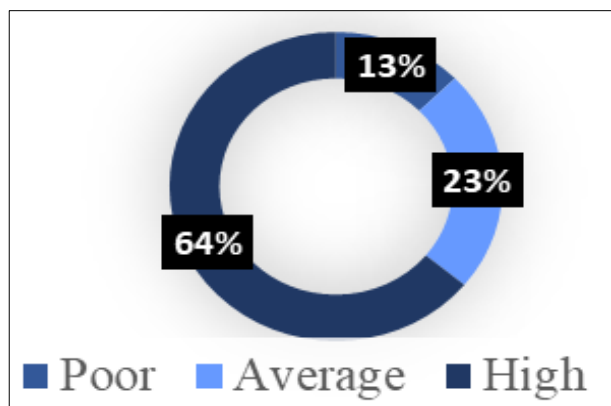


Fig 1: Distribution of consumers on the basis of knowledge level

Knowledge of the consumers regarding organic foods

The data presented in Table 2 clearly indicates that all the respondents (100%) had knowledge regarding the difference between organic or non-organic foods. 100% of respondents know the term organic food refers to food that is grown without the use of pesticides, fertilizers, or genetically modified organisms (GMOs). Khattab *et al.* (2020) [16] results showed that subjects are knowledgeable about organic foods and are familiar with their definition and concepts. According to the study, “Benefits of organic food”, as identified in the

data, 4% of respondents recognize that organic food is free from pesticides and fertilizers, indicating a perceived benefit of reduced chemical exposure in organic farming. 2% of respondents acknowledge that organic food contains higher antioxidant content. This suggests an awareness of the potential health benefits associated with consuming foods rich in antioxidants. 2.67% of respondents identify the absence of adulteration as a benefit of organic food. This indicates a perception that organic food is less likely to be tampered with or contaminated with impurities. 0.67% of respondents believe that organic food is rich in nutrients. This suggests an understanding that organic farming practices aim to maintain and enhance the nutritional quality of food. 4.67% of respondents express the belief that organic food is good for health. This indicates a general perception that consuming organic food can contribute positively to overall well-being. Most respondents (86%) selected the option “All of the above” indicating that they perceive multiple benefits associated with organic food, including pesticide/fertilizer free, containing higher antioxidant content, lacking adulteration, rich in nutrients, and being good for health antioxidant content, lacking adulteration, rich in nutrients, and good for health.

Table 2: Knowledge of the consumer regarding organic food products n=150

| S. No. | Sources | f | % |
|--------|----------------------|----|-------|
| 1. | Television | 8 | 5.33 |
| 2. | Magazine | 4 | 2.67 |
| 3. | Internet | 48 | 32.00 |
| 4. | Newspaper | 17 | 11.33 |
| 5. | Seminars/Conferences | 26 | 17.33 |
| 6. | Friends/Relatives | 47 | 31.33 |

Table 3: Knowledge of the consumers towards the source of information about organic foods n=150

| S. No. | Knowledge about organic food products | f | % |
|--------|---|-----|------|
| 1. | Know the difference between organic and non-organic foods | 150 | 100 |
| 2. | Aware of the term organic foods | 150 | 100 |
| 3. | Benefits of organic foods | | |
| a. | Pesticide/ Fertilizer Free | 6 | 4.00 |
| b. | Antioxidant Content | 3 | 2.00 |
| c. | No adulteration | 4 | 2.67 |
| d. | Rich in Nutrients | 1 | 0.67 |
| e. | Good for Health | 7 | 4.67 |
| f. | All of the above | 129 | 86 |

Source of information about organic food products

Table 3 and figure 2 elaborates that 32 percent of respondents have gained awareness through the internet followed by 31.33 percent of respondents have sourced information from Friends/Relatives and 17.33 percent of respondents have sourced information from Seminars/Conferences. Similarly, 11.33 percent of respondents have gained awareness about organic food from Newspaper and 5.33 percent of respondents are influenced by television. Further, it has been inferred that 2.67 percent of consumers have gained awareness through magazines. Hence, 32 percent of

respondents to get updated knowledge and information about organic foods are showing high interest in internet sources as they believe that these sources provide correct and authentic details about the same. The results of the study conducted by Maheshwari *et al.* (2021) [19] revealed that the regarding information almost get information from the Internet and social media. Raji and Nagadeepa (2020) [21] concluded that a key resource for raising awareness and gathering information about organic food in the research region is the Internet.

