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Research Article

Assessment of Environmentally Responsible Health-Oriented Behaviors in Students

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Abstract

Background & Objective: Changing people's attitude toward the environment is an important approach to the prevention of environmental damages. The present study aimed to evaluate environmentally responsible health-oriented behaviors in students.

Materials and Methods: This research was performed on 360 medical students (180 males and 180 females) who were selected via stratified random sampling. Data were collected using a responsible environmental behaviors questionnaire. Data analysis was performed in SPSS version 21 using linear regression analysis and Pearson's correlation-coefficient.

Results: The scores of the environmental attitude, environmental knowledge, and environmental behaviors of the participants were estimated at 52.63±5.74, 74.43±5.99, and 103.37±11.51, respectively. An insignificant correlation was observed between the environmental knowledge and environmental behaviors of the students (r=0.07; P=0.20). However, the correlation-coefficient between the environmental attitude and environmental behaviors of the students was positive and significant (r=-0.54; P<0.001). A negative, significant correlation was also denoted between the environmental knowledge and environmental attitude of the students (r=-0.39; P<0.001).

Conclusion: Despite relatively poor environmental awareness and attitude, the majority of the students had proper environmental behaviors. Therefore, it seems that having an environmentally responsible behavior does not rely on environmental attitude and knowledge. In fact, behaviors influenced by social conditions and structure encourage and facilitate environmental behaviors.

Keywords:
Environmental Knowledge; Environmental Attitude; Environmental Behavior

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Introduction

Today, environmental changes are one of the most considerable economic and social challenges, and numerous environmental problems are caused by people's unfavorable attitude toward the environment [1] Therefore, environmental concerns have become a social issue, and several studies have been focused on the attitudes, values, and behaviors of individuals based on environmental sociology [2]

Environmentally responsible behaviors (ERBs) refer to the reactions and responses of community members to the environment, which encompass a wide range of emotions, inclinations, and specific preparations for environmental behaviors. People of each community have a different attitude toward the environment depending on their social and cultural conditions and needs. These behaviors may either be environmentally destructive and completely negative or environmentally friendly and completely positive [3]. Humans have destroyed the environment with their anti-environmental behaviors, thereby causing an alarming threat. Human errors as a result of activity on land are among the main causes of environmental degradation. Therefore, correcting people's attitudes toward environmental dimensions may prevent environmental damages [4].

Another cause of inattention to environmental protection is the public ignorance of environmental harm, which requires purposeful, coordinated, and unified awareness. Environmental issues primarily emerge as a threat to the individual health of humans and are associated with irreversible outcomes. Furthermore, environmental damages affect economic, social, and cultural development in the community. This particular issue has led to greater general concerns regarding environmental hazards [5] which could be eliminated through adherence to environmentally friendly behaviors in order to pave the way for the development of communities and decreasing environmental failures. Increasing knowledge, changing values, and empowerment are required to encourage and increase the participation of students in environmentally protective behaviors, so that the proper foundation would be laid for creating solidarity and coordination between students and the environment [6].

From the perspective of environmental education, improving the knowledge and attitude of an individual toward environmental values is an effective approach to changing their ERBs [7]. In a research in this regard, Wee et al. (2017) evaluated the association between Malaysian students' knowledge and attitude toward environmental issues. According to the obtained results, these variables shaped the behavior of the students, and a positive, significant correlation was observed between the two variables [8]. In another study, Ahmad et al. (2015) assessed students' knowledge, attitude, and performance, reporting that the respondents had an acceptable level of knowledge about environmental issues. Nevertheless, they were significantly incapable of accommodating environmentally-friendly approaches in planning their daily activities. [9]

In a research conducted in Hong Kong, Tam and Chan (2017) investigated environmental behaviors and concerns in different countries, reporting lower and higher levels of environmental concerns in the societies where there was less distrust, belief in external control, and belief in order, as well as in the countries where individualism was pervasive [10]. Meanwhile, Rodríguez-Barreiro et al. (2013) focused on the environmental attitudes of the graduates of the University of Zaragoza in Spain and their relationship with environmental behaviors. Their findings were indicative of the favorable environmental attitude of the graduates in this regard as the participants paid great attention to environmental education. Moreover, the environmental behaviors of the subjects had become a daily and familial habit. While environmental education is recognized as an integral part of pro-environment behaviors, it is not sufficient for this purpose. As such, we must encourage attitudes toward environmental protection to improve such behaviors. To realize this goal, the academic community must lay the groundwork for environmental training and education [11].

