

Health literacy of Kerman Medical University, school of public health students about recycling solid waste

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ABSTRACT

Introduction: The increasing trend in waste production and its improper disposal in the environment have led to mismanagement of national resources and hazards to the natural environment. Therefore the recycling of solid waste can help prevent economic and bioenvironmental disasters. The aim of this study was to evaluate the health literacy of the student of the Kerman Public Health School, about the management and recycling of solid waste. **Methods:** This was a cross-sectional study and the target population was all of the students of the Kerman Public Health School (421 students), in five fields. A questionnaire including demographic and health literacy questions was distributed among the students. **Results:** The male students answered the questions significantly more than female students ($P < 0.001$). The Environmental Health students acquired a higher score than all other students and health literacy significantly increased as the student's studying degree promoted ($P < 0.001$). Also as the number of trimesters increased, health literacy significantly increased ($P < 0.001$). The parents' education, the family income and number of people in the family had no significant effect on health literacy. All students believed recycling is important and more than 50% had acquired their knowledge from their academics. **Conclusion:** This survey showed that students in health related fields although confirm its necessity, but need more education in health literacy as they are supposed to be the promoters of public health in the society in the near future.

Key words: Health literacy, Kerman, students, recycling, waste

INTRODUCTION

The quick increase in world population, development of industries, progresses in technology and the culture of

consumerism and therefore producing more waste is one of the issues that has led to economical and social crises in human populations.^[1,2]

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In Iran similar to other countries due to the lack of infrastructure and resources, the increase in urban solid waste had led to several problems in which can endanger the environmental and human health. Therefore, it seems necessary to frame programs and sustained policies to collect, transport, dispose, separate and recycle solid waste. Implementing applicable regulations for resolving this issue can save human societies from the problems originating from nonhygienic disposal such as the production and dissemination of gases and the production and penetration of leachate to underground and surface water resources.^[3,4]

In many developed countries such as Germany, Switzerland, Japan and the U.S. regulations have been passed in which

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factories have been obliged to supply a part of their raw material from recycled material.^[3]

In addition to the technical aspect for success in recycling, the cooperation of people and authorities and also the cultural structure of the society are important; because the first and most important step in recycling is the separation of recyclable waste from the production site. Increasing people's knowledge and encouraging them to separate solid waste, decreases the expenses of recycling and also increases the quality of some recyclable material such as paper.^[4] The increasing amount of waste including paper and cardboard and the improper disposal of them in the environment and neglecting recycling, leads to waste of national and natural resources.

Recycling is a process in which the valuable material in waste is separated and collected and then is used as raw material for producing new products. The physical analysis of urban wastes shows that in most situations, the dry recyclable components in urban waste include plastic, paper, cardboard, glass, metals, textile and dry bread. Some studies have shown that from the total amount of used paper and cardboard, up to 80% of it is recyclable and can be used again.^[5] Material recycling is important in every society in order to reduce the usage of natural resources and reduce the amount of solid waste production.^[6] However, it still needs proper programming. One of these programs is increasing people's health literacy. Health literacy is a person's capacity to acquire, describe and understand the basic information of health services which is appropriate for decision making.^[7] Culture and ethnicity are among the factors which effect health. Family, society and culture have an important effect in forming attitudes and beliefs and the interaction of people with the health system. Research has shown that the levels of health literacy is related with age, income and the number of years of formal education.^[7,8]

Students, especially in health-related fields, have the important responsibility of increasing the societies health literacy in the future, therefore one of the aims of this study is to evaluate the health literacy of these students in order to suggest appropriate educational initiatives for increasing solid waste recycling knowledge among this group and eventually the greater society.

MATERIALS AND METHODS

This study was done as a descriptive cross-sectional study for evaluating the health literacy of the students of the School of Public Health about the recycling of solid waste and its management. The population under study was all of students of the School of Public Health at Kerman Medical University (421 students) in five groups:

1. Health Services and Health Education students (Bachelors)
2. Biostatistics and Epidemiology students (Masters and Doctorate)
3. Nutrition students (Bachelors)

4. Environmental Health students (Bachelors and Masters)
5. Occupational Health students (Bachelors and Masters)

All different entrances (from semester 1 to last semester) were included in the study. In order to evaluate the health literacy of students a questionnaire including two parts, first demographic information (8 question) and then health literacy (10 questions) about the recycling of solid waste; in which its validity and reliability was approved in a pilot study was distributed among the students. The validity was approved by experts opinion and for testing its reliability and high repeatability the questionnaires were distributed two times for 10% of the population and the results showed a significant ($P = 0.001$) and high correlation ($r = 0.86$). The results of these questionnaires were analyzed by the SPSS software and by t-test and ANOVA at the 0.05 level.

RESULTS

In our study 23% (97 people) were male and the male students had significantly ($P < 0.001$) more correct answers in comparison to the female students.

