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Research Article

Evaluation of schools environmental health and safety indicators of schools located in Shiraz educations, Shiraz, Iran.

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Short (running) title: schools environmental health indicators in Shiraz

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Authors' contributions

Ahmad Badee Nezhad: He has completed and design questionnaires and efforted to data collection and manuscript preparation and Manuscript preparation

Ahmad Jonidi Jafari: He has worked in the preparation and design of the questionnaire and study design and Final approval

Mohamad Reza Heydariand Amirhossein Davoudian talab: He has worked mainly in statistical analysis and data collection and Manuscript writing

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Background: safety school plays an important role in educating of students. With respect to role of school environmental health in health promotion of society, this study was designed, for assessment of school environmental health and safety indicators of schools located in Shiraz education in 2014 academic year.
Materials and patient: In this descriptive-analytical study, all 86 schools were assessed. Data collection tools were a standard questionnaire that filled by an environmental health expert through interviewing with principal and direct observation inside the schools. The data analysed with SPSS software.
Result: The results showed that the schools do not have enough space per capita. Condition of supplying water, healthy disposal of waste water and firefighting system were ideal (100%). green space capitation were 2/32%. 76.25% of windows had no lacing and 70.9% of the school buildings were dilapidated. According to results of this assessment, 12 schools (13.95%) were in excellent health condition, 46 schools (53.49%) in good conditions, 16 schools (18/6%) in moderate and 12 schools (13.95%) in weak conditions. There wasn't significant difference

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between ownership of schools (state or non-profit) with standard conditions of classrooms (P>0/05), safety and health facilities (P>0.05) and space per capita of school (p>0/05).
Conclusion: result of this study shows that environmental health condition of schools of Shiraz is relatively good, although it should be improved. It requires more attention of responsible organization.

Key words: environmental health, safety school, education

INTRODUCTION

The school is a certain social place that education, training and personality development of children established and managed in it (1). Environmental health of schools includes all activities are being performed in order to supply, keep and improve health level and efflorescent of students' talent (2). Environment of schools should be respond to physical, psychological and social needs of students. (3). In modern education, physical environment has been considered as dynamic and live factor for performing educational and rearing activities for students (4). If there aren't healthy water, WCs, enough and suitable space, tools and equipment, proper garbage and sewage collection system, and generally do not provide a comfortable environment, then educational and rearing activities by teachers wouldn't be useful and efficient. On the other hand it is possible that students became infected to a variety of infectious diseases, diarrhea and parasitic infections (5, 6, and 7). Therefore, improvement of school environmental factors, can affect directly on students and society health (8).

Many researches and studies show relations of these factors with students' health. According to published statistics in 1990 in USA, about 43% of psychological and mental problems and children accident were related to schools and 20% of these accidents were related to school building (9). Study of Lyons et al. showed that many accidents which cause bone fracture in schools can be prevented through changes in environmental conditions (10). In the studies performed by Revalthy et al it was found that there is positive relation between physical environment specifications of schools and behavioral problems of students (11). Results of other studies showed that 21/2% of studied schools were in good environmental health conditions (4). A study on primary school students of Hamedan in 1998-99 academic years showed the incidence of student's accident is about 1/5% (12).

Since that no study has been performed about environmental health of schools in Shiraz and also role and importance of environmental health of schools for improving level of society health, this research was conducted in order to assess indexes of environmental health of schools in Shiraz and compare with current standard conditions.

MATERIALS AND METHOD:

In this cross-sectional and descriptive-analytical study, all 86 governmental and private schools were located in of Shiraz education, were studied. In the study area there was, 37 elementary schools, 27 middle schools and 22 high schools and pre-universities.

