

Evaluation of the Safety and Environmental Health Status in Schools of Evaz County in 2017

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Abstract

Aims: Attention to physical, health, and safety factors in educational environments is the most effective and fundamental factor for physical and mental growth of the students and their learning. Hence, one of the most important and influential school health issues is environmental health and safety. Accordingly, this study was conducted to study the environmental health and safety of Evaz district schools. **Materials and Methods:** This descriptive cross-sectional study was carried out in 2017 and the conditions of environmental health and safety of 16 schools (elementary, secondary, and high schools) were studied in Evaz County. For this purpose, a checklist with 48 questions was prepared. The checklist was prepared based on the Iranian environmental health of schools standards codes and completed by means of observing and interviewing the authorities and the obtained data were analyzed using the SPSS version 16. **Results:** The conditions of the schools were in an unfavorable status in terms of the healthy storeroom, controlling the insects and rodents, installation electrical safety (insulating) mat under the electrical panels, and installation of handwashing guide. The results showed that there were no pool and fountain, laboratory and workshop, and balcony and terrace in some of those schools. The statistical analysis depicts the significant correlation between the school area and the places for fuel storage and teachers' rest ($P = 0.03$). **Conclusion:** Based on the results the schools of Evaz city were in a favorable status in terms of equipment safety and the building sanitary rules, while the status of individual health and building safety was lower than the standard level. So, such items should be considered for health promotion of such schools.

Keywords: Environmental health, school safety, students

INTRODUCTION

The school is established and is managed as a safe place in the training and development of children's personality, based on sound and appropriate teaching methods, and favorable physical and psychological environment.^[1,2] Attention to the health and safety of students is one of the most important factors in maintaining and improving the health and developing the student talent.^[3,4] By highlighting the importance of paying attention to the health of schools, an essential step can be taken to improve the health and safety of schools.^[5-7]

Important factors that reduce the level of environmental health, safety, and ergonomics in schools are listed as follows: lack of educational places per capita, the proximity of schools to nonsanitary and nonsafety places, the old buildings of school, unhealthy conditions of toilets, washbasins and water fountains, the unsafe condition of classrooms and schoolyard,

the possibility of electric shock, fire, inadequate facilities for first aid, and the inappropriateness of boards, desks, and benches of students.^[8] Inappropriate environmental health conditions in schools can lead to early and late complications for students.^[9] Students may get infected by a variety of parasitic, infectious, and diarrheal diseases if the essential principles of environmental health, such as safe drinking water, proper disposal of sewage, and solid waste are not observed in schools.^[10]

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Reviewing similar studies indicated that schools are not standardized in terms of environmental health and safety. In a study conducted on the boy students of primary schools in Kermanshah city, the disparity between the desk and benches, with the body's dimensions of the students and having at least anomalies in the spine, and skeletal system was reported.^[11] The results of the present study in the cities of Tehran province showed that compliance with school standards was, in many cases, lower than the standard level.^[12,13] The results of the study conducted by Ganji *et al.* in Isfahan showed that in some schools the status of the benches, the intensity of lighting in classes, hallways, restrooms, toilet and library, playground levels, light reflection in the classrooms, the distance between the drinking water and the washbasin, the status of the walls of classrooms, and the waste separation status were not optimal.^[13] Given the importance of the role of environmental health and safety of schools in the flourishing of the student talent, authorities must prioritize this issue and should take executive steps to upgrade health and safety standards of schools. This study was conducted to evaluate the health and safety of schools of Evaz County in 2017.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted in all elementary, secondary, and high schools in Evaz. The data were collected using the school health checklist related to the regulations of the Schools Environmental Health. The checklist includes two sections, in which the first part is related to the general information and the second part is related to the health status of schools which constitutes of 48 questions in four parts, as follows: personal hygiene (2 questions), equipment hygiene (9 items), building health (28 items), and safety (9 questions). Then, the checklist was completed by visiting, direct observation, and in-person interviews with authorities by the environmental health expert. Responses to questions were classified as three options including “in compliance with the regulations,” “lack of compliance with the regulations,” and “does not exist.” To assess the validity, the questionnaire

was given to the members of the faculty and its validity was confirmed by them. Furthermore, the reliability was evaluated before the pilot study and the Cronbach's alpha value was obtained to be 0.75. The data were analyzed using the SPSS version 16 (IBM, New York, USA).

