

# Evaluation of Environmental Health Indices in Schools of a City in Khorasan Razavi, Iran

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## A-R-T-I-C-L-E I-N-F-O

### Article Notes:

Received: Oct 5, 2013

Received in revised form: Jan 25, 2014

Accepted: March 18, 2014

Available Online: March 20, 2014

### Keywords:

Environment

Health Schools

Indices

Khaf, Iran

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

**Background & Aims of the Study:** Environment health of schools described is one of the primary determinants of students' health. Undoubtedly, physical environment has a very important role on the education efficiency of children in the schools and nobody can neglect the importance. The primary aim of this study was to evaluate conditions of environment health in schools of Khaf City.

**Materials & Methods:** This cross sectional survey was performed in all schools of Khaf city by use a census. The data were collected by a questionnaire. A face to face interview method was used to obtaining the data. Finally, the data were statistically processed by means of Excel and SPSS software.

**Results:** The results of the present study showed that most of schools had good building conditions. But only four schools (9.5%) were equipped with health care services. Also, 13 schools (31%) out of the 42 schools had no good green space. Parameters of physical environment in all school were good. But in healthy water foundations case, 19 schools (45.2%) had no good conditions.

**Conclusions:** The findings of the present survey suggest that poor conditions of healthful environment especially problems regarding safe water supply, can be attributed to lack of authorities knowledge about environment health regulations. In most cases qualitative educational aspects were considered and little attention was paid on qualitative items.

**Please cite this article as:** Naghizadeh A, Motamed Rezaei O, Yari AR. Evaluation of Environmental Health Indices in Schools a City in Khorasan Razavi, Iran. Arch Hyg Sci 2014;3(1):37-43.

## Background

Education in a safe and healthy environment is the personal and social right of every student. A healthy school environment can directly improve the social and mental abilities of students and effective learning and thereby contribute to the development of healthy adults as skilled and productive members of society; therefore, more attention should be paid to this process.

According to the Constitution of the Islamic Republic of Iran, health and treatment facilities

are right of every citizen and the government has the responsibility of providing these facilities. Furthermore, providing physical, mental and social health of students is duty of Ministry of Education under the supervision of Ministry of Health and Medical Education. Schools are places for the education and physical and mental growth of the children. Physical environmental factors, health and safety practices in the schools are of great importance due to their influence on overall wellbeing of students (1).

Providing hygienic facilities and attention to mental and physical wellbeing of students, are of critical needs and have a considerable role in the society health, and recently much attention have been paid to it and many nations are trying to provide healthy environments for effective learning of children in the schools (2). Nearly 60 percent of absenteeism of students from schools are attributed to the prevalence of infectious diseases due to the unhealthy school environment. Lack of hygienic toilets is a factor that threatens health of children in the schools. This can be attributed to restrictions in land availability, location of toilets, and lack of a health care provider in the schools (3).

Safety and environment health, which is briefly described in section four of schools health implementation program of Iran, is in priority importance. School environment should provide physical, mental and social needs of students. Recently great attention has been paid to physical environment of schools. Schools without safe drinking water, toilets, enough educational area, standardized educational facilities, proper system of solid waste management and wastewater collection and disposal systems significantly decrease the learning performance of students (4,5).

Therefore, there are a lot of problems regarding school health across the country, which require comprehensive attention of authorities.

**Aims of the study:** The aim of this study was to study conditions of environment health and safety in schools of Khaf city in 2012.

## Materials & Methods

This paper is a cross sectional survey. The population of this study consisted of all primary, secondary and high schools of Khaf city in 2012. This city has 42 schools, which all selected for this survey. 22 schools were for boys and 20 schools for girls. Also, the numbers of elementary, middle and high schools were 12, 12 and 18, respectively. To gather data, school environment health form,

schools health implementation program of Iran, library studies and other related standards were used.

This questionnaire includes general questions about schools, and questions regarding health conditions, safety of health services, availability of healthy facilities, etc. and their comparison with schools health implementation program of Iran. Three answers were given to each question such as comply with regulations, acceptable and not comply with regulations. After completion of questionnaires, data were entered into a Microsoft excel and analyzed using SPSS software, Chi-square tests and Fisher's exact test ( $\alpha=0.05$ ).

The results of the present study provide guidance that can lead to promotion of healthful environment in the schools and the overall health of children.

## Results

### Characteristics of healthful environment of schools:

All 42 schools of Khaf city including 22(52.4 %) girl schools and 20(47.6 %) boy schools were selected for this study. Also, among these, 12(28.6%) schools were primary, 12 (28.6%) secondary, and 18 (42.9 %) were high schools. 36(85.7 %) schools out of 42 schools had only one floor and 6 (14.3%) had two floors. Also, 20 (47.6 %) and 22 (52.4 %) schools had old and new buildings, respectively. All of these schools were governments' schools.

### Quality and characteristics of schools buildings:

Parameters such as location of the schools and schools area for each student and distance from pollutant sources in all schools were satisfactory. Other items of questionnaire surveyed present in Table 1.