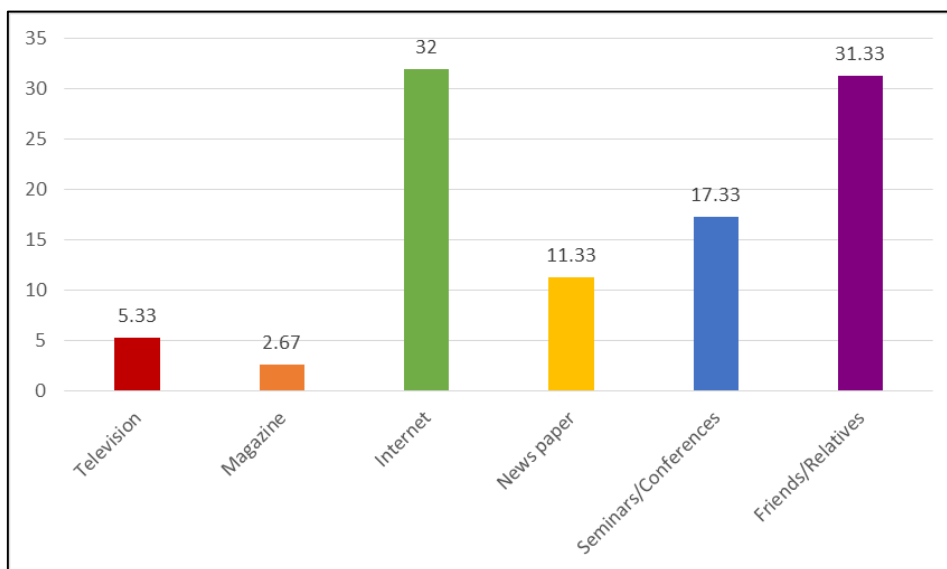


Fig 2: Source of information about organic foods

Knowledge regarding food safety
The following statements were evaluated

Statement 1

Most respondents (98.67%) believe that organic foods are free from hazardous chemical contamination, indicating a strong perception that organic farming practices prioritize avoiding harmful chemicals.

Statement 2

Around 79.33% of respondents claimed to know major Indian organic certification bodies, demonstrating a relatively good awareness among the participants.

Statement 3

Approximately 73.33% of respondents stated that they know popular organic food brands in India, indicating a considerable level of familiarity with such brands.

Statement 4

The majority of respondents (95.33%) expressed awareness of the ill effects caused by pesticides and genetically modified organisms, indicating a strong understanding of the potential negative impacts of these factors.

Statement 5

Around 85.33% of respondents believe that all organic food products are certified by the authorities, suggesting a general perception that organic foods undergo certification processes.

Statement 6

A significant portion of respondents (92%) believe that organic foods are more nutritious than conventionally produced foods, indicating a prevailing belief in the nutritional benefits of organic products.

Table 4: Distribution of respondents according to knowledge regarding food safety n=150

| S. No. | Statements | Yes f (%) | No f (%) |
|--------|--|-----------------|----------------|
| 1. | Are organic foods free from hazardous chemical contamination | 148 (98.67%) | 2 (1.33%) |
| 2. | Know the major Indian organic certification bodies | 119 (79.33%) | 31 (20.67%) |
| 3. | Know popular organic food brands in India | 110 (73.33%) | 40 (26.67%) |
| 4. | Aware of the ill effects caused by pesticides and genetically modified organisms | 143 (95.33%) | 7 (4.67%) |
| 5. | All organic food products are certified by the authorities | 128 (85.33%) | 22 (14.67%) |
| 6. | Are organic foods more nutritious than conventionally produced foods | 138 (92%) | 12 (8%) |

Knowledge regarding logo and certifications

The findings of Table 5 shows that most respondents (96.67%) are aware of the logo "Jevik Bharat" as an organic food product logo. The Food Safety and Standards (Organic Foods) Regulations, 2017, were published on December 29, 2017, in the Indian Gazette. With the motto "Jaivik Bharat" at the bottom, which denotes Organic Food from India. Khattab *et al.* (2020) [16] reported that 64% of participants trust the food labelling and believe in the logos of different brands and 90% of them were interested in using foods that have assured labelling.

About 81.33% of the respondents selected the symbol "India Organic" as the symbol representing certified organic food products.

Table 5 further elaborates that the majority (76.67%) believe that the U.S. Department of Agriculture (USDA) is the agency responsible for regulating organic food producers. This indicates a strong consensus among the respondents regarding the USDA role in overseeing organic food production. Conversely, a smaller percentage (19.33%) expressed the opinion that the U.S. Food and Drug Administration (FDA) holds this responsibility. About 4% of

respondents have an opinion U.S. Department of Health and Human Services.