Data collection tool was a questionnaire was designed according to laws and regulations of IslamicRepublic of Iran Ministry of Health and Medical Education (13). The questionnaire consists of 33 questions that can be studied the schools in 5 different categories. These categories were consisting of building and environment of schools (7 questions), safety, welfare and health facilities (8 question), toilets and drinking-cup (7 questions), classrooms (8 questions) and solid waste and wastewater disposal system (3 questions). An expert an educated environmental engineer, after visiting the school, was completed the questionnaire

through interviews and direct observation. Answer of question recorded in two proper and improper states respectively with numbers 1 and 0. After completing the questionnaire, total score is calculated and the schools were divided into 4 groups. Excellent with scores within 95-100, good with scores within 71-80, fair with scores within 71-80 and poor state with scores less than 50. Collected data then were analyzed by SPSS software.

RESULTS

The Schools studied demographic parameters were shown in table 1.The results showed that 82 (95.34%) schools have suitable distance from the pollution and nuisance centers. 63 (73.25%) schools have appropriate space capitation per student (…..m2 per student) but only two school have acceptable green space capitation. Although 25(29.1%) schools building were acceptable, but 61(70.9%) schools have had a high old dilapidated buildings. water supply and the system of waste water disposal, firefighting and liquid soap in all 86 (100%) schools were suitable and in hygienic statues.

Among 46 buffets existentIn 19(41.3%) schools healthy buffet was established with suitable condition but in other schools, food sellers worked in poor hygienic places although in 36(78.27%) schools these sellers had health card and only in 7(15.2%) schools they sold foods that was not approved by health authorities.

Drinking-cup number(each drinking-cup for 45 students) and height (75-100cm height) in 81(94.16%) schools were appropriate.in 81(94.16%) schools wash-basin (eachwash-basin per 60students) and toilet (each toilet per 40students) were enough but in 72 schools(83.72%) the toilet had healthy condition and disinfected periodically. The result shown that in 80(93.02%) schools ceiling, floor and black boards are suitable but the distance between chalkboard and the first row students from black board (2.2m) and class sizeis a follower of space per person, that above-mentioned. lace window were in poorest condition and only in 24(27.9%) schools there were. In 46(53.5%) schools the ash bin were in appropriate condition and solid waste in 73 (84.9%) schools was collected daily (table2).

The finding showed that 12(13.95%) schools were in excellent range, 46(53.5%) schools were in good range, 16(18.6%) schools were in fair range and 12(13.95%) schools were in poor range (table3).

The results of statistical analysis test showed, there isn't significant differences between the ownership of schools with the standard classroom situation, health and safety facilities and environment of schools (P value>0/05).

DISCUSSION AND CONCLUSION:

The minimum area required for each student in primary school is 6 m², and 7 m² for intermediate school and 8 m² for high schools. Results of this study showed that this standard was observed in 63 schools (73.25%), and this result is in consistent with results of other similar researches about shortage of educational space capita (12,14and 15). This can lead to excessive concentration of students in a classroom and finally students will be too close to the blackboard.

According to instruction of environmental health standard of schools, width and height of stairs should be at least respectively 30 and 18 centimeters, 80 schools (93.02%) observed this standard. Although the constructions of all schools were in suitable local position, however two schools were built near crowded streets. Godson et al studies showed that noise of heavy traffic routs will affect students' awareness and increase their stress and decrease their learning (16). In an assessment performed in Kelardasht Township, two schools (2.32%) were located near transit road (15).

In Structural aspects, conditions of ceiling and floors of classroom were good, it's meaning that

they were flat with no cracks but in 6 schools (6.97%) were far from this standards. wall of classes in 27 schools (31.4%) had unacceptable health conditions and the other structural problem was consist of lack of lacing windows in 63 schools (73.25%). This indicator was poorest parameter and considering this issue is necessary for prohibit entering pesky insects and infectious agent into class.

Chalkboard in 78 schools (90.7%) had good condition. Proper distance of first row of students to blackboard is 2.2 meters which wasn't observed in 27 schools (31.4%). In standard condition light should be radiated from left side in order to prevent shadow on the paper or table and prevent eyestrain that in this study averagely 57 schools (66.27%) enjoyed such conditions. Results of study by Shabankhani showed that light radiation isn't good in 42% of studied schools (17).