Table 1) Distribution of structure condition in schools of Khaf city

Items	Conditions	Poor (frequency or percent)	Good (frequency or percent)
Compliance of school map with health criteria		0	42 (100)
Area of sleeping room		2 (4.8)	40 (95.2)
Quality of walls, being dry and free of cracks		0	42 (100)
Washability of floors of classes and corridors		0	42 (100)
Kitchen hygiene comply with regulations		1 (2.4)	41 (97.6)
Class boards and charts in suitable place		0	42 (100)
A suitable place to store milk		5 (11.9)	37 (88.1)
1.25 m <sup>2</sup> area for each student		0	42 (100)
Agronomical items		0	42 (100)
Stairs equipped with handrails		0	42 (100)
Place for praying		7 (16.7)	35 (83.3)
School maps and charts		0	42 (100)
Windows equipped with screens		0	42 (100)
Guards provided for windows		2 (4.8)	40 (95.2)
Class of younger students in lower floors		0	42 (100)
Terrace and balcony were banned		0	42 (100)
No disturbance from laboratory and workshop		0	42 (100)
Maximum students in public rooms of school		2 (4.8)	40 (95.2)
Washable and durable desks and floors		0	42 (100)
No standing pool in schoolyards		0	42 (100)
Health care services		38 (90.5)	4 (9.5)
Green space		13 (31)	29 (69)
Schoolyards paved and not slippery		0	42 (100)

### Lighting, temperature and other physical characteristics in classrooms:

Conditions of ventilation, heating and cooling systems in all schools complied with school health implementation program of Iran. Various components of a healthful physical environment such as lighting, temperature in the classrooms, natural humidity, ventilation, use of heating facilities, uniform temperature of classroom by heating systems, proper placing of oil and gas tanks and natural lighting were studied in this survey.

### Drinking water facilities, hand washing arrangements and functioning toilets:

Parameters regarding conditions of safe drinking water in the schools and types of toilets are summarized in Table 2, It can be ascertained that 23.8% of school had unsuitable drinking water facilities. In addition, 45.2 % had no any healthy drinking water facilities. Almost all of these schools had proper wastewater sewers and septic tanks.

**Table 2) Percent distribution of conditions of drinking water and toilets in the schools of Khaf city**

Items	Conditions	poor (frequency or percent)	good (frequency and percent)
Hygienic Drinking fountains		10 (23.8)	32 (76.2)
Height of drinking water fountains		8 (19)	34 (81)
Conditions of drinking water		0	42 (100)
Water storage reservoir is enough		0	42 (100)
Numbers of drinking water fountains		7 (16.7)	35 (83.3)
Volume of stored water		0	42 (100)
Drinking water facilities in schoolyards		19 (45.2)	23 (54.8)
Healthy hand washing arrangements		0	42 (100)
Number of toilets		3 (7.1)	39 (92.9)
Number of hand washing arrangements		3 (7.1)	39 (92.9)
Hygienic toilets		0	42 (100)
Height of hand washing arrangements		2 (4.8)	40 (95.2)
Use of soap in toilets		2 (4.8)	40 (95.2)
Proper disposal of wastewater		0	42 (100)
Volume of septic tank		0	42 (100)

**Solid wastes storage, collection and disposal:**

All of the schools had good conditions regarding storage, collection and disposal of solid wastes. But 12 (28.6%) schools out of 42 schools had no proper waste bins. Also, some bins had no safe lid and pedal that require more attention.

**Safety, health and welfare management system:**

41(97.6 %) schools had hygienic buffets according to schools health implementation program of Iran. Other hygienic parameters in buffets were good. Parameters studied in this survey include food handler card for individuals preparing and handling foods, food handler card for buffet owner, personal hygiene and public health of workplace, wearing clean and bright clothes by food handlers, smoke prohibition, and compliance of foodstuff with Iranian food regulations. All these parameters were observed good.

**Discussion**

This survey was conducted to evaluate the environmental health conditions in schools of Khaf city, Iran. Environment health parameters studied in this survey include:

**Characteristics of healthful environment of schools:**

As noted in the result section, among total 42 schools of Khaf city, 20 (47.7%) schools had new building and 22(52.4%) schools had poorly maintained structures. Characteristics of all new schools complied with school health implementation program of Iran. Zazuoli *et al.* (2008) studied environment health conditions of primary schools in district 1 of Sari city, Iran and found that all schools had new buildings, except two non-government and one government school which had old and poor structures (5).

### Quality and characteristics of schools buildings:

As can be seen in Table 1, locations of all schools are according to schools health implementation program of Iran. Characteristics such as quality of walls (being dry, rigid and free of cracks), quality of floors of classrooms and corridors, suitable placing of school maps charts and boards, required area and space for students, ergonomically criteria, stair handrails providing, problems associated with chemicals in laboratory and noise from school workshops were all surveyed in all of these schools.

All of these conditions were satisfactory in all of the study population. 40 (95.2%) schools had enough area for sleeping. Jovhari conducted a survey in Tehran and revealed that 40 % of schools had insufficient standard area for students which lead to crowded classrooms, proximity to whiteboard, etc. Inadequate indoor environments in the schools may significantly decrease performance of learning (6).