Overall, the data suggest that the USDA is widely perceived as the primary agency in charge of regulating organic food

producers, reflecting the recognition of its pivotal role in ensuring the integrity and standards of organic farming practices.

Table 5: Knowledge of the consumers regarding logo and certifications

| S. No. | Knowledge about logo and certifications | f | % |
|--------|---|-----|-------|
| 1. | Organic food products logo | 145 | 96.67 |
| 2. | Symbol indicates a certified organic food product | 122 | 81.33 |
| 3. | The agency is in charge of regulating organic food producers | | |
| a. | The U.S. Food and Drug Administration | 29 | 19.33 |
| b. | The U.S. Department of Agriculture | 115 | 76.67 |
| c. | The U.S. Department of Health and Human Services | 6 | 4 |

Association of knowledge between different age groups, education qualifications and income

Age, education qualifications and income are major factors that influence the knowledge level of any individual. Therefore, these three parameters were considered for the comparison. Table 6 depicts the comparison of knowledge scores with 4 categories of age groups and 6 categories of education qualification namely, Primary, Middle, secondary, senior secondary, graduate and postgraduate and 4 categories of annual income.

Age: Table 6 revealed that the calculated chi-square value for age was found to be 137.82 is greater than the tabulated value of 12.592 which is significant at 0.05 level. So, there is a significant association between age and knowledge of organic food products.

Education Qualification: Overall there was a difference in all six categories. From the table, it is inferred that the calculated chi-square value of 74.19 is greater than the tabulated value of 18.549 which is significant at the 5 percent

level. Educated respondents had better knowledge about organic foods. So, there is a significant association between educational qualifications and knowledge of organic food products. The study has the same results as that of the study by Bhatt *et al.* (2009). He has stated that highly educated consumers tend to have a higher level of awareness about organic food products. Hence, the findings of the study proved that consumers' buying behaviour varied with respect to their educational status.

Income: Table 6 revealed that the calculated chi-square value for annual income was found to be 74.60 is greater than the tabulated value of 12.592 which is significant at 0.05 level, then there was a significant association between income and knowledge of organic food products.

Venkatakrishnan (2017) [22] found that using Chi-square it is found that there exists any significant association between gender, age, educational qualification, monthly income and consumer awareness towards organic food products of the respondents.

Table 6: Association of consumers' knowledge between different age groups, education qualification and income using chi-square

| Variable | Knowledge | | | df | Chi- Square (t-value) | |
|-----------|------------------|---------|------|----|-----------------------|--------------------|
| | Poor | Average | Good | | | |
| Age | Less than 25 | 4 | 5 | 7 | 6 | 137.821 (12.592) * |
| | 25 to 35 | 7 | 13 | 15 | | |
| | 35 to 45 | 2 | 14 | 37 | | |
| | 45 and Above | 6 | 3 | 37 | | |
| Education | Primary | - | - | - | 10 | 74.193 (18.549)* |
| | Middle | 1 | - | 1 | | |
| | Secondary | 1 | 1 | - | | |
| | Senior Secondary | 1 | 1 | - | | |
| | Graduate | 6 | 20 | 38 | | |
| | Postgraduate | 10 | 13 | 57 | | |
| Income | 3 to 6 Lakh | 4 | 12 | 41 | 6 | 74.607 (12.592)* |
| | 6-12 Lakh | 7 | 13 | 38 | | |
| | 12-18 lakh | 2 | 7 | 14 | | |
| | Above 18 lakhs | 6 | 3 | 3 | | |

*Significant at 0.05 level t-value- Tabulated value

Conclusion

Organic farming practices are becoming popular among producers and are considered an alternative for small farms. Consumers are aware of the implications the consumption of organic products has for the sustainable development of agriculture. The results of the study showed that consumers of organic products are educated people who are aware of the effect of their diet on their health. The increased consumer interest in organic food products was attributed to the growing demand for non-GMO, free of pesticides, high mineral and

vitamin content and natural ingredients. From the findings, it can be concluded that the majority of the consumers had good knowledge regarding organic food products. All the respondents know the difference between organic and non-organic food products and the term organic foods, most of them knew about food safety knowledge, logo and certification, respondents have gained knowledge regarding sourced information from the Internet and followed by Friends/Relatives. Chi-square analysis reveals a significant association between age, education level, annual income, and

consumer knowledge of organic food items. As per study findings, there are not many advertisements for organic food products like other conventional products hence, giving TV advertisements, newspapers and magazines with brand ambassadors so that consumers can become more aware and buy products by getting attracted towards organic foods.

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