The standard of green space per student was 0.5 m^2 and only 2 school (2.3%) enjoyed enough green space, however there were green space in 19 schools but far from standard capita. Although green space is aesthetic factor of schools and causing air cleanliness but it could help to improvement of mood and learning of students. In a study conducted in Kerman, 32/6% of studied schools enjoyed green space per capita (18).

Good coverage of schools environment and floor can prevent dust and finally allergy and respiratory disease in students. In restrict 2 and 3 all schools had acceptable conditions. All toilets were being disinfected every two weeks, and 72 schools (83.72%) had healthy toilets although most of them hadn't any ventilator, but is being done through valves and windows which aren't desirable. Height of drinking-cup place and toilets were according to standards (1 tap per 45 students) and it was observed in all schools. Distance of toilets should be 15 meters from drinking-cup places that 17 schools didn't observe it so that student used wash-basin as drinking-cup and this issue prepare good field for incidence of intestinal and parasitic pollutions among students (15).

Result of research which was performed by Raigan Shirzai nezhad and et al. in schools of Yasooj showed that number of drinking-cup have been in accordance to standards but there was no proper health condition (19). Results of this study show that wastewater disposal is being performed in healthy manner and through absorbent wells and sewage disposal network. Since that supplying healthy water is of basic and primary principles so 100% of these schools had healthy water and this result is in consistent with other studies (18, 20, and 21). All schools had ash bin but ash bins of 40 schools had no door or pedal.

Garbage was being collected daily in 74 schools (86.04%) and result of research in Shahrekord showed that condition of garbage collection in 51.6% of schools was being performed daily (21). All schools (100%) had good extinguishing cylinders installed in suitable place. In other study showed that 53.84%and 90.32%, of schools had firefighting system (22, 23)

Only 29 schools (33.72%) had emergency exit. emergency door and stairs will helped the student and officials that exit schools when fire occurs in a shorter time. All schools had health trainer two days in week. Among 46 buffets, seller of 12 schools (26/08%) use white cover when selling food and perishable foods are being kept in refrigerator. the main problem was lack of good planning of buffet s building so that most buffets (52/17%) had no proper structure. result of a study showed that 86% of buffets of studied schools enjoyed healthy conditions (18). According to results of other study, 46/5% of buffets were at no desired conditions in terms of individual health and 34/5% in terms of building health of shops (24).

Results of this study showed that 12 schools (13.95%) had excellent condition, 46 schools (53.48%) good conditions, 16 schools (18.6%)

fair conditions and 12 schools (13.95%) weak health conditions. Based on same results, the beast index of environmental health in studied schools were supply of healthy water, sewage disposal and firefighting system in all schools (100%). Inappropriate health indexes also included lack of observing green space standard in 84 schools (97/67%) and lack of lacing for windows in 63 schools (73.26%) and also worn building of 61 schools (70.94%) (more than 15 years old) and lack of existence of emergency exit in 57 schools (66.28%) all were some of improper safety conditions in studied schools.

Result of this research show that conditions of environmental health of schools in Shiraz is relatively good, however it should be acted for improving healthy buffet which requires more consideration by responsible organizations to health standards in the field of buffet planning. So it is suggested that School renovation organization of education institution of Shiraz city with cooperation of health section of Shiraz medical science university act for building new buffets with good structures and based on health standards and instructions.