RESULTS

The results of the study showed that of the 16 schools studied, seven of them were primary schools (43.75%), three of them were secondary schools (18.55%), and six of them were high schools (37.5%). The results showed that there were no pond and fountain, dining salon, laboratory, and workshop in some schools. Schools were also evaluated in terms of personal hygiene of staff and symptoms associated with hand sanitation. The results related to the status of schools in terms of individual health are presented in Table 1.

Data analysis in terms of equipment safety of schools in Evaz district showed that most schools were at an acceptable level. The schools studied were suitable and safe regarding cooling and heating systems, and antiseptic and disinfectant solutions. Moreover, maintaining the antiseptic and disinfectant solutions in a separate compartment was at a desirable level. The results of the assessment of other items related to the safety of equipment are shown in Table 2.

Table 3 shows that the majority of schools in terms of building health, except for two in implementing the necessary measures to control insects and rodents, were at the health level. In terms of the source of tap water, waste management with the required qualities such as sanitary waste disposal and timely discharge, covering the yard floor by asphalt or concrete (which prevents the slipping), as well as stairs and ramps with the required properties (stairs with a length of 1.5 m, width of 30 cm, and a height of 18 cm), 100% of the schools studied have met these criteria. Other specifications of schools building from the viewpoint of health are listed in Table 3.

As shown in Table 4, most schools were in poor condition in terms of the majority of safety features, such as having safety

Table 1: The results related to health status of schools of Evaz district from the point of view of individual health

Items inspected	Sanitary, n (%)	Nonsanitary, n (%)	Sum
Using clean and hygienic uniform by staff of pantry	2 (12.5)	14 (87.5)	16
Installation of hand and face washing guide at the location of washbasins	1 (6.2)	15 (93.7)	16

Table 2: The results related to health status of schools of Evaz district from the point of view of equipment safety

Items inspected	Sanitary, n (%)	Nonsanitary, n (%)	Sum
Sink equipped with hot and cold water	13 (81.2)	3 (18.7)	16
Clean and intact dishes at pantry	10 (90.9)	1 (9.1)	11*
Intact table and benches and suitable for the physical dimensions of the students	11 (68.7)	5 (31.2)	16
Markers and chalk with a standard label	15 (93.7)	1 (6.2)	16
First aid box with complete equipment	14 (87.5)	2 (12.5)	16
Implementing the necessary steps to prevent pediculosis: Haircut, bathing	14 (87.5)	2 (12.5)	16

*In some schools, clean and intact dishes at the pantry are not relevant

Table 3: Results of school health status from the view point of building health

Items inspected	Sanitary, <i>n</i> (%)	Nonsanitary, <i>n</i> (%)	Sum
Appropriate school distance from the streets and noisy places	15 (93.7)	1 (6.2)	16
The proportions of the school area with the number of students	15 (93.7)	1 (6.2)	16
Conformity of building map with requirements	15 (93.7)	1 (6.2)	16
Collection and disposal of wastewater according to the sanitary standard	15 (93.7)	1 (6.2)	16
Proper control of insects and rodents: Installing the nets	5 (31.2)	11 (68.7)	16
Toilet: One per 45 persons	9 (56.2)	7 (43.7)	16
Washbasin: One per 60 persons	12 (75)	4 (25)	16
Water fountain: One per 70 persons	12 (81.2)	3 (18.7)	16
Intact and clean floors, walls and ceilings of pantry	7 (46.6)	8 (53.3)	15*
The clean prayer room without unpleasant odor	14 (87.5)	2 (12.5)	16
Ceilings, walls and floors of the classrooms are intact, clean and cleanable	14 (87.5)	2 (12.5)	16
Classroom space is proportional to the number of students: 1.5 m ² per person	14 (87.5)	2 (12.5)	16
Laboratory and workshop have the necessary features: The floor and the wall are covered by the ceramic and tiles	5 (71.4)	2 (28.5)	7*
The walls and ceiling of the auditorium and the health room are intact and clean	14 (93.3)	1 (6.7)	15*
Teachers rest room has the necessary features: Having enough desk and bench	14 (87.5)	2 (12.5)	16
Prohibition of the constructing any balcony terraces associated with the class	10 (62.5)	6 (37.5)	16
Presence a milk storage position	13 (92.8)	1 (7.1)	14*
Proper doors and windows	11 (68.7)	5 (31.2)	16
The suitability of the location of classrooms	15 (93.7)	1 (6.2)	16
The good temperature and humidity of classrooms	15 (93.7)	1 (6.2)	16
Classrooms with proper lighting: Light radiation from the left	15 (93.7)	1 (6.2)	16
Classrooms with air conditioning	14 (87.5)	2 (12.5)	16

