

# A Survey of Knowledge, Attitude and Performance of People of Fasa on Segregation of Household Solid Wastes, Fasa, Iran, 2017

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## Abstract

**Background:** Environmental health is definitely one of the issues and challenges considered by human societies on the eve of the third millennium. Therefore, the present study was conducted to determine the knowledge, attitude and performance of the people of Fasa on segregation of municipal solid wastes in 2017.

**Methods:** This cross – sectional study was conducted on 400 residents of Fasa who were selected through cluster sampling. The tool used in this study was a Lickert-spectrum questionnaire, which was essentially a combination of two standard instruments and the researcher’s field studies. The data were analyzed using the SPSS 22 software as well as descriptive statistics, Man-Whitney test and one – way ANOVA test.

**Results:** The results of this study showed that the mean knowledge, attitude and performance of the people were  $23.5\pm 5.3$ ,  $13.5\pm 3.0$ , and  $21.5\pm 2.6$ , respectively. 43.7% of the subjects had weak knowledge (188 people), 28.6% had moderate knowledge (123 people) and 27.7% had good knowledge (119 people). Moreover, 36.6% had weak attitude (156 people), 19.3% had moderate (85 people) and 44% had good attitude (189 people). Finally, the performance of 46% of the participants was weak (198 people), that of 30.5% was moderate (131 people), and 23.5% had good performance (101 people). The mean scores of knowledge, attitude and performance of the male and female subjects were not significantly different.

**Conclusion:** The successful implementation of the waste management system in Fasa requires raising public knowledge, attitude and performance and close relationships between executive organizations and citizens. Regarding the results of this study, implementation of a regular and continuous education program to increase general knowledge, attitude and performance of the people of all ages seems necessary.

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## Introduction

The population growth, advancement of science and technology, and development of industry and urbanization as well as people’s welfare have led to more

consumption of materials and increased wastes. So, a large amount of wastes is discharged annually in the environment. Disposal of the wastes from consumption is one of the main factors affecting soil, water and air pollution. Currently, many parts of ecological systems

are being seriously threatened by human beings.<sup>1</sup> In recent years, environmental issues related to economic development have received much attention by various countries.<sup>2</sup> According to a comprehensive WHO study, wastes and lack of waste management may cause 32 environmental problems.<sup>3</sup> For example, wastes are directly related to climate change. According to the majority of the world's scientists, climate change is a serious threat to societies, because it has harmful impacts on human health and can cause problems such as strokes as well as respiratory and cardiovascular diseases. So, wastes need to be organized and managed.<sup>4</sup>

Understanding waste prevention behaviors enables local governments and decision makers to adopt effective policies to reduce waste production. Also since the problem of landfill shortage still remains, there is undoubtedly a capacity to manage waste quantities properly and save resources in order to prevent waste production.<sup>5-7</sup> Most of the unwanted materials produced by human activities is excreted as wastes. But a lot of these wastes are reusable and if properly managed, can be a source of energy production and industrial production.<sup>8,9</sup>

One of the most important measures that can be taken to manage solid municipal wastes is waste segregation and recycling, through which some waste components can be reused, and this is economically feasible. How to dispose of and recycle wastes is considered as one of the problems of today's world, and the third world countries as well as developing ones are facing this problem.<sup>10</sup>

Urban solid waste management problem in Iran has specific features. It is mainly related to the life style and culture of the people.<sup>11-13</sup> The most important factor in the success of solid waste management systems programs, especially reduction from the source, recycling, storage at the collection site, and processing, is people's cooperation. Understanding the views of people in the community, identifying their needs, being aware of their points of view, and having knowledge of the status quo are necessary for planning a municipal solid waste program.<sup>5</sup> Lack of knowledge of culture and urbanization, especially in terms of health and environmental protection, and the misconception of waste management as people think they should throw away whatever they do not need anymore, make the integrated management plan unsuccessful. Therefore, culture and public education are of great importance.<sup>14-16</sup> Hence, this study was carried out in 2017, the aim of which was to investigate the knowledge, attitude and performance of the households in Fasa, Iran, about waste segregation.