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REFERENCE:

1. Hafezi A. Comparison of the environment health schools approach to national education in primary schools girls have no health educator and coach. Journal of Noavaryhae Amoozeshi OF farhangian university 2012;11:163-178 [Persian].
2. Sharifi Rad G, Amidi Mazaheri M, Akbarzadeh K. Survey of environmental health situation in Isfahan school buffets. Journal of Ilam university of Medical sciences 2004;12:17-23 [Persian].
3. Shabankhani B. Abdollahi F. Evaluation of hygienic environmental indexes (educational spaces) in village schools of Mazandaran province in 2003. J Mazand Univ Med Sci 2003; 13: 98-102 [Persian].
4. Zare R, Jalalvandi M, Rafiei M. Ergonomic, Safety and Environmental Health Status of Primary Schools in Markazi Province/Iran in 2003-2004. J Kerman Univ Med Sci 2007; 14: 61-69 [Persian].
5. Khalili A, Jahani Hashemi H,Jamali H A. Comparison of Environmental Health and safety of usual- governmental with nongovernmental school of Ghazvin city, Journal of Ghazvin Medical Science 2007;1:41-49 [Persian].
6. Rashadmanesh MA. Survay of environmental health and safety of schools and effective factor on individual health of students in Sanandaj city at 1995 year, Journal of Kordestan Medical Science University1996; 1: 20-24[Persian].
7. Rezaeian M,Danafar A. Survay of environmental health of Yazd city school and comparison with principal of school standard. Research work, education and Traning Organization of Yazd Province, 2001;13:36-44 [Persian].
8. Hjurges M, Steffen R,Martin S. Dose Schooling Affect Health Be Havior? Evidence From The Educational Expansion In Western Germ. Electronic copy available at: http://ssrn.com/abstract=1466935
9. Maitra AK, Sweeney G. Are schools safer for children than public places? J Accid Emerg Med 1996; 13: 196-197.
10. Lyons RA, Delahunty AM, Kraus D, Heaven M, McCabe M, Allen H, et al. Children's Fractures: a Population Based Study. Inj Prev 1999;5: 129-132.
11. Kumar R, O'Malley PM, Johnston LD. Association between Physical Environment of Secondary Schools and Student Problem Behavior: A National Study, 2002-2003. Environ and Behav 2008; 40: 455-486.
12. Mani Kashani Kh, Mohamad Sadegh S, Azimian Ma. Investigation of accident incidence at primary schools students of Hamedan city at 1998-99 years. Journal of Hamedan Medical Science University, 2001;8:69-73. [Persian].
13. Ministry of Health and Medical Education and Islamic Republic of Iran, 2011. Executive instructions schools health

promoters in Islamic Republic of Iran 2011, pp: 1-72.
14. Zazuoli MA, Abdi M, Ghahramani E, Ghorbanian M. Investigation of Environmental Health Indexes of District 1 Primary School in Sari, Iran. Iran J Health Environ 2009; 2: 204-213 [Persian].
15. Majid K, Mahdi F, Zabihollah Y, Rahman G. Investigating the Environmental Health and Safety Status among Primary Schools. j Mazand Univ Med Sci 2012; 22: 93-97 [Persian].
16. Godson R. E.E. A.Na, Derek G. Shendell, G. E. Brown, Andm .K. C. Sridhar. Assessment Of Noise And Associated Health Impacts At Selected Secondary Schools In Ibadan, Nigeria. Journal of Environmental and Public Health2009:1-6
17. Shabankhani B, Abdollahi F. Evaluation of hygienic environmental indexes (Educational spaces) in village schools of Mazandaran province in 2003. Journal of Mazandaran University of Medical Sciences 2004; 41: 101-98. [Persian].
18. Malakootian, M., H. Akbari, M. Nekoei-Moghadam, A. Parizi and G.H. A. Nekounam, 2008. Investigation of environmental health condition and safety of schools in Kerman in2007. Journal of Yazd University of Medical Sciences, 7: 1-14 [Persian].
19. Rayegan Shirazi AR, Shahraki Gh.H, Fararooei M. Survey of environmental health in Yasuj primary schools. Armaghane-Danesh, Journal of Yasuj University of Medical Sciences. 2000; 20:55-61 [Persian]
20. Comparison of environmental health in public primary schools in different districts of Isfahan. Asieh Pirzadeh, Gholamreza Sharifirad, Mohammad Ali Oruji. Health Systems Research journal 2010; 6:134-140[Persian]
21. Abdolmajid F, Zohreh J. Evaluation of Environmental Health Condition and Safety of Primary Girls´School in Shahre-Kord, Iran. Middle-East Journal of Scientific Research. 2014;21 :1729-1733.
22. Sibiya, J.E. and J.R. Gumbo, 2013. Knowledge, attitude and practices (KAP) survey on water, sanitation and hygiene in selected schools in Vhembe district, Limpopo, South Africa. International Journal of Environmental Research Public and Health, 10:2282-2295; doi:10. 3390/ijerph10062282.
23. Ganji, M. and A. Hashmeanfar,. The survey of school circumference e hygiene in area 2 Arak city and that's conformity with national standard. Journal of Applied Sociology. 2009 4: 103-134. [Persian].
24. Sharifi Rad Gh,Amidi Mazaheri M,Akbarzadeh K. Investigation of buffet environmental health and effective of education on the buffet staffs in the Esfahan city, Journal of Ilam Medical Science University,2004;12:17-22.[Persian].

