

# Comparison of the Safety Levels of Governmental and Non-Governmental Schools: Study in Yazd City, Iran, 2009

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## ABSTRACT

The school environment is an environment wherein a student spends one third of his life with teachers and other students. In the present study, the safety levels of governmental and non-governmental schools were studied and compared. In a descriptive cross-sectional study we assessed schools safety using Fire and Life Safety Inspection Checklist presented by the National Fire Prevention Agency (NFPA). After determining the sample size using simple random sampling, 35 high schools of Yazd of which 21 were governmental and 14 were non-governmental schools were selected. Evaluation of the data was done using SPSS V.17.0 software program. The results showed that the highest coefficient of safety in the schools of Yazd was related to air conditioning systems, while the lowest coefficients were related to the electrical and fire safety. Also, the mean electrical and fire safety scores were higher in the non-governmental schools as compared to the governmental schools ( $p < 0.01$ ). Safety coefficients of all departments were higher in the non-governmental schools as compared to the governmental schools. Considering the results of the study, it is both essential and critical to pay greater attention to the process of reconstruction, repair, maintenance and building of new schools according to international safety standards in order to have a safe school environment that requires the attention of all those responsible in the education department.

**Keywords:** *Safety, Governmental schools, Non-governmental schools, Education, Iran*

## INTRODUCTION

Life without danger has always been the aim and wish of all people throughout the ages, and as we all know, school is an environment with a very high level of skilled and non-skilled potential work force. The school is an environment wherein a student spends one third of his /her life with teachers and other students and therefore for a good and effective education, this environment should be safe. Most of the students all around the world spend 180 days a year and 6 hours a day in schools [1]. From the first grade to the seventh grade, a student spends 8640 hours of his/her life in school. Therefore, it is important to pay continuous and specific attention to safety problems in this environment [2].

Man has always sought ways and methods to have an easy life free from accidents and dangers and has taken many steps in this area. Thus, if people realize that their life and work environment has high levels of safety, they can perform all their activities with an easy mind toward their respective aims, which in schools is education. If students go to safe schools, they can study better without worrying about problems like electric shock and fire. A safe school is defined as an environment wherein students and personnel feel safe, both physically and psychologically [3, 4]. If schools are not safe, none of the processes of education or learning will take place effectively [5]. Similarly, appropriate safety measures in the school environment that include safe buildings, safe day-to-day activities, and safety management can easily prevent occurrence of problems and dangers [6].

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**Table 1.** Distribution of the mean safety scores in each of the eight sections of the study

Variables	Mean	Standard Deviation
Electricity	33.82	8.99
Fire	35.46	7.42
Lighting Systems	15.85	1.92
Air Conditioning Systems	17.23	2.01
Temperature Regulating Systems	19	1.76
Buildings	41.22	4.72
Signs and Alarms	16.48	4.51
Equipment in use	18.08	4.74
Total Safety Score	185.82	21.16

A safe school is defined as following [7]:

1. Focuses on safety achievement.
2. Involves the families particularly in the safety process.
3. Increases relations with those concerned with safety in society in order to achieve safety management in the school.
4. Pays special attention to maintain safe behavior in students and personnel.
5. Explains in detail to students the safe methods for performing various activities.
6. Treats students who perform unsafe activities with respect.
7. Distributes the management of various safety departments among the students.
8. Helps students feel safe while expressing their feelings.
9. Plans systems to recognize students with unsafe or dangerous behavior.
10. Performs safe programs in the form of day-to-day routine work.
11. Awards those who have safe behaviors.
12. Recognizes problems for implementing safety environmental programs and tries to overcome them.

Proper acquaintance of teachers and students with basic principles of safety is one of the primary problems and helpful in establishing safety management. Safety programs should be implemented in all the areas of the school including classrooms, corridors, staircases, green spaces, playgrounds, and laboratories [8]. All of the school buildings should be resistant against natural disasters like earthquakes as well as fire and these safety levels should have been measured significantly [9]. The most important area for implementation of safety programs is the school building as most of the activities of the students take place inside the school buildings [7].

Regarding building safety, one of the most important problems that need to be considered is electrical and fire safety measures, for example, the raw material used in manufacturing of tables and chairs should be of fireproof material [10]. Another safety problem in buildings is related to doors and windows. Doors and windows should be fireproof, lockable, and firm with borders made of soft material [7]. On the other hand, the most important accidents in schools are fire outbreaks resulting in 13.4 deaths per million populations, which is the third leading cause of death in students following road accidents and drowning [11].

The statistical studies of United States Administration showed that in 2003, students younger than 10 years old comprised 22.2% of the deaths due to fire in schools [12]. Similarly, burns, especially those due to fire outbreaks in schools are the most prevalent accidents in students in the 6-17 years age group [11, 13]. Of the deaths due to fire, 8.8% occur in school students [14].

Considering the importance of safety management in schools on one hand and realizing the difference in safety levels in governmental and non-governmental schools, this study was done in 2009 to evaluate and compare the safety levels in governmental and nongovernmental schools of Yazd.

#### MATERIALS AND METHODS

In this cross-sectional descriptive study, data were collected via Fire and Life Safety Inspection Checklist [15, 16]. Initially, the checklist was translated to Persian and data were collected in 10 schools as a pilot study. The respective specialists confirmed the reliability and validity. The validity and statistical evaluation of the Persian copy was based on Likert score and the internal similarity related to the raw and standard scores based on Kronbachs formula was 0.88 and 0.86, respectively.

Each checklist included three sections. The first section had nine questions about school name, address, telephone numbers, inspector's name, and date of inspection. The second section had 50 questions with five choice answers and scores ranging from 0-4. In each of these questions, 0 score was defined as bad situation, 1 as fairly appropriate, 2 as moderately appropriate, 3 as appropriate and 4 as good.