In a study in this regard, Molina et al. (2013) evaluated the environmental knowledge of students and the influential factors in their environmental behaviors in countries with different levels of development. The results of the mentioned study indicated a difference between developed and developing countries in terms of external factors (culture, environmental constructs, and available services), which played a key role in the students' environmental behaviors. In addition, the variables of gender and psychology were identified as the determinants of environmental behaviors in both groups of countries. Meanwhile, no significant associations were denoted between environmental attitudes and non-official training with environmental behaviors[12]. As is observed, environmental knowledge and attitude have been the main variables evaluated in previous studies, with an emphasis on the impact of different factors on environmental behaviors. The previous studies in this regard have rarely recognized environmental knowledge as a sufficient factor for adherence to ERBs[13], denoting that environmental knowledge is essential to the observance of environmental behaviors while not sufficient since cultural factors may also act as barriers in this regard [14]. These studies have mainly identified environmental knowledge as a prerequisite for environmental attitude and concerns, and people's attitude toward the environment is shaped based on their knowledge of the environment. This linear correlation between environmental knowledge and environmental attitude could also be observed in the oldest patterns of environmental behaviors. This change in attitude leads to behavioral changes and directing the society toward environmental sustainability. Therefore, while knowledge may not have an absolute direct effect on behavior, it enhances other mechanisms such as attitude, thereby facilitating behavioral change. [15 ,16]

So far, it could be inferred that recognizing the views and general knowledge of community members regarding environmental issues is paramount since knowledge and attitudes affect behavior and performance in most cases. Correspondingly, our primary objective was to understand environmental behaviors to gain a new perspective and further assist the research in the field of environmental behaviors. Identifying and explaining the environmental behaviors of academics as an informed and influential circle of the society are fundamental to policymaking and educating a generation that is aware of the environment and its hazards through acknowledging and modifying environmental policies.

With this background, the present study aimed to evaluate the ERBs of the students of Kermanshah University of Medical Sciences (KUMS), Iran.

Materials and Methods

This descriptive-correlational study was conducted on the students of KUMS (n=4,200), and 360 students (180 females and 180 males) were selected via stratified random sampling after segregation based on their school and gender. Data were collected using the standard questionnaire by Milfort, Duckitt, and Wagner (2010), [17] which has been previously used in Iran [18]. Data analysis was performed in SPSS version 21 using linear regression analysis and Pearson's correlation-coefficient.

Results

According to the descriptive results, 50% of the subjects (n=180) were female, and the remaining were male. In terms of education level, 44% of the participants (n=159) had a BSc, and the majority of the subjects (22%) were from the School of Nursing and Midwifery (Table 1).

Table 1. Demographic characteristics of the studied students

Percentage	Abundance	Categories	Variable
50	180	woman	Gender
50	180	Men	
19.4	70	Hygiene	School of study
19.4	70	Paramedical	
22.2	80	Nursing and Midwifery	
13.9	50	medical	
11.1	40	Pharmacology	
13.9	50	Dentistry	
9.7	35	Associate Degree	Major
44.2	159	expert	
7.2	26	Masters	
13.9	50	medical	
11.1	40	Pharmacology	
13.0	50	Dentistry	

The mean score of ERBs was 63.67±4.88, and the mean scores of environmental attitude and environmental knowledge were 25.79±4.08 and 18.62±1.99, respectively. Table 2

Our findings were indicative of an insignificant correlation between the environmental knowledge and environmental behaviors of the students (r=0.07; P=0.20). On the other hand, a positive, significant correlation was denoted between the environmental attitude and environmental behaviors of the participants (r=-0.54; P<0.0001) table 3. A negative, significant association was also observed between the environmental knowledge and environmental attitude of the students (r=-0.39; P<0.001).