Table 1: Distribution of frequency and Relative frequency of schools demographic parameters that located in Shiraz educations, Shiraz, Iran.

Frequency	Educational level			Ownership		Sex	
	Primary school	Middle school	High School	Privet school	Governmental school	Girls school	Boys school
Frequency	37	27	22	11	65	45	41
Relative frequency (%)	43	31.4	25.6	12.8	87.2	52.32	47.68

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Table 2: Distribution of frequency and Relative frequency environmental health in Shiraz educations, Shiraz, Iran.

Frequency	Poor (45-50)	Fair (60-79)	Good (80-94)	Excellent (95-100)	Total
Frequency	12	16	46	12	86
Relative frequency (%)	13.95	18.6	53.48	13.95	100

Table3: Status of indicators environmental health at schools of Shiraz educations, Shiraz, Iran.

Indicator	**Parameters**	**Suitable***		**Unsuitable****	
		N	%	n	%
Building and school environment	far from built annoying centers	84	97.67	4	2.33
	Floors of place of schools	81	94.18	5	5.82
	1. 25 m^2 area per students	63	73.25	23	26.75
	0.5 m^2 green area per students	2	2.32	84	97.68
	Health condition of pantry	68	79.07	18	20.45
	New and strong structure	25	29.06	61	70.94
	Water piping and confirmed by health officials	86	100	0	0
Health facilities, welfare and safety	Buffet proper structure	22	25.58	64	74.42
	Seller health card	36	41.86	50	58.14
	Healthy food	38	44.18	8	55.82
	Having health room	37	43.02	9	56.98
	Fire control	86	100	0	0
	warm water piping	25	29.06	61	70.94
	emergency exit	29	33.72	57	66.28
	Standard width and height of stairs	80	93.02	6	6.98
toilets and drinking-cup places	Each Drinking-cup per 45 students	81	94.18	5	5.82
	Each wash-basin per 60students	81	93.19	5	6.81
	Each toilet per 40 students	80	93.19	6	6.81
	15m Distance between wash-basin and Drinking-cup	68	79.07	18	20.93
	Health condition of Toilet	72	83.72	14	16.28
	Drinking-cup and wash-basin height(75-100cm)	81	93.19	5	4.55
	existence of liquid soap	86	100	0	0
Classroom	Safety floor	81	94.18	5	5.82
	Safety wall	59	68.6	27	31.4
	Safety ceiling	81	94.18	5	5.82
	Having lace window	23	26.74	63	73.26
	Suitable chalkboard	78	90.7	8	9.3
	2.2 m Distance between chalkboard and the first row students	59	68.6	27	31.4
	1. 25 m^2 area per students in class	52	60.04	34	39.96
	light radiation angle	57	66.27	29	33.73
Solid waste and wastewater disposal	wastewater disposal	86	100	0	0
	ash binhealthy	46	53.48	40	46.52
	Solid waste collection and disposal	74	86	12	14

* More than 85% agreement, **less than 85% agreement