

## A Study of the Status of Environmental Health at the Junior High-schools

Reza Rahmanian Koshkaki<sup>1</sup>, Marzieh Kargar Jahromi<sup>2</sup>  
and Afifeh Rahmanian Koshkaki<sup>3\*</sup>

<sup>1</sup>Department of Health, Jahrom University of Medical Sciences, Jahrom, Iran.

<sup>2</sup>Community Health Nursing, Faculty Member, Jahrom University of Medical Science, Jahrom, Iran.

<sup>3</sup>Department of Nursing, Jahrom University of Medical Sciences, Jahrom, Iran.

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One of the most important factors in the education of children is the established physical environment of schools. Proper consideration of the physical, sanitary, and safety issues in educational environments is essential to children's physical and psychological growth and success at learning. The present study is a cross-sectional piece of research conducted on 67 of the junior high-schools of Jahrom, Iran, and addressed the environmental Health of the classes, sanitation, drinking fountains, toilets, light in the classes and restrooms, and buffets. The data collection instrument was the school environmental Health evaluation questionnaire which contains 33 two-choice questions. The collected data were analyzed using SPSS 15, descriptive statistics, chi-square, Kruskal-Wallis, and Fisher's exact test. 53.7% of the schools were newly-built, 46.3% were old, 82% were public, and 18% were private schools. Based on the results and the statistical indexes, there was a significant difference between the old and newly-built schools in terms of environmental Health: the classes in the new schools were in better conditions ( $p < 0.039$ ). Newly-built schools have much more hygienic restrooms: there is a significant relationship between the age of the school building and the sanitary conditions of the restrooms ( $p < 0.009$ ). Overall, the results show that the status of environmental Health is better in new schools than in old schools and the latter need to be renovated.

**Key words:** Environmental Health, junior high-schools.

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The physical environments of schools have a major impact on the education of children. It is essential that the environments of schools satisfy the students' entire physical, psychological, and social needs. A school is a special social environment where students, the future architects of the society, are provided with proper education and training in physically and mentally appropriate surroundings<sup>1,2</sup>. One of the important factors in the protection and development of the health of students is the

environmental Health and safety of schools<sup>3,4</sup>. Among the components of school environmental Health are such sanitary facilities as the drinking fountains, restrooms, the quality of the drinking water, sanitation, garbage disposal, safety of the sports fields and the yards. Failure to consider the state of environmental Health in schools can prove catastrophic<sup>5</sup>: if the principles of environmental Health, e.g. safe drinking water and proper garbage and sewage disposal, are not observed in schools, the students may develop a variety of parasitic, infectious, and diarrheal diseases<sup>6,7</sup>.

Paying attention to physical, health, and safety issues in educational environments is the key to students' healthy physical and

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\* To whom all correspondence should be addressed.  
Tel.: 98-715-4341501;  
E-mail: afifeh61@yahoo.com

psychological growth and academic success<sup>8</sup>. The environmental Health of a school is mostly influenced by its location, the state of the building (facilities), and its sanitary and safety conditions<sup>9</sup>. Since large populations enter and leave schools on a daily basis, the risk of infection is high, hence the need for such facilities as proper provision of drinking water and hygienic restrooms<sup>10</sup>. If a school fails to provide safe drinking water, sanitary restrooms, sufficient space and facilities, and proper sanitation, the educational work of the teachers will definitely be adversely affected; therefore, it is essential that the standards of school environmental Health be observed and a desirable physical environment be provided for the development of a healthy generation<sup>11</sup>.

