RESEARCH ARTICLE

•Arch Hyg Sci 2017;6(4): 363-369
•Journal Homepage: http://jhygiene.muq.ac.ir

Environmental Health and Safety Status of Schools: Case Study in Paveh City of Kermanshah Province

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A-R-T-I-C-L-EI-N-F-O

Article Notes:
Received: Mar 6, 2017
Received in revised form: Aug 7, 2017
Accepted: Sep 25, 2017
Available Online: Sep 30, 2017

Keywords:
Environmental health
safety
schools
Iran.

A-B-S-T-R-A-C-T

Background & Aims of the Study: A most part of children time is spent in a school environment. Important part of the basic mission of schools is promoting the health and safety. So, assessing the existing conditions is an important factor in promotion and this study conducted to investigate the environmental health and safety status of Paveh city schools in Kermanshah province, Iran.

Materials & Methods: This is a descriptive-cross sectional study and has performed in Paveh city of Kermanshah province. The study population consisted of primary, secondary and high schools of Paveh city. Data have been collected by referring to schools, direct observation and completion of environmental health and safety checklist. Schools conditions were determined according to the environmental health and safety checklist in desirable, semi-desirable and undesirable. The collected data were analyzed, using Excel software, and data means and frequencies sign in tables and were drawn by charts.

Results: From 28 schools which have been visited, 35.6% of school buildings were old and 63.7% of school buildings were new. In the study of all schools, among 8% of them, environmental health status were undesirable, 21% semi-desirable and 71% were desirable; also, safety status among 4% of all schools were undesirable and 21% were semi-desirable and 75% were desirable. Undesirable safety conditions were related to adjacent to waste accumulation areas, brick buildings without footing beam, inappropriate distance of first row bench from the boards and lack of green spaces.

Conclusion: Given the importance of safety in schools, more attention should be paid to this issue. It is essential to compliance with the principles of health and safety in schools; also, any consideration and action in this field can be effective in reducing the risk of many related health problems.

Please cite this article as: Mousavi SA, Faraji M, Mesgaraf H, Abdollahi Z, khaledi L, Kamari F, Janjani H. Environmental Health and Safety Status of Schools: Case Study in Paveh City of Kermanshah Province. Arch Hyg Sci 2017;6(4):363-369.

Background

Today, environmental concern is increasing significantly. As school is one of the places where education should be done, (1) most part of children time is spent in a school (2,3). Human built environment including places such as homes, schools, industrial areas, workplaces, parks, farms and roads affect the physical and mental health (4-6). Physical factors may modify the body response and it is recognized that the poor quality of the school environment can lead to illness and health symptoms. As a result, it causes absence from school and

decreasing the performance while they are at school (3,7).

Indoor air pollution not only affect students' comforts and reduce school attendance and productivity but also increase chances of the development of long and short-term health problems in students and staff in school (8-10).

Lights have important non visual effects on students and inappropriate lighting creating adverse physiological, neurological and psychiatric effects (nervous exhaustion, injuries to the individuals health and vision) (11,12).

Other environmental factors affecting health are: inadequate educational space per capita; unsanitary conditions of toilets, restrooms, drinking fountains; unsanitary conditions of classroom and school grounds, collection and disposal of solid waste; the possibility of electric shock and fire; inadequate first aid facilities and inappropriate blackboards and desks (13).

As an important part of the basic mission of schools is promoting the health and safety (14), assessing the existing conditions is an important factor in promotion that cause researchers assessing the schools conditions; so, Kermani investigated the environmental health and safety status among primary schools and revealed that according to Health Instruction Guide for Schools' Environment, most schools were in the medium levels of standards (15).

Shahriari, in the study of environmental health status of Birjand city of Iran, found that schools status were appropriate in classrooms and hallways, drinking fountains, toilets, waste disposal and sewage disposal; they were inappropriate in buffets, site, building and safety (16).

Khaniki, in environmental health assessment of primary schools in Norabadmamasani city of Iran, reported according to Health Instruction Guide for Schools' Environment, most schools had appropriate and hygiene environmental health status (17)

Aims of the study:

In Paveh city of Kermanshah province, with student population of approximately4 thousand, there are some schools with antiquity over 30 years that may affect the environmental health status and safety; so, the aim of of this study was to investigate the environmental health and safety status of Paveh city schools of Kermanshah province of Iran.