## Materials and Methods

This descriptive cross-sectional study was conducted

in Fasa city in 2017. The study population consisted of Fasa city citizens who were selected through cluster random sampling. So, according to population density, three centers namely 12 Bahman, Moosa ibn Ja'far and Al-Zahra were selected. Then, one cluster from each center was then selected and from each cluster 50 households were questioned completely randomly. Those who were able to respond to the questions completed the questionnaire. In case they could not respond or were absent, the researchers referred to the next house.

The sample size was determined to be 400 based on the following formula and the study by Amouei et.al, with 95% confidence level and 5% error.<sup>9</sup>

$$n = \frac{Z^2 P(1 - P)}{d^2}$$

The tool used in this study was a four-point scale (Never=0, low=1, moderate=2, high=3) which was essentially a combination of two standard instruments along with the researcher's field studies. First, a questionnaire developed by Ebrahimi et.al, the validity and reliability of which had been confirmed and its Cronbach's alpha was 78%, as well as a questionnaire developed by Amouei et.al, the validity and reliability of which had also been confirmed, were used.<sup>9,17</sup> Considering the research objectives, we used different parts of the two questionnaires for assessing the levels of knowledge, attitude and performance based on the extent of communications. Generally, the questionnaire included the two following sections:

1. Demographic information including gender, age, education, residence place and job.

2. Information on knowledge, attitude and performance: the information in this section was a combination of the two standard questionnaires that were completed with the authors' permission. The number of questions on knowledge, attitude and performance was 10 each. After summing up the questions related to knowledge, attitude and performance of the individuals, and regarding the lack of data normalization, the participants' answers were divided into 3 categories. Less than 50% was classified as weak, 50% to 75% was considered moderate, and over 75% was classified as good answers. To collect the required data, the health volunteers received necessary training on completing the questionnaires. Then they completed the questionnaires by asking the head of each household face to face; otherwise, an informed family member was asked the questions. The data were analyzed using the SPSS-22 software as well as descriptive statistics, Man-Whitney test and one – way ANOVA.

## Results

310 participants in this study were male (72.1%) and 120

ones were female (27.9%). 21 subjects were illiterate (4.9%), 134 ones were lower than diploma (31.2%), 148 ones had a diploma (34.4%), 110 individuals had a Bachelor degree (25.6%), and 17 subjects had a master degree or higher (4%). In terms of job, 102 individuals were employees (23.7%), 69 ones were self-employed (16%), 237 were housewives (55.1%) and 22 were unemployed (5.1%). The mean age of the individuals in this study was  $41.4 \pm 13.0$ ; i.e. at least 13 years old and up to 83 (Table 1).

Table 2 shows the descriptive data and Mean $\pm$ SD of knowledge, attitude and performance (Table2). According to the Mann -Whitney test, there was no significant difference between the mean scores of

knowledge, attitude and performance of the male and female participants.

Table 3 shows the results of the comparison between the mean knowledge, attitude and performance scores based on demographic variables. The one – way ANOVA results indicated that there was no significant difference between occupations in terms of the mean performance score: ( $F=1.656$ ,  $P=0.176$ ). A comparison of the mean scores of attitude in occupational groups showed that there was no significant difference between the mean scores of attitude ( $F=1.895$ ,  $P=0.13$ ). Also the mean scores of knowledge in various occupational groups were significantly different ( $F=2.67$ ,  $P=0.047\%$ ), and Tukey's test indicated that

**Table 1:** Demographic data of the subjects studied

Variable		Number	Percentage
Gender	Male	310	72.1
	Female	120	27.9
Job	Employee	102	33.7
	Free	69	16
	Housewife	237	55.1
	Un employed	22	5.1
	Education	Illiterate	21
	Under diploma	134	31.2
	Diploma	148	34.4
	Bachelor	110	25.6
	Postgraduate	17	4

