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ORIGINAL ARTICLE

Iranian Nursery School Teachers' Knowledge about Safety Measures in Earthquakes

Mahmoud Nekoei Moghadam[1], Shiva Shykhoeslami[1], Rohaneh Rahimisadeq[1] and Narges Khanjani[2,3*]

[1]Department of Health Services Management, School of Management and Information Resources, Kerman Medical University, Kerman, Iran, [2]Department of Epidemiology, School of Public Health, Kerman Medical University, Kerman, Iran and [3]Monash Centre for Occupational & Environmental Health, School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia

Abstract: *Introduction:* The occurrence of disasters and related casualties is one of the realities of man's life. Although man cannot prevent the incidence of many unfortunate events, but still can alleviate its consequences by applying safety measures. Children's health is the most important concern of parents and supervisors, and as this vulnerable group spends a lot of time in the nursery, their safety and protection at disasters and inside the nursery is one of the main health priorities. The main objective of this survey is to find out the level of nursery school teachers' awareness in Kerman, Iran; about safety measures in earthquakes. *Methods:* A cross sectional study was conducted. The study population was the nursery school teachers of Kerman. A sample of 239 teachers was enrolled through cluster sampling and each completed a questionnaire. Descriptive statistics, regression and chi-square were applied for data analysis. *Results:* The findings show that only 27.4% of the teachers had previously been through training and education about these safety measures. The majority (54.8%) of nursery teachers' awareness regarding earthquake was moderate and the majority's (62.3%) level of awareness regarding fire (resulting from earthquake) was moderate too. There was a significant relationship between attending previous training and the more knowledge. *Conclusion:* Kerman is a disaster prone province in Iran. One of the main threats is earthquake and fire that may happen afterwards. Therefore intense and frequent education of kindergarten teachers who spend almost half of the day with the vulnerable children is essential and has positive consequences on their knowledge.

Key words: Nursery schools, Teachers' Knowledge, Earthquake, Fire

Introduction

Disasters are unexpected, unpredictable and complicated phenomena or events that occur due to natural or artificial incidents [1]. Unfortunately, man cannot prevent the occurrence of many disasters, but can decrease the unfavorable consequences by planning before and acting correctly during the crisis [2]. Iran ranks tenth among the disaster prone countries of the world and is 4th among Asian countries. While in regard to mortality due to earthquakes its rank is the 2nd in the world [3]. It seems like earthquakes can strike at any time and any place in Iran, especially the province of Kerman that has experienced strong and disastrous earthquakes in the past recent years. Therefore, it is necessary for all people to learn how to be safe and protect themselves from the hazards of earthquakes [4].

The other unexpected event that may happen following an earthquake is fire, which can be highly destructive and fatal if safety instructions are ignored. Often, fires which follow earthquakes, floods, explosions and other disasters are found to be more devastating than the main calamity [4]. Children as the most vulnerable age-group at the time of disasters, are prone to many hazards and if ignored, their mental and physical health will be jeopardized [5]. Children are classified as vulnerable groups due to lack of understanding of the situation and also lack of sufficient compatibility strategies during disasters [6]. Since 20% of the victims of the disasters are children [7] and the fact that crises threaten strategic interests, special attention has to be paid to preparedness and reducing the disasters' devastating effects [8].

Kindergartens are places where children under 6 years spend an average of 5 hours every day; their safety in the kindergartens is of great concern and protecting their health and safety in disasters, is a priority of the Ministry of Health, and the Welfare Organization [9]. Crises resulting from disasters have an outstanding impact on the community. In these circumstances, the centers responsible for taking care of infants and children are very vulnerable and should be able to secure the children's safety as much as possible. Nowadays, many natural or man-made disasters can be predicted and in some instances, they can even be prevented. Therefore, by rising temporal or spatial awareness and also knowing about the backgrounds of the crises, we can reduce the negative impact of the disasters on health, economy and security through preparedness and providing appropriate human resources and equipment [4].

In general, kindergartens must have a suitable plan for earthquake and fire safety and the personnel in charge must have had sufficient theoretical and practical training about this topic. Due to the importance of developing, maintaining and enhancing the health and safety of children, our group planned to study the awareness level of Kerman, Iran nursery teachers about safety measures, in order to assess their strengths and weaknesses about this issue. This study will help the Welfare organization (the organization in charge of kindergartens in Iran) to take positive steps to enhance teachers' level of awareness through educational and practical plans.

Material and Methods

Table-1: The random, cluster sampling performed and the number of people randomly chosen from each cluster.

Municipal region	Population	Sample
1	97	49
2	205	103
3	151	75
4	37	19
Total	490	246

A cross sectional study was designed and conducted in 2009. The statistical population was the teachers of Kerman, Iran nursery schools. There were 82 kindergartens according to records of the Welfare Organization. In Kerman, all nursery schools operate under the supervision of the Kerman welfare department. A total of 490 persons, including the managers worked in these kindergartens. Random cluster sampling was performed from 4 municipal regions according to their population and a total of 246 teachers were selected as a sample (table 1).

