

## Consumer's Knowledge, Attitude and Practices (KAP) Regarding Organic Foods in Relation to Demographic Factors of Punjab

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### Abstract

The present study was carried out with an aim to study the knowledge, attitude and practices regarding organic foods on a total of 120 selected subjects (aged between 35 and 45 years) belonging to middle income group (MIG) and high income group (HIG) from two cities of Punjab namely Ludhiana and Patiala. The questionnaire consisted of various statements pertaining to knowledge, attitude and practice regarding organic foods. The major sources of information regarding organic foods were found to be television and radio, followed by newspaper, friends, organic shops, farmers and labels, values being 28.3, 18.3, 15.8, 15.8, 12.5 and 9.1%, respectively. Majority of the respondents (88%) strongly agreed that organic foods were healthier than conventional foods. Organic foods were found to be consumed by 96.7 and 93.3% percent of the MIG and HIG subjects respectively of Ludhiana city where as in Patiala city corresponding values were 83.3 and 90% respectively. There was no significant difference in the overall knowledge and attitude score of both MIG and HIG respondents. However, a statistically significant ( $p < 0.05$ ) difference was observed in the overall practice score of respondents belonging to MIG and HIG. Hence, it can be concluded that as the income increases the practice of using organic foods also increases.

**Keywords:** Attitude; Knowledge; Practice; Organic foods; Middle Income group; High Income group.

### Introduction

Healthy life style has become a global trend and has been underlined by a slogan 'back to nature'. The environment a lists in 1960s and 1970s concentrated on the effects of chemical fertilizers and pesticides on the biophysical and human health leading to

take an alternative food system i.e. organic farming which also hold into account consumer safety. The issues of soil quality, food contamination and conservation of biodiversity was highlighted by the organic food industry [6]. Though the organic products originated in the developed countries, but due to increasing awareness about environmental issues and their alarming effects on health, consumers from developing countries also started accepting the notion of "Go organic". Presently the consumers prefer healthy and high-quality food mainly for two reasons, which are food safety and sustainability. Therefore, the green foods with less chemical residues have become more popular worldwide [3].

Modernization of society has reportedly affected the food choices and preferences of consumers. The consumers very intelligently choose healthy foods because of their improved standard of living and

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education level. This habit of consumers emerged because there has been some apprehensions about the safety of conventional foods which ultimately influenced lifestyle and food habits worldwide [4]. The organic products are environment-friendly so far as the production methods and the final products are concerned.

The consumers demand bundles of characteristics in a product and their choice is influenced by their perception about desirable characteristics of organic foods. In organic market awareness and knowledge are important in two ways. Firstly, a large segment of the population is not yet informed about organic foods. Secondly, the consumers do not have enough detailed information to clearly differentiate the unique attributes of organic from conventionally grown alternatives [5]. The important drive for the growth of organic food market are consumer's knowledge and attitude as well as their practices. So, the present investigation was conducted with an objective to assess and compare the acquired knowledge, attitude and practices of the consumers regarding organic foods belonging to two different income groups i.e. MIG and HIG from two cities of Punjab.

### Material and Methods

For the present study, two cities namely Ludhiana and Patiala were selected which represent Central and South-eastern Zones of Punjab, respectively (in the year 2016-17). In each city two localities were selected on the basis of socio-economic status of the families. A total of one hundred and twenty subjects

including 60 from Ludhiana and 60 from Patiala city were selected, which comprised of 30 from Middle income group (MIG) and 30 from high income group (HIG) from both the cities (Fig. 1). The selection of subjects was independent of gender. The respondents selected from HIG of both the cities had monthly family income >Rs.1,00,000, while respondents from MIG had monthly family income between Rs.50,000-1,00,000.

The data regarding demographic profile of respondents pertaining to their gender (M/F), age, marital status, education, total family income, religion, type of family, number of family members and locality was recorded.

### Assessment of knowledge, attitude and practices (KAP) score

A questionnaire consisting of two parts was developed. First part of the questionnaire contained all the general information of the subjects i.e. demographic profile, socio-economic status, education, marital status etc. Second part of the questionnaire contained a total of 29 questions out of which 10 were regarding the knowledge, 12 regarding attitude and 7 regarding the practice towards organic foods. The questionnaire was developed after thoroughly reviewing the available literature.

Pre-testing of the questionnaire was done on 20 subjects. Thereafter, necessary modifications were incorporated. These 20 respondents were excluded from the final respondents. The modified questionnaire was then used for data collection by personally interviewing the subjects.