Kitchens hygiene of 41 (97.6%) schools was in agreement with schools health implementation program of Iran. 37 (88.1 %) schools out of 42 schools had a good and healthy place for keeping milk. Also, mosques were available in 35 (88.3%) schools. Shahriari et al. carried out a study regarding environment health status of schools in Birjand city, Iran and reported that only 8.4 % of all studied schools had good conditions with respect to building location and its quality (7). Farsad et al. (2001) in a survey regarding environment health status in schools of Ganjghaleh region of Kerman city, Iran revealed that 57.14% of schools had good buildings (8).

### Lighting, temperature and other physical characteristics in classrooms:

As noted above in the results section, all schools of Khaf city had healthy environment. As students spend much of their day time within classrooms during critical developmental stages, therefore correct lighting of the

classrooms where the education takes place has a significant influence on the students' performance efficiency and their capability to concentrate. Lighting system should be enough for all spaces of classroom especially in front of class and on the students' desks.

Also, ventilation has an important role in the overall health of students. Adequately ventilated classrooms provide a healthy environment for students and avoid respiratory health problems including asthma and allergy attacks. Lack of a properly-operated ventilation system and also a well-designed structure for adequate air circulation are the main problems of many schools in Iran. School health providers have a significant role in the prevention of occurrence of some health problems including respiratory diseases and asthma by regular inspection of ventilation systems and by controlling other health indices. Students should be educated for prevention from asthma, and also students who develop asthma symptoms should be recognized (9). Farsad et al. (2001) in a survey regarding environment health conditions in schools of Ganjghaleh region of Kerman city, Iran revealed that 78.57% of schools had good lighting (8). The results of the present study and also other similar studies shows that there is the possibility of health hazards in many schools due to lack of lighting, inadequate ventilation and poor healthcare facilities (10-12).

### Drinking water facilities, hand washing arrangements and functioning toilets:

Conditions of drinking water fountains, hand washing arrangements and toilets are presented in Table 2. The results showed that drinking water and water tanks were safe and healthy. In Gangi et al. study regarding conditions of environment health in schools of Arak city, Iran, they found that drinking water was safe in all schoolyards and also firefighting water valves were available in the proximity of schools (3).



In our study, 10 schools out of 42 schools had no hygienic drinking water fountains and also in 8 schools the height of drinking water fountains was not standard. Furthermore, in 7 schools the numbers of drinking water fountains was not enough.

In addition, there were no drinking water fountains in schoolyards of 19 schools which require more attention of the local authorities. Alternative use of drinking water fountains and hand washing arrangements and also use of non-standardized fountains in the schools can cause or exacerbate health problems or transmission of various diseases among students.

Shahriari *et al.* carried out a study regarding environment health status of schools in Birjand city, Iran and reported that status of drinking water fountain was not satisfactory in 55.3%, 73.3% and 83.3 % of pre-schools, secondary schools and high schools, respectively (7).

As can be seen in Table 1, number of functioning toilets and hand washing arrangements in 39 (92.9%) schools were enough.

Zazuoli *et al.* (2008) studied the environment health conditions of primary schools in district 1 of Sari city, Iran and found that only 37.8 % of schools had enough functioning toilets to the number of students. Also, they reported that only 36 (80%) schools had enough hand washing arrangements (5). Poor conditions of healthful environment in this study especially problems regarding safe water supply, can be attributed to lack of authorities knowledge regarding environment health standards.

In most cases, qualitative educational aspects were and little attention was paid on qualitative items.

#### **Solid wastes storage, collection and disposal:**

The results of the present survey revealed that storage, collection and disposal of solid wastes in all schools were in a proper manner. Similarly the study of Shahriari *et al.* is in accordance with the present study (7). Also,

this agrees with the finding of Gangi *et al.* (2). But in our study 12 (28.6%) schools out of 42 schools had no safe and hygienic waste bins.

#### **Safety, health and welfare in schools:**

The results of this study revealed that hygienic conditions in all school buffets were good. Hoboobati *et al.* (2001) carried out a study and found that 97% of schools had no hygienic buffets (13).

Ganji *et al.* also reported that 91.43% of schools had no hygienic buffets (2). Due to the significant role of nutrition in overall wellbeing of students, buffets are responsible to offer hygienic foodstuff and beverages. Therefore, more attention is needed to provide safe and healthy food and nutrition for all students as is in schools health implementation program of Iran.

### **Conclusion**

This work seeks to evaluate the conditions of environment health in schools of Khaf city. The results showed that building conditions, physical characteristics, and wastes disposal manner were good in all schools. But drinking water was unsafe and also toilets hygiene was poor, that necessitates more attention of authorities in order to overwhelm the available and future problems in these schools by making comprehensive decisions.

### **Footnotes**

#### **Acknowledgments:**

We would like to say our thanks to the personnel of “Deputy of Research & Technology” for their cooperation.

#### **Funding/Support:**

This study was supported by “Deputy of Research & Technology” at Birjand University of Medical Sciences, Birjand, Iran.

#### **Conflict of Interest:**

The authors declare no conflict of interest.

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