Among the different fields of health, 39.4% of the population was environmental engineering students. These students had an average score of 6.46 (from 10) and the highest score in comparison to the other fields. Occupational Health students were 26.6% of our population and acquired an average score of 5.4, the Nutrition students got 4.98, the Public Health students got 4.87 and the Epidemiology and Statistic students got 4.54 in order of decreased score. The difference in health literacy between these groups was significant ($P < 0.001$). Our study also showed the degree the students were studying for was effective on their health literacy. As it can be seen in Table 1 as the degree increase (except the degree of doctorate in Epidemiology) the health literacy of the students increase significantly ($P < 0.001$). It does seem for students studying a PhD in Epidemiology, as their studies are completely professional, they have less knowledge about health literacy in comparison to bachelor and Master Students. The results in Table 1 also shows that the increase in studied semesters is also effective in increasing the knowledge and health literacy of students ($P = 0.001$). The decrease in health literacy in the 5th and 6th semester is probably because only bachelor students were studying in these semesters (Master has only up to 4 semesters). However, as it can be seen in the Table, health literacy in the 6th semesters is more than the 5th semester. On the other side as it can be seen in the Table 1, the parents education ($P = 0.30$, $P = 0.34$), the family income ($P = 0.35$) and the number of family members ($P = 0.89$) did not show a significant association with health literacy. According to the results the province of residence showed a significant association with solid waste recycling health literacy and the difference between provinces was significant ($P = 0.001$). [Figure 1]

According to the study results all of the students (in all fields and degrees) believed that the recycling of solid waste should be done and more than 50% of the students at the School

Table 1: The demographic characteristics of the participants, the mean health literacy in each group and the *P*-values of comparison

Parameter	Subgroup	Number	Mean±SD	<i>P</i> - value
Field of study	Environmental health	112	6.46±1.85	<i>P</i> < 0.001
	Occupational health	166	5.4±1.97	
	Public health	85	4.87±1.65	
	Nutrition	45	4.9±1.53	
	Epidemiology and Biostatistics	13	4.53±1.8	
Degree studying for	Bachelor	385	5.55±1.86	<i>P</i> < 0.001
	Master	31	7.06±2.2	
	PhD	5	4±1.7	
Number of semesters passed	0	36	4±1.2	<i>P</i> < 0.001
	1	99	4.7±2.2	
	3	84	5.67±1.76	
	4	23	7.2±1.2	
	5	120	6.1±1.6	
	6	59	6.5±1.6	
Gender	Male	97	6.4±2	<i>P</i> < 0.001
	Female	324	5.42±1.86	
Fathers education	Under Diploma	166	5.7±1.88	<i>P</i> = 0.34
	Diploma	174	5.7±1.9	
	University Degree	78	5.4±1.9	
Mothers education	Under Diploma	205	5.72±1.95	<i>P</i> = 0.3
	Diploma	147	5.73±1.88	
	University Degree	61	5.3±1.93	
Family income (in Tomans)	<500/000	116	5.46±1.84	<i>P</i> = 0.33
	500/000-700/000	186	5.6±2.08	
	700/000-1/000/000	93	5.93±1.76	
	>1/000/000	24	5.46±1.93	
Province of residence	Kerman	205	5.75±1.88	<i>P</i> = 0.001
	Fars	93	5±1.8	
	Yazd	34	5.53±1.62	
	Other	89	6.1±2.15	
Number of family members	<3	82	5.78±2	<i>P</i> = 0.89
	3-5	193	5.6±1.95	
	5-7	110	5.63±1.9	
	>7	36	5.53±1.75	

of the Public Health at Kerman Medical University had gained their knowledge about solid waste recycling from their lecturers and academics [Figure 2].

DISCUSSION

The quantity and quality of solid waste production has changed dramatically due to improvements in science and technology. One of the important and basic steps in the management of solid waste is recycling which has economical and environmental benefits.^[2] For example, recycling one of ton of used paper can save cutting 17 forest trees. Also the recycling industry can create jobs from buying and selling recycled material.^[5] Certainly success in recycling waste needs increasing people's information and knowledge about this issue.

Unfortunately the number of studies about health literacy and knowledge about recycling solid waste is very limited. A study

done in 2008 in Zanjan among the students of Zanjan medical school showed that the female students had more knowledge about solid waste recycling than boys.^[4] However, in our study male students had significantly higher health literacy in comparison to girls and we can guess that these different results can be due to differences in culture, customs, ethnicity, province of residence, etc.^[7] Our study confirms that students from different provinces knew differently about recycling solid waste.