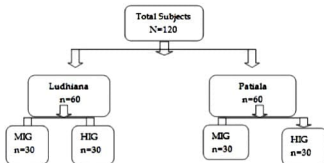


Fig. 1: Selection of subjects

*Scoring of Knowledge, Attitude and Practices regarding organic foods*

Various statements (as mentioned in Table 3) to check the knowledge of the consumers regarding organic foods were asked and the responses were quantified by a score system from 3 to 1 as given in the following table:

Scoring of Knowledge regarding organic foods

Agreement	Scores
True	3
Do not know	2
False	1

Attitude of the selected respondents towards organic foods was assessed through various statements (as mentioned in Table 4) the results were calculated by a score system from 5 to 1 as mentioned below:

Scoring of Attitude towards organic foods

Agreement	Scores
Strongly agree	5
Agree	4
Neutral/No idea	3
Disagree	2
Strongly disagree	1

Statements regarding practices (as mentioned in Table 5) of the selected subjects towards organic foods were given scores as given below:

Table 1: General profile of the selected respondents (N=120)

Particulars	MIG			HIG		
	Ludhiana (n=30)	Patiala (n=30)	Total (n=60)	Ludhiana (n=30)	Patiala (n=30)	Total (n=60)
Age (years)	35-45 18 (60.0)	23 (76.7)	41 (68.3)	16 (53.3)	19 (63.3)	35 (58.3)
	>45 12 (40.0)	7 (23.3)	19 (31.7)	14 (46.7)	11 (36.7)	25 (41.7)
Gender	Female 26 (86.7)	28 (93.3)	54 (90.0)	26 (86.7)	26 (86.7)	52 (86.7)
	Male 4 (13.3)	2 (6.7)	6 (10.0)	4 (13.3)	4 (13.3)	8 (13.3)
Marital Status	Married 28 (93.3)	29 (96.7)	57 (95.0)	27 (90.0)	28 (93.3)	55 (91.7)
	Unmarried 2 (6.7)	1 (3.3)	3 (5.0)	3 (10.0)	2 (6.7)	5 (8.3)
Education	Primary 1 (3.3)	0 (0.0)	1 (1.7)	0 (0.0)	0 (0.0)	0 (0.0)
	High school 5 (16.7)	2 (6.7)	7 (11.7)	2 (6.7)	0 (0.0)	2 (3.3)
	Graduate 15 (50.0)	15 (50.0)	30 (50.0)	18 (60.0)	12 (40.0)	30 (50.0)
	Post graduate 9 (30.0)	13 (43.3)	22 (36.7)	10 (33.3)	17 (56.7)	27 (45.0)
Religion	Hindu 18 (60.0)	13 (43.3)	31 (51.7)	14 (46.7)	13 (43.3)	27 (45.0)
	Sikh 11 (36.7)	17 (56.7)	28 (46.7)	16 (53.3)	16 (53.3)	32 (53.3)
	Others 1 (3.3)	0 (0.0)	1 (1.67)	0 (0.0)	1 (3.3)	1 (1.7)
Type of family	Joint 7 (23.3)	6 (20.0)	13 (21.7)	4 (20.0)	10 (33.3)	14 (23.3)
	Nuclear 23 (76.7)	24 (80.0)	47 (78.3)	26 (80.0)	20 (66.7)	46 (76.7)
Type of residence	Owned 18 (60.0)	27 (90.0)	45 (75.0)	30 (100.0)	30 (100.0)	60 (100.0)
	On rent 12 (40.0)	3 (10.0)	15 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)
Occupation	Working 22 (73.3)	21 (70.0)	43 (71.7)	28 (93.3)	26 (86.7)	54 (90.0)
	Non-working 8 (26.7)	9 (30.0)	17 (28.3)	2 (6.7)	4 (13.3)	6 (10.0)
Total monthly income	50,000-1,00,000 30 (100)	30 (100)	60 (100)	0 (0.0)	0 (0.0)	0 (0.0)
	>1,00,000 0 (0.0)	0 (0.0)	0 (0.0)	30 (100)	30 (100)	60 (100)

Figures in parenthesis indicate percentage

Scoring of Practices towards organic foods

Agreement	Scores
Yes	1
No	0
Organic food consumption frequency scores	
Daily	4
Weekly	3
Monthly	2
Rarely	1

Statistical analysis

The collected data was analyzed using various statistical tools such as frequency, percentages and the comparisons between categories of respondents were done using z-test and correlation coefficient of various demographic and socio-economic factors were also calculated.

Results and Discussion

General information

The general information of the respondents i.e. age, gender, marital status, education, religion, type of family, type of residence, occupation and income of the respondents has been presented in Table 1. As evident from Table 1 the age of respondents of both the cities belonging to MIG as well as HIG ranged between 35-45 years. Further, gender distribution showed that 90% of the respondents

in MIG and 86.7% in HIG were females. Majority of the respondents were married in MIG and HIG i.e. 95 and 91.7% respectively. In both the income group from both the cities 50% of the selected respondents were found to be graduates while 45% of the HIG subjects and 36.7% of the MIG subjects were educated up to postgraduate level indicating good educational level of the subjects. The majority of the selected respondents in both the cities were Hindu/Sikh. The majority of the selected respondents i.e. 78.3% in MIG and 71.7% in HIG belonged to nuclear families. All the subjects in the HIG had their own houses while 75% MIG had their own houses, while others had rented houses. It was also found that 71.7 and 90% selected respondents from MIG and HIG, respectively were working. All the subjects in MIG were having monthly income between Rs. 50,000-1 lakh and in HIG all the subjects were having monthly income more than Rs. 1,00,000.