Materials & Methods

This is a descriptive-cross sectional study conducted in 2012-2013 in Paveh city. Paveh is one of the northern cities of Kermanshah province and the Paveh city center. The study population consisted of primary, secondary and high schools of Paveh city. All Paveh city schools (total of 28 schools) were investigated. Data have been collected by referring to schools, direct observation and completion of environmental health and safety checklist. The checklist contains 18 questions to assess environmental health and 24 questions to measure schools safety which was made according to school health regulations. Environmental health and safety of Paveh schools including: Health status of toilet and washbasins, drinking fountains, level of safety and protection, ventilation system, classes lighting conditions, collection and disposal of solid waste status, the suitability of the location of school, suitability of heating and cooling system, having fire extinguishers, an emergency exit and standard of stairs were evaluated. After completion the checklists, schools condition related to environmental health and safety status were determined according to the environmental health and safety checklist in desirable, semi-desirable and undesirable. This means if schools environmental health and safety status compliance with checklist criteria up to (80-100) % the schools status was desirable in term of environmental health and safety, the (60-80) % and less than 60% compliance with checklist criteria were semi-desirable and undesirable, respectively. The collected data were analyzed,

using Excel software, and data means and frequencies sign in tables and were drawn by charts and schools were compared based on compliance with environmental health and safety standards.

Results

The results of Paveh schools environmental health and safety evaluation showed, under the terms of regulations and checklist, from the 28 visited schools, 35.6% of schools building were old and 63.7% of them were new (table 1). In terms of environmental health standards, 20 schools environmental health status were desirable, 6 schools were semi-desirable and 2 schools were undesirable. In term of safety status, 21 schools were desirable and 6 schools were semi-desirable in safety condition (table 2). On this basis, status of toilet and washbasins, sewage and garbage disposal in all schools were healthy and had good brightness and 93% of schools had healthy drinking fountains and 96.4% of schools had inadequate green spaces. Other results separately are described by charts (Figure 1, 2).

Table1) The number of schools based on antiquity building

schools	The number of old school building	Percent (%)	The number of new built schools	Percent (%)
primary schools	4	14.2	7	**25**
Secondary School	3	10.7	3	**10.7**
high schools	3	10.7	8	**28**
total	10	35.6	18	**63.7**

According to table1, most of school building is new built; in other words, 35.6% of school building is old and 63.7% of them were new.

According to table 2, environmental health and safety status of most of schools were desirable and just in 8% and 4% of schools environmental health and safety status were undesirable, respectively. Environmental health and safety status of primary schools in 9% of schools was undesirable. None of the secondary schools were in undesirable conditions in environmental health and safety status. Also, environmental health status was undesirable in 9% of high schools and none of the high schools were in undesirable conditions in safety status.

According to figure1, 54% of schools windows, in accordance with the regulations, are equipped with mesh and in all schools the sewage and waste disposal, toilets and restrooms are in accordance with regulations and are appropriate in terms of the number of students.

According to figure 2, location of schools, classes' area and lighting, height of windows, door and benches are appropriate. Also, 71% and 64% of schools have fire extinguishing and emergency exit, respectively. But green space per student is not suitable in 96% of schools.

Table2) Schools environmental health and safety Status

schools		environmental health Status%			safety Status%		
		desirable	semi-desirable	undesirable	desirable	semi-desirable	undesirable
primary schools		73	18	9	73	18	9
Secondary School		67	33	0	67	33	0
high schools		73	18	9	82	18	0
total	Number	20	6	2	21	6	1
	Percent (%)	71	21	8	75	21	4