The results of the Zanjan study showed that 65% of the students had enough knowledge about recycling and separation of solid waste and about 73% had acquired their knowledge about recycling from radio and television. Therefore the authors suggested in order to succeed in recycling solid waste, there needs to be proper educational programs through the mass media for increasing people's knowledge and cooperation in recycling solid waste.^[4]

In the Zanjan study similar to our study the environmental

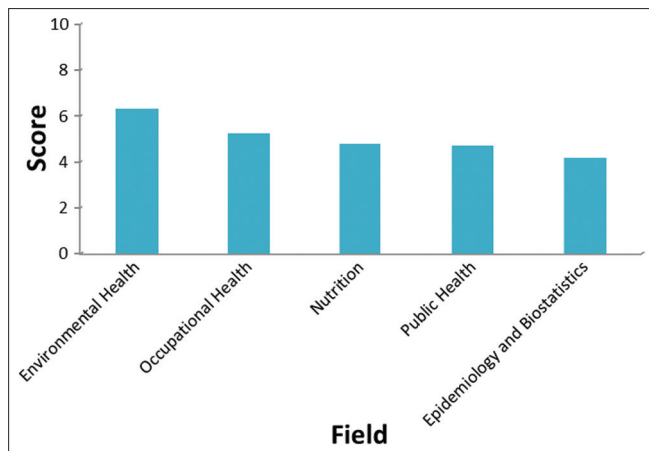


Figure 1: Health literacy of students in different fields

health students had the highest knowledge about recycling and managing solid waste,^[4] which was predictable. Also in another study the student of Civil Engineering, Environmental Sciences and Chemistry had more information about solid waste recycling in comparison to other engineering students,^[6] and this fact is probably due to the more related course work that these students pass their for degree, because not only Environmental Health Engineering students but also Civil Engineering, Environmental Sciences and Chemistry students pass courses related to environmental contamination prevention.

In summary, according to the study we conducted the students at the School of Public Health of Kerman Medical University had average health literacy about recycling solid waste, and therefore it is not irrational to conclude that the general society has even less knowledge about this issue. According to the results, although the students of environmental health engineering acquired 6.46 (from 10) that was the highest score in comparison to the other fields of health sciences, but because after graduation these individuals have the heavy responsibility of educating the society and applying the basics of recycling, there does seem to be a necessity for more programming and more intense education in this field.

REFERENCES

1. Baghiani Moghdam MH, Ehrampoosh MH, Ghaemmohammadi V.

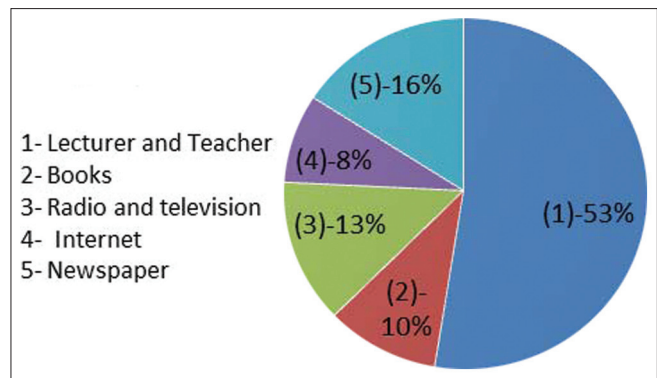


Figure 2: The information sources of students for familiarity with recycling solid waste

Knowledge, attitude and performance of students in the field of recycling and waste removal martyr Sadoughi. Tehran, Iran: Proceedings of Eighth National Conference on Environmental Health; 1384.

2. Dehghani MH, Dehghanifard E, Aazam K, Asgari AR, Baneshi MM. Qualitative and quantitative study the potential recycling of solid wastes in Tehran. *Sci Health Q* 1388;4:40-4.

3. Ghahremani F, Mohebi M, Najafi HR. Knowledge and how people working in recycling plastics from household waste Shiraz 1386. Proceedings of the Twelfth National Conference on Environmental Health; 1388. p. 1862-9.

4. Bagheri M, Nabiee A, Eslami A. Knowledge and attitudes of Zanjan university of medical sciences in the field of solid waste separation and recycling in 1385-1386. Hamedan, Iran: Article Tenth National Conference on Environmental Health; 1386. p. 10-8.

5. Farzadkia M, Divand A, Taghdisi MH. Assess economic and environmental aspects of recycling paper and cardboard waste from the city of Isfahan. *Tabib East* 1387;10:237-46.

6. Raghimi M, Shahpasandzadeh M, Yaghmaee F, Gholipour M. Physical decomposition of solid household waste recycling with a view to it (sample: Gorgan). *Agric Sci Nat Resour* 1385;13:172-8.

7. Tehrani Banihashemi SA, Amirkhani MA, Haghdoost AA, Alavian SM, Asgharifard H, Baradaran H, *et al.* Health literacy in the five provinces of the country and its effective factors. *Journal of Medical Education Development Center*, 1386:4(1):1-9.

8. Alavimogadam MR, Delbari A. Evaluation of undergraduate student awareness of the subject solid waste management in the environment. *J Technol Educ* 1388;3:309-14.

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