#### Source of information regarding organic foods

As evident from Table 2, 28.3% of the subjects from both the cities found TV/Radio as the major source of information followed by newspaper/magazines (18.3%), friends/relatives (15.8%), organic shops (15.8%), farmers (12.5%) and labels (9.1%), respectively. It was reported [2] that 28.5% of the respondents used television and radio for obtaining information about organic food products where as newspapers, friends, farmers and other type of information delivery was 14.9, 19.7, 14.3 and 22.6%, respectively. Quality information, labeling and advertisement play important role in enhancement of knowledge [9].

#### Knowledge, attitude and practices towards organic foods

##### Knowledge about organic foods

Knowledge can be defined as familiarity or understanding of something such as facts, information and description etc. In the present

study knowledge of the respondents was assessed through a series of questions about organic foods and they were asked to state whether the statement were true/false or they do not know. The statement "organic production does not involve use of chemical pesticides and fertilizers" was found to be true by 44% of the total subjects in middle income group of both the cities where as 57% of the higher income group subjects of both the cities found this statement to be true. The organic foods have higher nutrient content and healthier than conventional foods, this statement was found to be true by majority of the respondents of both the income group in both cities (Table 3). The values being 70 and 71.7% respectively in middle and high income group of both the cities. Among the middle income group 51.7% subjects of both the cities found the statement that organic foods can be judged by their appearance as false, where as 41.7% of the high income group subjects found this statement to be true.

Statement regarding no preservatives in organic foods was found to be true by 43.3 and 48.3% from MIG and HIG respectively. However, 35% of the respondents from MIG did not know about presence or absence of preservatives in organic foods. Fifty percent of the respondents from MIG knew that bio fertilizers are used in organic foods where as the corresponding values in HIG was 47.7% for the same statement. Regarding the availability of organic foods majority of the subjects from both the income groups i.e. 46.7 and 58.3% from MIG and HIG respectively stated it false that real organic products can be purchased only from supermarkets, departmental stores or organic food stores. Among MIG subjects 43.3% of the respondents reported it true that only certified and labeled foods are real organic foods. However, 51.7% of the HIG subjects found the same statement to be false. The statement that organic farming can serve as an effective measure for the safety and health of the people was found to be true by a great majority of the subjects in both the income groups (Table 3).

**Table 2:** Source of information regarding organic foods among middle and high income group subjects of both the cities.

Source of information	MIG (n=40)	HIG (n=40)	Total (N=120)	z-value
Television/Radio	18(30.0)	16(26.7)	34(28.3)	0.41
Newspaper/magazines	10(16.7)	12(20.0)	22(18.3)	0.47
Friends/Relatives	10(16.7)	9(15.0)	19(15.8)	0.25
Organic shops	9(15.0)	10(16.7)	19(15.8)	0.25
Farmers	7(11.7)	8(13.3)	15(12.5)	0.28
Labels	6(10.0)	5(8.3)	11(9.1)	0.32