*In some schools, some cases such as laboratory and workshop with the required characteristics, i.e., having the floor and the wall covered by ceramic and tiles, having the auditorium and the health room with intact and clean walls and ceiling, having a place for the keeping of milk are not considered

Table 4: Results of health status of Evaz district schools from the viewpoint of safety

Items inspected	Observed, <i>n</i> (%)	Unobserved, <i>n</i> (%)	Sum
Observation of safety tips in laboratories and workshops and playgrounds	8 (66.8)	4 (33.3)	12
Having safety signs and emergency exit	1 (6.2)	15 (93.7)	16
Installation of safety mats under electrical panels and water coolers	3 (18.7)	13 (81.2)	16
Recording the incidents at the relevant office	16 (100)	0	16

In some of the studied schools, some parameters such as the suitable fuel storage location, observance of safety tips in laboratories and workshops, playgrounds, safety signs, and emergency exit points were not of relevance

warning boards and emergency exits, safety mats installed under the electrical panel, and water cooler. About 100% of the schools surveyed observed the requirements in terms of the location of the fuel storage, the fire suppression system, implementation of the measures to prevent noise, implementation of the health system management plan, the prohibition of the installation of the radiation production system, and the recording the accidents in the relevant office [Table 4].

DISCUSSION

The results of this study showed that more than 93% of the schools studied were located in suitable places, i.e., with a suitable distance away from places such as hospitals, factories, poultry houses, and high-rise centers. The status of the schools studied in terms of the healthy pantry, the control of insects and rodents, the installation of electrical safety (insulating) mat under the electrical panels, the installation of the handwashing guide, was in an unfavorable position. In general, based on the

findings of this study, the status of the schools studied was not favorable in terms of environmental health and safety, which can have a negative effect on students' physical, psychological, and social health.

Schools are considered as one of the important places in the formation of the personality and the growth and training of the students; therefore, it is necessary to take into account the standards required for these places. The environmental health and the safety of schools are very important points that need to be considered in schools. Lack of compliance with standards in the buildings of the school causes problems for students. For example, the results of studies have shown that noise pollution can increase the level of stress and reduce the accuracy and learning capacity of students.^[9] Therefore, it should be considered as one of the important factors in determining the location of schools.

Plenty of space should be allocated to schools; according to the standards, the minimum area needed for each student in

the elementary school is 6 m², in the secondary school is 7 m² and in high school is 8 m² which was observed in more than 93% of schools. The study of Golpour *et al.*, showed that low areas for schools lead to close contact of students with together and thus, to increase the incidence of warts.^[14]

In this study, 100% of the schools studied had safe drinking water. The lack of safe drinking water causes an increase in disease. In the study conducted in Tehran, the prevalence of intestinal parasitic infections in elementary school students was 18.4%, which the rate of intestinal parasitic infections decreased when the tap water was used.^[15,16] In a survey on the environmental health and safety status of urban and rural schools of Abadan, 100% of schools had access to piped safe drinking water.^[17] In this study, 81.25% of the schools studied had a water fountain per 70 people, and there was one washbasin per 60 people in 75% of the schools and only 56.25% of schools had a toilet per 45 people. In the study performed in Abadan, more than 93% of schools had a drinking fountain for every 45 pupils.^[17] In the study conducted in Ilam city, 38.1% of the schools had access to sanitary toilets.^[18]