Considering the possibility and degree of accidents, the third section was divided into 8 sections that included quantitatively electricity, fire, buildings, lighting systems, air conditioning systems, temperature regulating systems, equipment in use and signs and alarms in the form of percentages. In this section, the departments that had safety coefficient less than 50% were considered as having low safety levels, those between 50% and 75% as moderate and those above 75% as good.

After determining the sample size using simple random sampling, 35 high schools of Yazd were selected (21 governmental and 14 non-governmental schools). Evaluation of the data was done using SPSS V.17.0 software program.

**Table 2.** Distribution of the mean electricity and fire safety scores in schools of Yazd according to the type of school

Electricity and Fire	Number	Mean	Standard Deviation	P Value
Governmental schools	21	30.90	8.25	< 0.01
Non-Governmental schools	14	38.21	8.48	

**RESULTS**

The results of the study are presented in Tables 1 and 2. The results of the study showed that the mean safety scores in both governmental and non-governmental schools of Yazd were 185.82 with a standard deviation of 21.16 (Maximum score of 253 and minimum score of 62 in each section). According to Table 1, the highest mean safety score belonged to the buildings section and the lowest mean score to the lighting systems section. The electrical and fire safety scores in non-governmental schools had higher mean levels than the governmental schools (Table 2) ( $p < 0.01$ ). The highest safety coefficients in each of the eight sections of the study belonged to air conditioning systems and the lowest safety coefficients was seen in the electrical and fire extinguishing systems (Fig. 1).

All of the safety coefficients in each of the sections of non-governmental schools were higher than governmental schools (the total safety coefficients in governmental schools and that in non-governmental schools was 69.9% and 78.7%, respectively).

**DISCUSSION**

In a similar study in order to evaluate the safety coefficients and the need for execution of safety programs in the schools, all of the managers and teachers of the governmental and non-governmental schools agreed with and specified the need for safety in schools [1]. Both the management and teachers believed that the safety coefficients in governmental schools was less than that in non-governmental schools ( $p < 0.05$ ), which was similar to the present study.

The high coefficients of safety in the 8 sections in the non-governmental schools of Yazd is due to the fact that they have enough resources that is paid in the form of school fees by the students and the high levels of expectation for safety by their families, which results in paying more attention to safety programs by managers. These findings are similar to the findings of another study, which shows that as families of students in non-governmental schools have better and more relations with the school manager and teachers, the implementation of safety programs is more successful that results in better education [17]. These results are also similar to the results of the study by Bong [18].

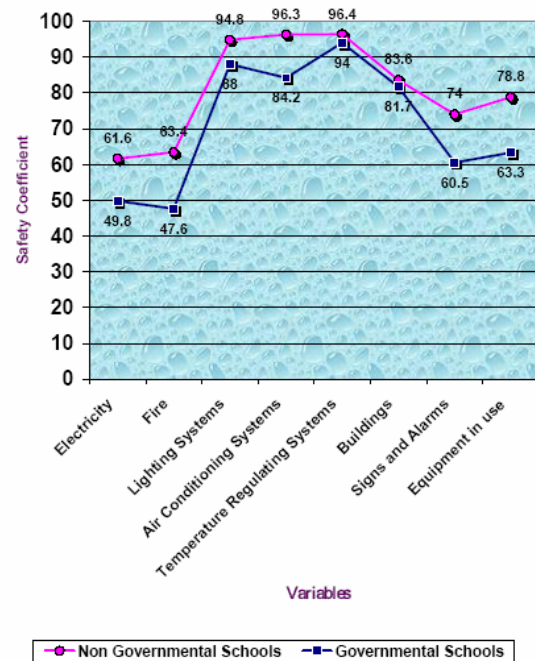
Calculated safety coefficients before and after the implementation of fire safety programs in schools shows that implementation of fire safety programs in schools, especially where students have high-risk behavior can effectively prevent fire in these schools. It is worth mentioning that these fire safety programs should not be considered as educational programs only for fighting fire, but should contain educational programs for first aid during fire, methods of approach

to injured persons and attention to continual re-education is necessary for the educational program [19].

The low fire safety coefficients in most of the schools is due to defects and lack of inspection of lighting, temperature control, air conditioning systems and school buildings. Of course, insufficient proper education should not be forgotten. Presence of an appropriate educational process can significantly reduce risk of fire in schools and this need has been calculated significantly earlier ( $p < 0.01$ ) [20-23]. The success of fire safety programs in schools is because the process of acquisition of appropriate fire extinguishing equipment and education has been implemented together [24].

Kolko and Day pay special attention to the process of education in fire safety. In two similar studies in 2001 and 1993, setting of fire by students with a distribution of 50%, lack of knowledge about fire and incomplete information about reasons for incidence of fire in schools due to incomplete education of students are the main reasons of fire in schools all over the world [25-21].

Many fire safety programs have been implemented in both governmental and non-governmental schools, but due to lack of primary fire extinguishing facilities, these programs have many problems in governmental schools [26, 27]. The same problem is observed in the governmental schools of Yazd that need to be equipped



**Fig 1.** Diagram showing safety coefficients in each of the eight sections under study scores in schools of Yazd according to the type of school

as soon as possible. The low electrical safety coefficients in schools can be due to old and worn-out electrical circuits, lack of regular inspection and repairs and use of cheap non-standard electrical equipment during the initial building of schools.

### CONCLUSION

With respect to the results of the present study, it is essential to pay special attention to repair, maintenance, and building of new schools according to international safety standards in order to attain safe educational environments. This is very crucial and needs the attention of all related administrative officials of the country.

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