Figures in parenthesis indicate percentage

**Table 3:** Knowledge regarding organic foods among middle and high income group subjects of selected cities (N=120)

Statements		MIG (n=60)			HIG (n=60)		
		Do not know	False	True	Do not know	False	True
Organic production does not apply chemical pesticide and fertilizers.	Ludhiana	3 (10.0)	2 (6.67)	25 (83.3)	1 (3.3)	1 (3.3)	28 (93.3)
	Patiala	5 (16.7)	6 (20.0)	19 (63.3)	0 (0.0)	1 (3.3)	29 (96.7)
	z-value	0.76	1.52	1.75	1.01	0	0.59
	Total	8 (13.3)	8 (13.3)	44 (73.3)	1 (1.7)	2 (3.3)	57 (95.0)
Organic food are grown under natural conditions.	Ludhiana	2 (6.67)	26 (86.7)	2 (6.67)	2 (6.7)	27 (90.0)	1 (3.3)
	Patiala	5 (16.7)	20 (66.7)	5 (16.7)	1 (3.3)	23 (76.7)	6 (20.0)
	z-value	1.21	1.83	1.21	0.59	1.39	2.01*
	Total	7 (11.7)	46 (76.7)	7 (11.7)	3 (5.0)	50 (83.3)	7 (11.7)
Organic food has higher nutrition content than conventional food.	Ludhiana	3 (10.0)	0 (0.0)	27 (90.0)	12 (40.0)	3 (10.0)	15 (50.0)
	Patiala	10 (33.3)	5 (16.7)	15 (50.0)	1 (3.3)	1 (3.3)	28 (93.3)
	z-value	2.19*	2.34*	3.38**	3.45**	1.04	3.72**
	Total	13 (21.7)	5 (8.3)	42 (70.0)	13 (21.7)	4 (6.7)	43 (71.67)
We can judge if a product is organic or not by its outlook appearance.	Ludhiana	7 (23.3)	15 (50.0)	8 (26.7)	6 (20.0)	9 (30.0)	15 (50.0)
	Patiala	7 (23.3)	16 (53.3)	7 (23.3)	6 (20.0)	14 (46.7)	10 (33.3)
	z-value	0	0.26	0.3	0	1.33	1.31
	Total	14 (23.3)	31 (51.7)	15 (25.0)	12 (20.0)	23 (38.3)	25 (41.7)
There is no preservative in organic food.	Ludhiana	12 (40)	5 (16.7)	13 (43.3)	6 (20)	11 (36.7)	13 (43.3)
	Patiala	9 (30)	8 (26.7)	13 (43.3)	8 (26.7)	6 (20)	16 (53.3)
	z-value	0.81	0.94	0	0.61	1.43	0.78
	Total	21 (35.0)	13 (21.7)	26 (43.3)	14 (23.3)	17 (28.3)	29 (48.3)
Organic farming use bio-fertilizers.	Ludhiana	19 (63.3)	2 (6.7)	9 (30.0)	8 (26.7)	9 (30.0)	13 (43.3)
	Patiala	5 (16.7)	4 (13.3)	21 (70)	9 (30)	6 (20)	15 (50)
	z-value	3.69**	0.86	3.10**	0.29	0.89	0.52
	Total	24 (40.0)	6 (10.0)	30 (50.0)	17 (28.3)	15 (25.0)	28 (46.7)
Real organic products can only be bought in large supermarkets, department stores or organic food stores.	Ludhiana	1 (3.3)	13 (43.3)	16 (53.3)	4 (13.3)	21 (70.0)	5 (16.7)
	Patiala	6 (20)	15 (50)	9 (30)	3 (10)	14 (46.7)	13 (43.3)
	z-value	2.01*	0.52	1.83	0.4	1.83	2.25*
	Total	7 (11.67)	28 (46.7)	25 (41.7)	7 (11.7)	35 (58.3)	18 (30.0)
Only those products with organic certified labels are real organic products.	Ludhiana	2 (6.7)	11 (36.7)	17 (56.7)	3 (10)	16 (53.3)	11 (36.7)
	Patiala	9 (30)	12 (40)	9 (30.0)	5 (16.7)	15 (50)	10 (33.3)
	z-value	2.34*	0.27	2.08*	0.76	0.26	0.27
	Total	11 (18.3)	23 (38.3)	26 (43.3)	8 (13.3)	31 (51.7)	21 (35)
Organic farming can serve as an effective measure for safety and health of the people.	Ludhiana	1 (3.3)	2 (6.7)	27 (90)	3 (10)	1 (3.3)	26 (86.7)
	Patiala	4 (13.3)	2 (6.7)	24 (80)	2 (6.7)	2 (6.7)	26 (86.7)
	z-value	1.4	0	1.08	0.47	0.59	0
	Total	5 (8.3)	4 (6.7)	51 (85)	5 (8.3)	3 (5.0)	52 (86.7)
Several organic foods are available in the market.	Ludhiana	1 (3.3)	7 (23.3)	22 (73.3)	4 (13.3)	0 (0.0)	26 (86.7)
	Patiala	12 (40.0)	2 (6.7)	16 (53.3)	3 (10)	2 (6.7)	25 (83.3)
	z-value	3.45**	1.81	1.61	0.4	1.44	0.36
	Total	13 (21.7)	9 (15)	38 (63.3)	7 (11.7)	2 (3.3)	51 (85)

Figures in parenthesis indicate percentage

\* Significant at 5% level

\*\* Significant at 1% level

The values being 85 and 86.7% among MIG and HIG, respectively. A higher number of the subjects from HIG i.e. 85% stated that several organic foods are available in the market as true.