Revalthy's studies (2003) prove the correlation between the physical environment of schools and students' behavior disorders<sup>12</sup>. The most important barriers to environmental Health in schools are: insufficient per capita educational space, proximity of schools to unhygienic and unsafe places, poor conditions of the old school buildings, unhygienic toilets, sinks, and drinking fountains, unhygienic and unsafe conditions of the classrooms and school yards, inadequate first aid equipment, and unsuitable boards, desks, and seats for the students<sup>13</sup>. A study in Poland shows that substandard conditions in schools, especially in rural areas, often include inadequate light, poor sanitary facilities, unacceptable conditions of the restrooms, and lack of recreational facilities<sup>14</sup>. In their study of the status of environmental Health in the elementary schools of Yasuj, Iran, Raigan Shirazi *et al.* found that more than 72% of the schools had acceptable environmental Health, 45.7% had hygienic drinking fountains, and 44% had hygienic toilets and sinks<sup>15</sup>. Since schools are responsible for educating the future generation, it is necessary that the sanitary and safety issues in schools be treated as important matters. Thus, the present study aims to evaluate the status of environmental Health in the junior high-schools of Jahrom, Iran. Approach Employing the cross-sectional (descriptive-analytical) approach, the study was conducted in 2014 on 67 junior high-schools in Jahrom. The data collection instrument was the school environmental Health evaluation questionnaire, developed by the Ministry of Health of Iran. It contains 33 two-choice questions about

the classrooms, restrooms, drinking fountains, light of the classrooms, sanitary garbage disposal, sewage disposal, toilets, and buffets. Once the data were collected, the questions that were related to the classrooms, restrooms, drinking fountains, light of the classrooms, sanitary garbage disposal, sewage disposal, toilets, and buffets were extracted from the checklist, each question was assigned a code, and the data were entered into SPSS 15. Next, the questions that dealt with the same area were combined and formed a variable for that area—sinks, toilets, etc.; finally, the data were analyzed by descriptive statistics, chi-square, Kruskal–Wallis, and Fisher's exact test.

## MATERIALS AND METHOD

The present study is a cross-sectional piece of research conducted on 67 of the junior high-schools of Jahrom, Iran, and addressed the environmental Health of the classes, sanitation, drinking fountains, toilets, light in the classes and restrooms, and buffets. The data collection instrument was the school environmental Health evaluation questionnaire which contains 33 two-choice questions. The collected data were analyzed using SPSS 15, descriptive statistics, chi-square, Kruskal–Wallis, and Fisher's exact test.

## RESULTS

The sample consisted of 67 of the junior high-schools of Jahrom: 36 (53.7%) of the schools had newly-built buildings, 31 (46.3%) had old buildings, 55 (82%) were public schools and 12 (18%) were private schools. Table 1 shows a comparison between the status of environmental Health in old and new schools based on the items in the school regulations. Table 2 shows a comparison between the status of environmental Health in public and private schools based on the items in the school regulations.

Based on the results and the statistical indexes, there was a significant difference between the old and newly-built schools in terms of environmental Health: the classes in the new schools were in better conditions ( $p < 0.039$ ). Newly-built schools have much more hygienic restrooms: there is a significant relationship between the age of the school building and the sanitary conditions

**Table 1.** A comparison between sanitary conditions of schools based on the age of the buildings

Sanitary conditions	New			Old			Total			
	Frequency of compliance with regulations	%	Frequency of non-compliance with regulations	%	Frequency of non-compliance with regulations	%	Frequency of compliance with regulations	%	Frequency of non-compliance with regulations	%
Acceptable classroom conditions	33	91.6	3	8.4	22	70.9	9	29.1	55	82
Hygienic fountains	25	69.4	11	30.7	21	67.7	10	32.3	46	68.6
Hygienic Toilets	34	94.4	2	5.6	20	64.5	11	35.5	54	80.5
Hygienic Sinks	35	97.2	1	2.8	26	83.8	5	16.2	61	91
Hygienic Sewage disposal	32	88.8	4	11.2	29	93.5	2	6.5	61	91
Hygienic garbage disposal	24	66.6	12	33.4	26	83.8	5	16.2	50	74.6
Sufficient light in classes	34	94.4	2	5.6	27	87	4	13	61	91
Hygienic buffet	32	88.8	4	11.2	24	77.5	7	22.5	56	83.5