**Table 2:** Descriptive table. Knowledge, attitude and performance score of the subjects

Variable		Frequency (%)	Mean $\pm$ SD
Knowledge	Poor	188(43.7)	23.46 $\pm$ 5.29
	Moderate	123 (28.6)	
	Good	119 (27.7)	
Attitude	Poor	156 (26.3)	13.49 $\pm$ 3.06
	Moderate	85 (19.3)	
	Good	189 (44)	
Performance	Poor	198 (46)	21.4 $\pm$ 2.6
	Moderate	131 (30.5)	
	Good	101 (23.5)	

**Table 3:** Comparison of mean scores of knowledge, attitude and performance according to demographic variable

Variable		Mean $\pm$ SD		
		Knowledge	Attitude	Performance
Sex	Male	23.3 $\pm$ 5.3	13.6 $\pm$ 3.04	21.4 $\pm$ 2.6
	Female	23.1 $\pm$ 5.3	13.6 $\pm$ 3.1	21.7 $\pm$ 2.48
P		0.24	0.67	0.22
Education	Illiterate	20.45 $\pm$ 5.96	13.88 $\pm$ 2.99	20.80 $\pm$ 2.42
	Under diploma	22.39 $\pm$ 5.61	13.32 $\pm$ 2.92	21.31 $\pm$ 2.39
	Diploma	23.68 $\pm$ 4.73	13.45 $\pm$ 3.06	21.43 $\pm$ 2.52
	Bachelor	24.66 $\pm$ 5.16	13.89 $\pm$ 3.35	21.65 $\pm$ 2.81
	Postgraduate	26.20 $\pm$ 4.17	12.07 $\pm$ 1.73	22.37 $\pm$ 3.51
P		<0.001	0.26	0.37
Job	Employee	24.39 $\pm$ 5.23	14.11 $\pm$ 3.49	21.96 $\pm$ 2.44
	Free	24.34 $\pm$ 4.7	13.47 $\pm$ 2.86	21.27 $\pm$ 2.36
	Housewife	22.83 $\pm$ 5.27	13.28 $\pm$ 2.84	21.31 $\pm$ 2.77
	Un employed	23.2 $\pm$ 6.66	12.77 $\pm$ 3.51	21.25 $\pm$ 2.75
P		0.04	0.13	0.17

the difference was between the illiterate group and the Bachelor and MA ones ( $F=5.45\%$ ,  $P<0.001$ ). Besides, there was a significant difference between the performance scores of different educational groups ( $F=1.06$ ,  $P=0.376$ ). Tuki's post hoc test showed that this difference was between the housewife and the employee groups ( $P=0.008$ ).

## Discussion

The present study aimed to examine the knowledge, attitude and performance of the households in Fasa, Iran, on segregation of solid wastes. The study showed that despite the high levels of knowledge and attitude, the people did not have a good performance, due to their cultural differences. This finding is consistent with the results of some previous studies.<sup>3-5, 8</sup> In a study by Ammoei et.al with the aim of investigating the knowledge, attitude and performance of urban residents of Mazandaran on household management of hazardous solid waste, the families had a good level of knowledge, attitude and performance (75%, 36.7%, and 6.3% , respectively).<sup>3</sup> The results of the study by Malkoutian et.al, entitled knowledge, attitude and performance of people in Kerman city on solid waste management showed that the people in Kerman had good knowledge, attitude and performance in terms of solid waste management (94.3%, 84.3% and 72.4%, respectively).<sup>4</sup> In the study by Mousavi et.al, the level of knowledge and attitude of the housewives in terms of recycling consumable materials was high (88.6% and 97.3%, respectively) , but regarding performance, the recycling of solid waste was inadequate, and almost half of the respondents had a weak performance.<sup>5</sup> In the study by Banga entitled Household knowledge, attitudes and performances in solid waste segregation and recycling in Kampala, it was concluded that despite the families' knowledge on segregation of wastes, their performance was not desirable. That could be consistent with the results of our study.<sup>8</sup>