#### *Attitude towards organic foods*

An attitude is a tendency to respond in a positive or in a negative manner towards a certain idea, object, person or situation. It influences one's choice of action and response to challenges and rewards. In the present study attitude of the selected subjects towards organic foods was assessed by a well structured questionnaire which consisted of 12 statements and the subjects were asked to respond whether they agreed, disagreed or neutral to the mentioned statement. It was found that 46.7% of the MIG subjects and 50% of HIG subjects from Ludhiana city strongly disagreed to the statement that "I am not interested in organics" (Table 4). However, 50% of HIG subjects from Patiala city were neutral to the above mentioned statement. The statement regarding preference of buying organic foods was agreed by 36.7% of the MIG subjects in Ludhiana city where as in Patiala city half of the subjects disagreed to the same statement, where as 26.7% of the higher income group subjects in Ludhiana city and 30% in Patiala city agreed to the same statement. Among the MIG subjects of Ludhiana and Patiala city who agreed to the statement regarding safety and reliability of organic foods was 56.7 and 60% respectively and 50% HIG subjects in Ludhiana city and 30% subjects in Patiala city strongly agreed to the same statement. Similarly, the statement regarding better quality of organic foods was agreed upon by 53.3 and 56.7% of the MIG subjects and 50 and 33.3% of HIG subjects in Ludhiana and Patiala city, respectively. No subjects in both income groups of both the cities disagreed to the statement that "organic products are healthier and more nutritious i.e. all the subjects were aware that organic foods are healthier. It has been reported that majority of the subjects about 88% t strongly agreed that organic foods were healthier than conventional foods and only 2% of consumers disagreed to the statement (Table 4). It was further reported that 10% of the respondents were neutral in this respect.

All the MIG subjects from Ludhiana city and 3.3% in Patiala city strongly agreed to the statement and fifty percent HIG subjects remained neutral to the statement that organic foods are supreme products and consumed only by rich people. Nooripoor *et al.*, (2008) indicated that higher price of organic foods is one of the major barrier to their consumption. All the subjects in both income groups of both the

cities strongly agreed to the statement that organic products are available in limited variety in the market. Majority of the respondents i.e. 43.3% in MIG and 40% in HIG in Ludhiana city agreed to the statement that there are a lot of sale points for organic products, where as 50% in MIG and 46.7 in HIG of Patiala city were neutral to the same statement. The statement regarding trust on organic products was agreed upon by 56.7 and 43.3% of the selected MIG subjects from Ludhiana and Patiala city, respectively. However, 46.7% t subjects of Ludhiana city and 40% subjects of Patiala city remained neutral to the statement.

Further, it was also found that all the subjects agreed that organic foods are more nutritious but at the same time all of them agreed that these foods are costlier. Majority of the subjects agreed that organic foods are available in limited variety. On contrary, it was found that a higher number of respondents in Ludhiana city were interested in organic foods and preferred to purchase organic foods as compared to those in Patiala city. The reason for this difference might be that though the respondents in both the cities were well aware about the better quality, safety and nutrition of organic foods but the respondents from Ludhiana were more interested in purchasing organic foods, which might be due to their higher purchasing power and more availability of organic foods in Ludhiana city.

#### *Practices towards organic foods*

The practice is the actual application or use of a method/idea/belief as opposed to theories relating to it. Along with the knowledge and attitude, practices towards organic foods adopted by the respondents were also assessed in middle and high income group subjects of both the selected cities. Organic foods were found to be consumed by 96.7 and 93.3% of the MIG and HIG subjects of Ludhiana city respectively, where as in Patiala city values were 83.3 and 90% respectively, indicating that in Ludhiana city income level of selected subjects did not influence their purchase of organic foods, but in Patiala city the subjects from HIG were purchasing more of organic foods (Table 5). Among MIG subjects of both the cities 90% of the respondents stated that they were consuming organic foods while HIG subjects 93.3% of the subjects responded the same. This finding can be correlated well with the attitude of the respondents from both the cities which indicated that more number of subjects in Ludhiana city were interested in purchasing organic foods and all the subjects in both the cities responded that organic foods were costlier.