**Table 2.** A comparison between sanitary conditions of schools based on ownership

Sanitary conditions	New			Old			Total			
	Frequency of compliance with regulations	%	Frequency of non-compliance with regulations	%	Frequency of compliance with regulations	%	Frequency of non-compliance with regulations	%	Frequency of compliance with regulations	%
Acceptable classroom conditions	45	81.8	10	18.2	12	100	0	0	57	85
Hygienic fountains	39	70.5	16	29.5	11	91.6	1	8.4	50	74.6
Hygienic Toilets	45	81.8	10	18.2	12	100	0	0	57	85
Hygienic Sinks	50	90.9	5	9.1	10	83.3	2	16.7	60	89.5
Hygienic Sewage disposal	52	94.5	3	5.5	10	83.3	2	16.7	62	92.5
Hygienic garbage disposal	45	81.8	10	18.2	12	100	0	0	57	85
Sufficient light in classes	51	92.7	4	7.3	11	91.6	1	8.4	62	92.5
Hygienic buffet	49	89	6	11	10	83.3	2	16.7	59	88

of the restrooms ( $p < 0.009$ ). However, the relationship between the age of the school buildings and the sanitary conditions of the sinks was not significant: the conditions in newly-built schools were not better than in old schools ( $p > 0.083$ ).

In terms of natural light, hygienic sewage and garbage disposal, drinking fountains, and buffets, the difference between the old and newly-built schools was not significant. Moreover, in terms of natural light, hygienic sewage and garbage disposal, drinking fountains, buffets, classroom conditions, and toilets, the difference between the public and private schools was not significant.

### DISCUSSION

The objective of the study was to evaluate the status of environmental Health in the junior high-schools of Jahrom. The results show that the sanitary conditions of the toilets, sinks, and drinking fountains are, respectively, 80.5%, 91%, and 68.6% in compliance with the Health regulations. In their study in 2000, Raigan Shirazi *et al.* found that the sanitary conditions of toilets, sinks, and drinking fountains in the elementary schools of Yasuj were, respectively, 52%, 26%, and 77% in compliance with the Health regulations<sup>16</sup>. In the present study, 36 (53.7%) of the schools had newly-built buildings, 31 (46.3%) had old buildings, and 74.6% of the schools used hygienic methods of garbage disposal. In the study of Hububati *et al.* (2000), it was found that 81.4% of the schools in the city of Yazd had newly-built buildings, and 65.8% of the schools used hygienic methods of garbage disposal<sup>17</sup>.

Similar studies in the cities of Tehran and Sanandaj show that the sanitary conditions are better in newly-built and public schools than in old and private schools<sup>18</sup>. According to the study of Malakoutian *et al.*, 95% of the schools in Kerman used sanitary sewage disposal systems, but in only 66.9% of the cases, the capacity of the septic tanks suited the population of students; this is a potentially dangerous situation and can lead to serious health problems. They also found that 76% of the schools had hygienic trash cans, 90.2% of which schools observed the recommended time intervals for emptying and washing the trash cans<sup>19</sup>.

In the present study, 83.5% of the buffets in the schools complied with article 13 in the foods and cosmetics regulations. A study of the sanitary conditions in the school buffets in Isfahan shows that 46% have poor personal Health conditions and 34% do not comply with the environmental Health standards<sup>20</sup>. The recent increase in children's weights necessitates careful attention to the foods that are sold at schools<sup>21</sup>. In many developed countries, the risk of infectious diseases in students has been significantly reduced through the provision of clean drinking water, adequate food, and proper garbage disposal<sup>22</sup>.

91% of the classes in the present study had sufficient light. It is suggested that the areas of the windows be expanded so that more natural light can enter the rooms. Otherwise, adequate artificial light should be used in the classes. 68.6% of the schools had hygienic drinking fountains; however, in a study in Nigeria, only 50% of the schools had access to safe drinking water<sup>23</sup>. Overall, the results show that the status of environmental Health is better in newly-built schools than in old schools and the latter need to be renovated.

### CONCLUSION

Overall, the results show that the status of environmental Health is better in new schools than in old schools and the latter need to be renovated

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