We applied linear regression analysis to evaluate the correlations between the students' environmental behaviors and variables of gender, attitude, knowledge, education level, and medical school. In the first stage, we investigated the correlations between the independent variables and the dependent variable, and the effects of these variables were also adjusted by multivariate analysis in case of a significant correlation. According to the multivariate linear regression analysis and the univariate analysis, the students' environmental behaviors was significantly correlated with the variables of gender, attitude, education level, and medical school (P <0.05). The effects of these variables were modified by multivariate analysis.

Table 2. Mean (standard deviation) of the total score of the variable of environmentally responsible behavior, attitude and environmental knowledge

Maximum	Minimum	Standard deviation	Mean	Scale
130	79	11.51	103.37	Total score of environmental behaviors
65	39	5.74	52.63	Total score of environmental attitude
53	27	5.99	43.74	Total score of environmental knowledge

Table 3. Shows the relationship between variables using Pearson correlation coefficient

Knowledge	theory	Behavior	Variables
0.07	-0.54	1	Environmental behaviors
-0.39	1	-0.54	Environmental attitude
1	-0.39	0.07	Environmental knowledge

After the modification of the gender variable, the significant associations remained between the environmental behavior scores and variables of attitude and education level, and the environmental behavior scores of the medical and dental students were 4.91 and 7.18 units higher compared to the students with an associate degree (reference category) (Table 4). In addition, a significant correlation was denoted between the students' environmental behaviors and their attitude, so that a one-unit increase in the environmental attitude score increased the environmental behavior score by 0.97 units (Table 4). According to the regression model, these variables explained approximately 35% of the variance of the students' environmental behavior score (dependent variable).

Table 4. Multivariate Regression Analysis of Correlations between Environmental Behavior Score and Demographic Characteristics, Knowledge, and Environmental Attitude (n=360)

justified				Not adjusted				Variable
P-Value	Beta	SE	B	*P*-Value	Beta	SE	b	
0.001	0.49	0.08	0.97	0.001	0.54	0.1	1.07	Attitude
----	----	-----	----	0.208	0.067	0.010	0.13	Knowledge
----	----	----	Reference category	----	----	----	Reference category	woman Gender
0.922	-0.01	1.11	-0.11	0.38	-0.11	1.21	-2.51	Man
-----	----	----	Reference category	----	----	----	Reference category	School of study Health
				.999	1.9	1.15	3.15	Nursing and Midwifery
				0.963	0/01	1.12	0.05	Paramedical
				00.003	0.19	2.16	6.55	medical
				00.001	0.21	2.18	7.54	Pharmacology
				0.001	0. 31	2.60	10.27	Dentistry
----	----	----	Reference category	----	----	----	Reference category	education know-how
0.236	-0.03	0.62	0.76	.117	-0.8	1.12	-1.76	Expert
0.199	-0.031	1.6	-1.37	0.011	-0/09	1.74	-4.42	Masters
0.010	0.015	1.89	4.91	0.036	.14	2.23	4.74	Medical
0072	0.11	2.07	3.73	00.012	.15	2.25	5.72	Pharmacology
0.005	0.22	2.56	7.18	0.002	1.25	2.66	8.46	Dentistry

Dependent variable: Environmental behaviors / 0.35 Adjusted R^2 = / * Deleted due to alignment

Discussion

The present study aimed to evaluate ERBs in medical students by assessing two important components of environmental knowledge and attitude, which affect environmental behavior. The obtained results showed significant correlations between the students' environmental behaviors and their knowledge and awareness. Accordingly, increased environmental knowledge and awareness was associated with more environmentally conscious behaviors in the students, as well as their higher inclination toward environmental protection. In addition, the correlation-coefficient between the environmental attitude and environmental behaviors of the students was positive and moderate. Moreover, significant associations were denoted between the mentioned variables. In this regard, our findings are in line with the results obtained by Wee et al. (2017), Ahmad et al. (2015), Tam and Chan (2017), Rodríguez-Barreiro et al. (2013), and Molina et al. (2013) [8,9,10,11,12].