**Table 4:** Attitude regarding organic foods among middle and high income group subjects of selected cities (N=120)

Statements	MIG (n=60)					HIG (n=60)					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
I am not interested in organic foods	Ludhiana	0 (0.0)	2 (6.7)	9 (30.0)	8 (26.7)	14 (46.7)	0 (0.0)	2 (6.7)	10 (33.3)	3 (10)	15 (50)
	Patiala	1 (3.3)	4 (13.3)	15 (50.0)	7 (23.3)	3 (10)	0 (0.0)	3 (10.0)	11 (36.7)	2 (6.7)	14 (46.7)
	z-value	1.01	0.86	1.58	0.51	3.83**	NA	0.47	0.31	0.52	0.31
	Total	1 (1.7)	6 (10)	24 (40)	15 (25)	17 (28.3)	NA	5 (8.3)	21 (35)	5 (8.3)	29 (48.3)
I prefer buying organic foods.	Ludhiana	0 (0.0)	11 (36.7)	9 (30)	7 (23.3)	3 (10)	11 (36.7)	8 (26.7)	8 (26.7)	3 (10)	0 (0.0)
	Patiala	3 (10)	7 (23.3)	1 (3.3)	15 (50)	4 (13.3)	8 (26.7)	9 (30)	12 (40)	1 (3.3)	0 (0.0)
	z-value	1.78	1.13	2.77**	2.14*	0.40	0.83	0.29	1.10	1.04	NA
	Total	3 (5.0)	18 (30.0)	10 (16.7)	22 (36.7)	7 (11.7)	19 (31.7)	17 (28.3)	20 (33.3)	4 (6.7)	0 (0.0)
Organic products are safer and more reliable.	Ludhiana	0 (0.0)	17 (56.7)	4 (13.3)	1 (3.3)	8 (26.7)	15 (50.0)	11 (36.7)	4 (13.3)	0 (0.0)	0 (0.0)
	Patiala	2 (6.7)	18 (60)	8 (26.7)	2 (6.7)	0 (0.0)	9 (30.0)	10 (33.3)	11 (36.7)	0 (0.0)	0 (0.0)
	z-value	1.44	0.26	1.29	0.59	3.04**	1.58	0.27	2.09*	NA	NA
	Total	2 (3.3)	35 (58.3)	12 (20.0)	3 (5.0)	8 (13.3)	24 (40.0)	21 (35)	15 (25.0)	0 (0.0)	0 (0.0)
Organic products are of better quality.	Ludhiana	0 (0.0)	16 (53.3)	4 (13.3)	3 (10.0)	7 (23.3)	7 (23.3)	15 (50)	8 (26.7)	0 (0.0)	0 (0.0)
	Patiala	1 (3.3)	17 (56.7)	7 (23.3)	5 (16.7)	0 (0.0)	10 (33.3)	10 (33.3)	9 (30.0)	1 (3.3)	0 (0.0)
	z-value	0.21	0.26	1.00	0.76	2.82**	0.86	1.31	0.29	1.01	NA
	Total	1 (1.7)	33 (55)	11 (18.3)	8 (13.3)	7 (11.7)	17 (28.3)	25 (41.7)	17 (28.3)	1 (1.7)	0 (0.0)
Organic products are healthier and more nutritious	Ludhiana	7 (23.3)	15 (50.0)	6 (20.0)	2 (6.7)	0 (0.0)	6 (20.0)	4 (13.3)	15 (50.0)	5 (6.7)	0 (0.0)
	Patiala	4 (13.3)	12 (40.0)	9 (30.0)	5 (16.7)	0 (0.0)	7 (23.3)	6 (20.0)	17 (56.7)	0 (0.0)	0 (0.0)
	z-value	1.07	0.78	0.89	1.21	NA	0.31	0.69	0.52	2.34*	NA
	Total	11 (6.7)	27 (45.0)	15 (25.0)	7 (11.6)	0 (0.0)	13 (21.7)	10 (16.7)	32 (53.3)	5 (8.3)	0 (0.0)
Organic products are very expensive.	Ludhiana	0 (0.0)	11 (36.7)	6 (20.0)	6 (20.0)	7 (23.3)	13 (43.3)	7 (23.3)	9 (30.0)	1 (3.3)	0 (0.0)
	Patiala	0 (0.0)	12 (40.0)	13 (43.3)	5 (16.7)	0 (0.0)	6 (20.0)	7 (23.3)	13 (43.3)	4 (13.3)	0 (0.0)
	z-value	NA	0.27	1.94	0.33	2.82**	1.94	0.0	1.07	1.40	NA
	Total	0 (0.0)	23 (38.3)	19 (31.7)	11 (18.3)	7 (11.7)	19 (31.7)	14 (23.3)	22 (36.7)	5 (8.3)	0 (0.0)
The packing of organic products looks less pleasing to the eye.	Ludhiana	4 (13.3)	6 (20.0)	7 (23.3)	13 (43.3)	0 (0.0)	5 (16.7)	2 (6.7)	15 (50.0)	1 (3.3)	7 (23.3)
	Patiala	2 (6.7)	9 (30.0)	9 (30.0)	6 (20.0)	4 (13.3)	2 (6.7)	2 (6.7)	20 (66.7)	6 (20.0)	0 (0.0)
	z-value	0.44	0.89	0.58	1.94	0.21	1.21	0.0	1.31	2.01*	2.82**
	Total	6 (3.3)	15 (25.0)	16 (26.7)	19 (31.7)	4 (13.3)	7 (11.7)	4 (6.7)	35 (58.3)	7 (11.7)	7 (11.7)
Organics are supreme products consumed only by rich people.	Ludhiana	0 (0.0)	9 (30.0)	10 (33.3)	5 (16.7)	6 (20.0)	0 (0.0)	4 (13.3)	15 (50.0)	1 (3.3)	10 (33.3)
	Patiala	1 (3.3)	9 (30.0)	12 (40.0)	5 (16.7)	3 (10.0)	2 (6.7)	1 (3.3)	15 (50.0)	12 (40.0)	0 (0.0)
	z-value	0.22	0	0.54	0.0	1.08	1.44	1.40	0.0	3.45**	3.46**
	Total	1 (1.7)	18 (30.0)	22 (36.7)	10 (16.7)	9 (15.0)	2 (3.3)	5 (8.3)	30 (50.0)	13 (21.7)	10 (16.7)
There is small variety of organic products.	Ludhiana	0 (0.0)	12 (40.0)	8 (26.7)	3 (10.0)	7 (23.3)	6 (20.0)	9 (30.0)	5 (16.7)	7 (23.3)	3 (10.0)
	Patiala	0 (0.0)	13 (43.3)	8 (26.7)	7 (23.3)	2 (6.7)	4 (13.3)	10 (33.3)	15 (50.0)	1 (3.3)	0 (0.0)
	z-value	NA	0.26	0	1.39	1.81	0.69	0.28	2.74**	2.28*	1.78
	Total	0 (0.0)	25 (41.7)	16 (26.7)	10 (16.7)	9 (15.0)	10 (16.7)	19 (31.7)	20 (33.3)	8 (13.3)	3 (5.0)
There are a lot of sales points for organic products.	Ludhiana	0 (0.0)	13 (43.3)	6 (20.0)	6 (20.0)	5 (16.7)	2 (6.7)	2 (6.7)	12 (40.0)	11 (36.7)	3 (10.0)
	Patiala	1 (3.3)	10 (33.3)	15 (50.0)	3 (10.0)	1 (3.3)	0 (0.0)	9 (30.0)	14 (46.7)	7 (23.3)	0 (0.0)
	z-value	1.01	0.80	2.44*	1.08	1.72	1.44	2.34*	0.52	1.13	1.78
	Total	1 (1.7)	23 (38.3)	21 (35.0)	9 (15.0)	6 (10.0)	2 (3.3)	11 (18.3)	26 (43.3)	18 (30.0)	3 (5.0)
It is difficult to identify real organic products.	Ludhiana	0 (0.0)	7 (23.3)	11 (36.7)	5 (16.7)	7 (23.3)	14 (46.7)	8 (26.7)	6 (20.0)	2 (6.7)	0 (0.0)
	Patiala	1 (3.3)	14 (46.7)	8 (26.7)	6 (20.0)	1 (3.3)	5 (16.7)	7 (23.3)	14 (46.7)	4 (13.3)	0 (0.0)
	z-value	1.01	1.89	0.83	0.33	2.28*	2.50*	0.30	2.19*	0.86	NA
	Total	1 (1.7)	21 (35.0)	19 (31.7)	11 (18.3)	8 (13.3)	19 (31.7)	15 (25.0)	20 (33.3)	6 (10.0)	0 (0.0)
I trust organic products.	Ludhiana	0 (0.0)	17 (56.7)	5 (16.7)	3 (10.0)	5 (16.7)	5 (16.7)	10 (33.3)	14 (46.7)	1 (3.3)	0 (0.0)
	Patiala	2 (6.7)	13 (43.3)	11 (37)	4 (13.3)	0 (0.0)	7 (23.3)	10 (33.3)	12 (40.0)	1 (3.3)	0 (0.0)
	z-value	1.44	1.55	2.25*	0.42	2.34*	0.65	0.0	0.52	0.0	NA
	Total	2 (3.3)	28 (46.7)	18 (30.0)	7 (11.7)	5 (8.3)	12 (20.0)	20 (33.3)	26 (43.3)	2 (3.3)	0 (0.0)