In 100% of schools, the safety tips on cooling and heating devices such as the heater protective fences and cooler valve were considered. In 81.25% of the cases, the stairs and ramps were standard in height, width and length. In 100% of the cases, schools were equipped with a fire suppression system, but only 40% of schools have an emergency exits, which requires more attention of authorities. About 93.53% of schools had favorable conditions in terms of the suitability of the class and in terms of temperature, humidity, and brightness. About 68.58% of the studied schools lacked the nets on the door and window overlooking the outside. This is important in order to prevent the occurrence of intruder insects and the transmission of disease to the classes.

The physical environment in modern education is a living and dynamic factor in student education and training activities. Attention to physical, health, and safety indexes in educational settings is the most effective and fundamental factor for normal physical and mental growth and student learning.^[19] According to the World Health Organization, school health is a set of actions that are implemented and supervised by authorities to identify, provide, maintain, and promote the physical, psychological, and social health of students and school staff who are in a relationship with students. The overall goal of school health is the training and education of healthy and balanced children that can have natural growth and development, without incidence of any mentally, physically, or emotionally disorder.^[20] According to the study of Revalthy, there was a direct relationship between physical features and behavioral problems of students in schools.^[21]

How to design and construct a school and its constituent elements such as color, light, sound, equipment, and schoolyard along with educational and training factors, can have important effects on the health of students.^[20] Lack of sufficient educational space per capita, inadequate

lighting, unhealthy toilet conditions, water fountains and washbasins, unhealthy and unsafe conditions in classrooms and schoolyard, the possibility of electric shock, and inadequate fire and first aid facilities can reduce the level of environmental health and safety at schools.^[22] Studies in Iran have shown that the status of schools in terms of the buffet, water, location and building,^[23] toilet, and washbasins were lower than standards.^[19] In 89.9% of schools drinking water was health, and in 95.96% of schools, the status of sewage was proper. About 76% of schools had sanitary waste management and buffets. In a study conducted in Kerman, 89.9% of schools had safe drinking water; about 95.96% had swage sanitary disposal and 76% of schools had sanitary dustbin and buffet.^[23] In Norabad Mamasani City, the favorable status in terms of handwashing services, toilets, water fountain system, classroom, location of the building, and waste collection system was observed in 84.6%, 76.9%, 84.6%, 76.9%, 57.7%, and 100% of schools, respectively.^[24] In a study conducted in Sanandaj city, collection and disposal of waste was favorable in 42% of the schools, handwashing service was in a good condition in 48% of centers, and 70% of schools were in an acceptable level in terms of water fountain system.^[25] In a study conducted in southeastern Nigeria, a validated school health program evaluation scale (SHPE) was used to assess the environmental health status of primary schools. Water supply, sewage system, solid waste disposal, school building ventilation, lighting, and seating, as well as the availability of toilet tissue, basins for washing hands, and regular cleaning of toilets were addressed. According to the survey, there were only two schools that attained the minimum acceptable SHPE score of 57. Moreover, the score of the private schools was remarkably greater than that of the public.^[26]

With respect to the obtained results and according to the environmental health and safety regulations of schools, most of the schools studied were in a favorable status. However, a poor condition was observed in terms of insects and rodents' control (68.75%), safety electrical mat installed under panels (81.2%), unpleasant appearance status of pantry staff (87.5%), handwashing guide (93.7%), and safety signs and emergency exit (93.7%). According to the results of this study, the partnership between the Ministry of Education and the Ministry of Health and Medical Education should be improved to prevent the occurrence of illness and accident in students and to provide a safe and healthy environment for their growth.

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Conflicts of interest

There are no conflicts of interest.

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