Inconsistent with our findings, Akomolafe (2011) evaluated the influential factors in the environmental education of 539 students, reporting an unfavorable attitude toward environmental issues in the sample population. Moreover, parental gender and education level and educational institution had no impact on the environmental behaviors of the students.[19] The discrepancy between these findings might be due to the fact that people's behaviors toward environmental protection cannot be predicted through the mere understanding of their accepted environmental values, as well as environmental knowledge and attitudes. Therefore, an assessment of other social and environmental factors is required to identify citizens' environmental behaviors. Some researchers believe that novel environmental approaches are primarily beneficial for determining our attitude toward the environment and may also create a situation where meaningful environmental behaviors could be tracked [20].

According to the results of the present study, the correlation-coefficient between the environmental awareness (knowledge) and environmental behaviors of the students was rather weak, yet positive. Furthermore, no significant correlation was observed between the two variables, which is incongruent with the results obtained by Mifsud (2012) (8), Roczen et al. (2013) (9), Disa et al. (2011) (10), and Molina et al. (2013) (21). On the other hand, our findings are in line with the results obtained by Kumar Sanjay (2013) [21] and Reyes et al. (2010) [22] Kumar Sanjay (2013) evaluated the environmental knowledge of rural people in the Hamirpur region (India), reporting that the environmental knowledge of the participants was low, and there were several barriers to making relevant information available to this community. In the mentioned research, the subjects seemed to have a certain level of environmental awareness, while they did not exhibit any environmental behaviors. In the study by Reyes et al. (2010) regarding local environmental knowledge and education, no significant association was denoted between local and academic knowledge. Therefore, education in this field seemed necessary, and it was concluded that learning could lay the foundation for proenvironmental behaviors.

A possible explanation of the mentioned findings is that the behaviors in the field of environmental protection cannot be predicted through the mere knowledge of the type of environmental values acknowledged by individuals or their environmental knowledge and attitudes. Therefore, an assessment of other social and environmental factors is required to identify the environmental behaviors of citizens. It is likely that the physical characteristics of the natural environment where individuals interact in their daily lives and their attitude toward these places may influence their attitudes and behaviors toward the environment. In general, increased environmental knowledge could change their attitude and performance, thereby leading to effectual environmental policies. On the other hand, the need to recognize the views and assess the general knowledge of the community members about environmental issues is due to the fact that the knowledge and attitude of individuals affect their behaviors in multiple cases [23]. Furthermore, the general knowledge and attitudes of the public toward the environment lay the foundation for enhancing the impact of these variables on the practices in this regard [24]. Therefore, the way we treat planet Earth and its resources will have a profound effect on the climate. If the required actions are not taken, negative environmental changes can severely damage the environment and lower the quality of life of human communities.

One of the most important institutions affecting this issue is higher education since evaluating the most important problems and challenges regarding students' environmental attitude include the tendency to subjectivism and moving away from objectivity, lack of assurance of fairness in the evaluation, and lack of guaranteed security about the results of the evaluation reports of students [25]. Higher

education could obtain environmental information and promote critical and independent thinking in the community [26].

Given the poor environmental knowledge of students, it is recommended that proper solutions be devised in this regard, such as holding environmental camps for cleaning the environment, visiting protected and deteriorated natural resources, holding ceremonies such as planting trees in universities on the occasion of arbor day, discussing environmental issues in the form of influential posters/images, preparing movies/brochures about the environment and presenting them to students, encouraging students to separate garbage in the dormitory, creating and strengthening environmentally-friendly student organizations, holding courses/workshops about the environment, implementing competitions in the field of environment among students, and printing/publishing magazines to raise the environmental awareness of students.

Conclusion

According to the results, factors such as the belief, knowledge, attitude, awareness, and behaviors of humans affect their reaction to the environment. Despite poor environmental attitude and knowledge, the majority of the subjects in our study had suitable ERBs, which highlighted the lack of association between environmental behaviors, environmental attitude, and environmental knowledge. In addition, social constructs and the impact of the situation could be considered to facilitate proenvironment behaviors.

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