Figures in parenthesis indicate percentage.

\*Significant at 5% level.

\*\*Significant at 1% level

It was found that subjects of MIG of both cities had no practice to use organic foods daily. However, among HIG subjects 26.7 and 16.7% of the respondents from Ludhiana and Patiala city respectively were using organic foods daily (Table 5). It can be concluded that with the increase in income, consumption of organic foods increases on daily basis which might be due to higher affordability of these products with the increase in income. It was found that purchase intention towards organic foods and the level of income had a positive but insignificant relationship [8]. On weekly basis consumption of organic foods was found to be higher (50%) among HIG subjects as compared to that among MIG (30%) subjects. Overall, rare consumption of organic foods was found to be higher among MIG subjects as compared to HIG subjects. When the practices regarding the methods of washing, cutting, and cooking of organic foods

were compared with those of unconventional foods, they were found to be similar in all the subjects of both the cities. However, chopping of organic vegetables was found to be more convenient as compared to conventional vegetables by subjects of both the income groups from both the cities.

#### Knowledge, Attitude and Practice (KAP) Score

As shown in Table 6, there was no significant difference in the overall knowledge and attitude score of both MIG and HIG respondents. However, there was a statistically significant ( $p \leq 0.05$ ) difference in the overall practice score of respondents belonging to MIG and HIG. Hence, it can be concluded that although the level of income does not affect the knowledge and attitude regarding organic foods, but as the income increases the practices regarding using organic foods do increase.