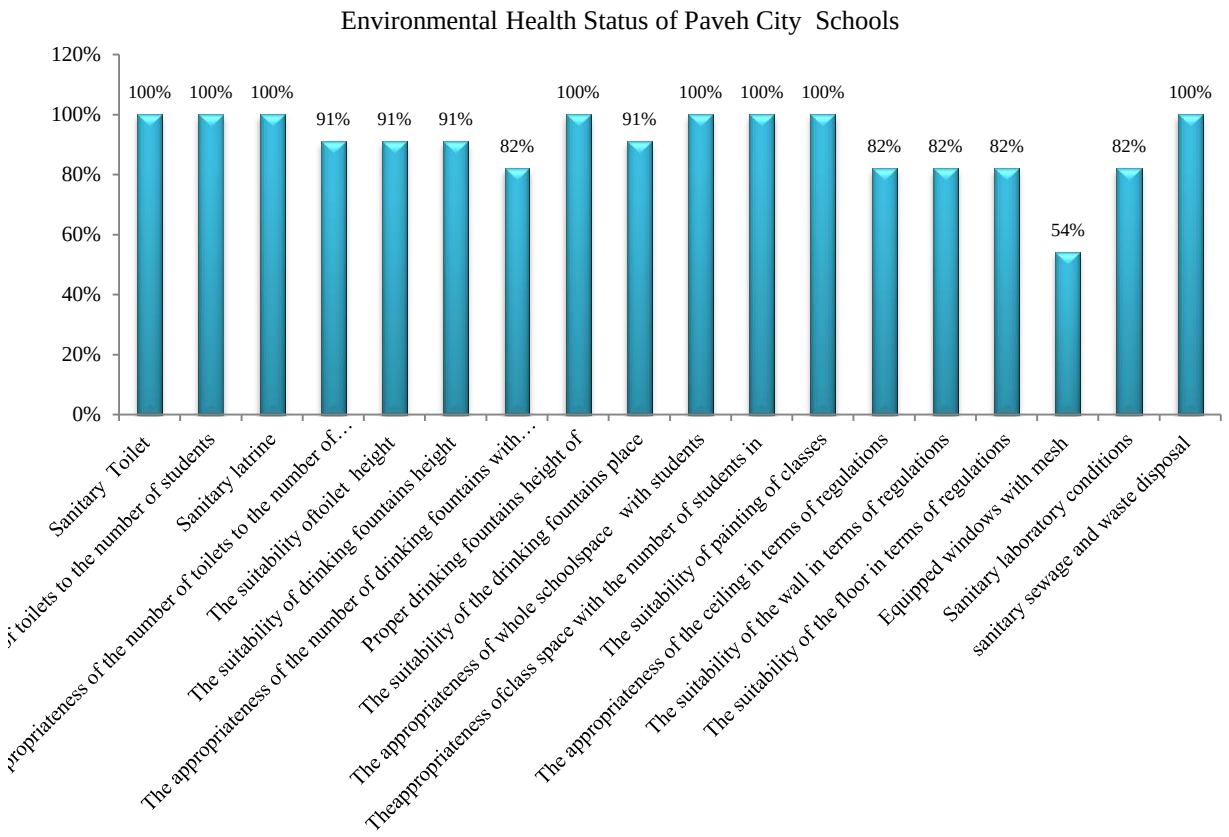

Figure1) Environmental health status of Paveh city schools according to regulations