These results indicated that there was a significant difference between the mean scores of knowledge among the occupational groups.<sup>18-20</sup> This difference was between the employee and housewife groups. The reason for this difference was that employees had higher knowledge than other groups due to their higher education as well as their cultural and social conditions and communications.<sup>21, 22</sup> However, there was no significant difference in attitude and performance in this study. Therefore, it could be concluded that not only providing good knowledge and, consequently, good attitude towards waste segregation would not necessarily lead to proper performance, but it was needed to improve the individuals' performance through some programs beyond educational programs.<sup>23, 24</sup> Citizen encouragement programs, in particular women, would provide strong motivations

for proper waste segregation.<sup>25</sup> Cooperation of other institutions, especially the Municipality and Waste Management Organization, could enhance the success of the program. The lack of people's cooperation and their inappropriate attitudes were among the factors that could play a significant role in implementation of the program.<sup>26, 27</sup>

The results of this study indicated that the mean scores of knowledge in various educational groups were significantly different. This difference was found between the illiterate group and the Bachelor and Master groups. This finding consists with those of previous studies.<sup>11, 12</sup> The results of a study by Ghanadzadeh et.al, entitled the attitude and performance of students and teachers in Arak city about waste management for educational method in 2012 carried out on a sample of 1793 students and 149 teachers showed that there was a significant difference between various levels of education based on the ANOVA test.<sup>11</sup> Their finding is consistent with the results of our study. In a study by Sajjadi et.al in Gonabad, it was concluded that there was a significant relationship between education and knowledge levels.<sup>12</sup>

The results of the present study showed that as aged increased, the level of knowledge decreased. This is consistent with the results of the study by Khodadadi et.al [19]. In their study in Ilam city, Khodadadi et.al concluded that as age grew, knowledge of waste recycling decreased [19]. Also, in a study by Soghra Alhooti and Ali Shams, it was indicated that there was a negative and significant relationship between education, income, the number of family members, and knowledge about prevention of household wastes production. In addition, age, beliefs, social participation, income, responsibility, environmental status and social status, and performance of the households in waste production in rural areas were influential [6].

The result of this study showed that there was no significant difference between the mean scores of attitude and occupation. This finding is inconsistent with those of the study conducted by Sajjadi et.al.<sup>12</sup>

The lack of education about the types and characteristics of waste disposal methods can have adverse effects on humans and environment. Environmental education should start from elementary school, because at this age, children's findings are formed based on what they have been trained. Meanwhile, educational contents can play a critical role.<sup>4</sup> In the present conditions, considering the sanctions and the realization of the resistive economy objectives, segregation and recycling of household wastes is of vital importance not only in terms of health and economy, but also politically. One of the vital requirements in this regard is collaborative efforts. Training people on recyclable and non-recyclable

wastes<sup>13</sup> can be effective to improve people's behavior and attitudes,<sup>14</sup> and various studies have proved the effectiveness of a variety of educational methods on improving the individuals' knowledge.<sup>6</sup>

The present study showed that there was a direct relationship between the levels of knowledge and performance, so that an increased level of knowledge would lead to increased performance. However, there was no relationship between attitude and performance, and knowledge and attitude. The results of this study are in contrast to those of Mousavi et.al's study in west Gilan.<sup>5</sup>

Considering the presence of 20% recyclable materials such as paper, cartons, plastics, glass and metals, and 7% compostable materials, recycle from origin will be a fundamental change in solid waste management. In this regard, health education as well as increasing the knowledge, attitudes and performance of individuals can have a significant impact on this overall policy of the country, which is resistive economy.

## Conclusion

In conclusion, the findings of this study showed that the levels of knowledge, attitude and performance of the people in Fasa city about waste segregation were moderate and low. To increase the levels of knowledge, attitude and performance, health education programs and various educational methods such as mass media, local general training, and pamphlet can lead to changes in people's knowledge, attitude and performance for the optimal use of household wastes.

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