**Table 5:** Practices towards organic foods among middle and high income group-subjects of selected cities (N=120)

Practices Ludhiana	MIG			HIG					
	Patiala	z-value	Total	Ludhiana	Patiala	z-value	Total		
Consumption of organic products	29 (96.7)	25 (83.3)	1.72	54 (90)	28 (93.3)	27 (90)	0.22	56 (93.3)	
Frequency of using organic foods	Rarely	9 (30)	9 (30)	0.58	18 (30)	2 (6.7)	3 (10)	0.94	5 (8.3)
	Monthly	14 (50)	8 (26.7)	1.61	22 (36.7)	5 (16.7)	7 (23.3)	0.65	12 (20)
	Weekly	5 (16.7)	13 (43.3)	0.00	18 (30)	15 (50)	15 (50)	0.24	30 (50)
	Daily	0 (0.0)	0 (0.0)	NA	2 (3.3)	8 (26.7)	5 (16.7)	0.94	13 (21.7)
Methods of washing vegetables	19 (63.3)	20 (66.7)	0.27	39 (65.0)	25 (83.3)	26 (86.7)	0.36	51 (85.0)	
Before cutting									
After cutting	19 (63.3)	17 (56.7)	0.53	36 (60.0)	14 (46.7)	16 (53.3)	0.52	30 (50.0)	
Dipping	2 (6.7)	3 (10.0)	0.47	5 (8.3)	8 (26.7)	14 (46.7)	1.61	22 (36.7)	
Rinsing	2 (6.67)	3 (10.0)	0.47	5 (8.3)	10 (33.3)	10 (33.3)	0.00	20 (33.3)	
Rubbing while washing	1 (3.3)	4 (13.3)	1.40	5 (8.3)	2 (6.7)	1 (3.3)	0.59	3 (5.0)	
Chopping is easier	22 (73.3)	23 (76.7)	0.30	45 (75.0)	21 (70.0)	17 (56.7)	2.36*	45 (75.0)	
Cooking practice vary for organic food products	6 (20.0)	0 (0.0)	2.58*	6 (10.0)	0 (0.0)	4 (13.3)	2.07*	4 (6.7)	
Cooking takes same time	15 (50.0)	8 (26.7)	1.86	23 (38.30)	12 (40.0)	18 (60.0)	1.55	30 (50.0)	
Cooking Methods									
Open Pan	14 (46.7)	24 (80.0)	2.68*	38 (63.3)	23 (76.7)	12 (40.0)	2.88**	35 (58.3)	
Pan with lid	12 (40.0)	2 (6.7)	3.05**	14 (23.3)	17 (56.7)	14 (46.7)	0.78	31 (51.7)	
Pressure Cooking	21 (70.0)	12 (40.0)	2.34*	33 (55.0)	15 (50.0)	19 (63.3)	1.04	34 (56.7)	

Figures in Parenthesis indicate percentage

\* Significant at 5% level,

\*\* Significant at 1% level

**Table 6:** Mean Knowledge, Attitude and Practice score in middle and high income group subjects of selected cities (N=120)

Parameters	MIG(n=60)	HIG(n=60)	z-value	Total (N=120)
Knowledge	4.6 ± 0.7	4.8 ± 0.6	0.55	4.7 ± 0.6
Attitude	5.0 ± 0.5	5.2 ± 0.4	0.48	5.1 ± 0.4
Practice	3.0 ± 0.5	3.8 ± 0.4	2.40*	3.4 ± 0.4
KAP score	12.6 ± 1.7	13.8 ± 1.3	1.23	13.2 ± 1.4

Values are Mean ± SD,

\* Significant at 5% level, N=non significant



**Table 7:** Correlation coefficients (r) of KAP score with demographic factors

Correlation of with KAP score	Age	Education	Income
Knowledge	0.19*	0.23**	0.11NS
Attitude	0.07NS	0.08NS	0.12NS
Practice	0.09NS	0.09NS	0.18*
KAP score	0.12NS	0.11NS	0.10NS

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (1-tailed).

NS- Non-significant

### *Correlations between various factors and purchase of organic foods*

In different states of India food consumption varies and the factors which influence consumption are regional, cultural, ethnic, income and difference in agricultural production. In the present study, correlation coefficient values of KAP scores with demographic factors like age, education and income were calculated and are represented in the Table 7.

The knowledge of the respondents had a significantly ( $p \leq 0.05$ ) positive correlation with age and education, indicating that the knowledge increases with age and education, whereas it had a positive but non-significant correlation with income. The attitude of the respondents had a positive but non-significant correlation with age, education and income. Similarly, the practice score had a positive but non-significant correlation with age and education. However, it had a significantly ( $p \leq 0.05$ ) positive correlation with the income.

### **Conclusion**

Consumption of organic foods is increasing because of environmental and health issues. From the present study, it can be concluded that the knowledge and attitude of the consumers regarding organic foods is influenced by their education level and age as well. Furthermore, the level of income does not affect their knowledge and attitude regarding organic foods, but it does affect practice of using the same. The data can help both marketers and policy makers in formulating strategies and policies regarding the supply and availability of organic foods.

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