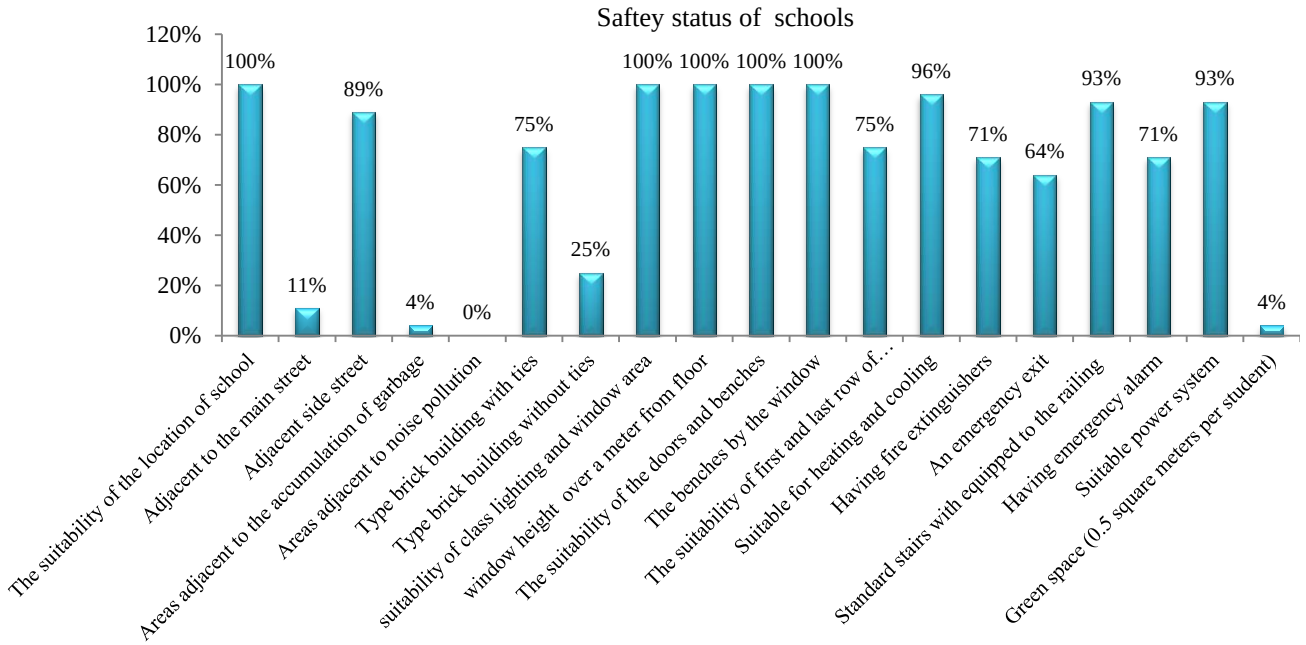

Figure 2) Safety status of Paveh city schools according to regulations

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Discussion

Important part of the basic mission of schools is promoting the health and safety. This study conducted to investigate the environmental health and safety status of Paveh city schools in Kermanshah province. Results showed 35.6% of school building is old and 63.7% of them are new and also the most of new buildings were high schools. But, the health environmental and safety status of high schools were not very better than primary and secondary schools with more old building. JahedKhaniki and colleague in study of primary schools in Norabadmamasani city found that according the Chi-square test ($p>0.05$), between the health status of hand washing services, water fountain system, toilet and classrooms in the old building and new building there was not a significant difference (17). So, based on these studies the new built schools building also need attention in the term of environmental health and safety.

According to study results, 71% of schools environmental health status were desirable. Although, based on this report, most of schools environmental health status were desirable, health and safety of students compared to other organizations should be of great importance and take action to promote the environmental health status in all schools. Because unsuitable healthy condition affected students physical, psychological and social health. Also, building quality affect academic outcome (18). Schools by providing health and safe environment give children the possibility of the physical and mental development (18). According to assessment undesirable and semi desirable condition relate to lack of toilet proportional with the number of students, lack of health drinker fountains and proportional with the number of students, inappropriate height of drinking fountains, and places of drinking fountains, lack of adequate space for the number of students in the whole school and classroom space, inappropriate painting of classes, inappropriate ceiling, walls and floor in terms of regulations, without mesh window and not health laboratory conditions. Other studies have conducted in Iran such as the survey of hygiene and safety physical environment status of primary schools in Shahrekord city (13) and study of hygienic status of schools in Birjand (16) and ergonomic, safety and environmental health status of primary schools in Markazi reported that environmental health and safety status did not have a satisfactory condition and inappropriate condition can be related to supervision, defects in designing, construction, and maintenance of schools, also change in users of schools and culture of safety (19). However, on the basis of Zazouli and colleagues study, the most important thing in non-compliance with health indicators is ignorance or inattention of managers or people responsible to standards (20).

The results showed that all of schools in the city were built in the appropriate location. This is due to the lack of rail, heavy traffic, industrial centers, farms, landfills and other polluting agents in the region. While other studies conducted in Kerman and Markazi provinces of Iran have reported appropriateness of the locations 90 % (21) and 76%, respectively (19).

Results showed that safety status of most of schools are desirable (75%), and undesirable safety conditions related to adjacent to waste accumulation areas, brick buildings without footing beam, inappropriate distance of first row bench from the boards, lack of green spaces (0.5 square meters per student), lack of fire extinguishers, no emergency exit, not standardized stairs, stairs with no railing, no emergency alarm systems and inappropriate cooling system. Results of the study conducted in Khorasan Razavi also showed 13 schools (31%) out of the 42 schools had no good green space and 19 schools (45.2%) had no good condition in healthy water foundations case (22). Although, based on this study, the safety

status of schools is better than the environmental health status but it is important to consider that school appropriate safety can prevent many events. Maitra studies also shows the importance of this subject and based on Maitra studies school injuries occur where the environment is generally unsupervised (23). The study of environmental health and safety of primary and secondary schools in Zabol showed that 63.30% of schools were desirable in terms of safety and given the importance of safety in schools, more attention should be paid to this issue (24). Important point that requires the authorities planning is schools immunization against incidents such as earthquakes. In this study, 75% of schools are adhered in earthquake-safety principles.

Conclusion

Schools should be of great importance compared to other organizations in term of environmental health and safety. According to this study, 71% of schools environmental health status were desirable. Environmental factors influencing physical and mental health and in unfavorable condition students not only have health-related problems but may be encountered educational problems due to decrease in motivation. Therefore, it is essential to compliance with the principles of health and safety in schools and any consideration and action in this field can be effective in reducing the risk of many related health problems. As our results showed the new built schools were not very better than old building in term of health environmental and safety, so, principles and standards should be considered in the designing stage to achive approprate condition for new buildings and in the case of old buildings action to be modified. Also, based on this study, safety status of most of schools (75%) were desirable. However, this safety status is nearly appropriate but achieve to maximum safety must be considered for the schools.

Footnotes

Conflict of Interest:

The authors declared no conflict of interest.

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