We visited the randomly selected kindergartens and distributed the questionnaires among the teachers and had them filled by the teachers themselves and collected. The questionnaire used was titled "Assessing the awareness of nursery school teachers about safety measures in earthquake and fire" and included three parts. First the demographics including the individual characteristics of the teachers such as age, years of work experience, marital status, education level, field of study, training courses passed and the location of the school according to Kerman municipal regions. The second part of the questionnaire included 10 four-choice questions about the actions to be taken during earthquakes and the third part included 10 four-choice questions about the actions to be taken during fire. Each part had 10 points in 3 different levels: 7-10 = good, 5-6 = average and 0-4 = weak.

The face and content validity of the questionnaire was confirmed by 10 academics at the School of Public Health, Kerman Medical University who were members of the crisis management and emergency medical services committee. The reliability was calculated through test-retest method and by re-distributing 20 questionnaires to 20 teachers and the Kronbach's Internal Consistency was calculated to be 85%. The data collected were analyzed by the SPSS software, using descriptive statistics and the relation between variables was analyzed by using the Chi square statistic.

Results

Table-2: The characteristics of the participants

	Number	**Percent**
Age		
<25 years	88	36.8
25-29 years	82	34.3
30-35 years	38	15.9
>35 years	31	13.0
Education level		
Diploma and lower	123	51.5
Graduate Diploma	57	23.8
Bachelor in Science	59	24.7
Field of study		
Medical	88	36.8
Non-medical	151	63.2
Years, work experience		
1-5 years	143	59.8
6-10 years	71	29.7
>10 years	25	10.5
Marital status		
Married	116	48.7
Single	122	51.3
Training courses		
Yes	65	27.4
No	172	72.6
Total	239	100

In this survey, 239 nursery school teachers completed and returned the questionnaires. Table 2 shows the characteristics of the participants. The majority of the participants (36.8%) were young and under 25 years old. In regards to education, the majority (51.5%) had a high school diploma or were less than diploma and (36.8%) had degrees related to medical fields. More than half (59.8%) of the teachers had 5 years or less experience. Most of them (51.3%) were single and only 27.4% had passed a training course on natural disasters.

Teachers' average knowledge on readiness for earthquakes was 5.39 ± 1.97 with a median of 6. In this sample 39 persons (16.3%) had a low awareness level, 131 persons (54.8%) had an average awareness and 69 persons (28.9%) had high (desirable) awareness levels.

Teachers' knowledge about readiness for fire was 5.03 ± 1.78 with a median of 5.0. In this regards 44 persons (18.4 %) had a low awareness level, 149 persons (62.3%) had average awareness levels and 46 persons (19.2%) had high (desirable) awareness levels. Based on multiple variable analysis, the most important variable on teachers' knowledge about readiness against earthquake and fire was passing previous training course/courses in this field ($p < 0.001$). In regards to awareness about readiness for earthquakes, higher age (>35 years) meant significantly less knowledge ($p<0.001$), while in awareness about fire, the married had significantly more knowledge ($p<0.001$).

Discussion

This study is to our knowledge is the first study surveying the knowledge of kindergarten teachers about safety measures in earthquakes. A previous survey in Tehran about the knowledge and practice of hospital managers in regard to earthquake relief showed that these measures were low and unsatisfactory and the researchers suggested intense and immediate attention for promoting the knowledge and practical skills of hospital managers for post earthquake aid management [10].

Some other studies have surveyed other health topics in kindergartens such as a study about awareness of Birjand nursery schools teachers about children's tracheal obstruction by foreign objects which showed out of 96 teachers 38.5% had weak awareness, 47.9% had average awareness and 12.5% had good awareness about the topic [11]. In another study on Kerman nursery teachers awareness of cardio-pulmonary resuscitation (CPR) in aspiration problems due to foreign objects in children, out of 163 nursery teachers, 68.7% did not have any knowledge on how to remove the tracheal foreign object, 68% did not have any knowledge on mouth to mouth resuscitation and 68.7% had no information on chest massage [12]. These figures in addition to the results of our study display alarming images about the low knowledge of kindergarten teachers in regard to important life threatening issues. In crisis management prediction, prevention, planning, training, management and control are all important. It's clear that not much can be done at the time of a disaster, except management and control, but obviously it is important to make the correct decisions [13].

From the management perspective, to make the right decisions, one needs data, information and the possibility of processing and analyzing the data. But, unfortunately, all these resources are at our disposal just before the crisis and if the two steps i.e. prediction /prevention and planning/ training are not done beforehand, we will have a second crisis in the heart of the first disaster and with hasty and uncalculated decisions the situations exacerbates and new and even unrecognizable crises occur, whose consequences will cause trouble in the process of controlling the main crisis [13]. The findings depicted that training is a main factor in increasing the desired level of knowledge about safety in earthquake and fire. So, it is most likely that attending courses would help teachers take the right steps in rescuing the lives of children at the time of the crises. But in our study, just 27.4% of the teachers had attended courses on natural disasters.

True and correct understanding of natural events and phenomena will help us to logically predict, prevent and alleviate their consequences. In other words, it is possible to minimize the effects of natural and man-made disasters by choosing effective procedures [14]. Many believe that attention to planning and education is the main factor in reducing disasters and their impacts [15]. Our study also showed that previous training did have a positive impact on their theoretical knowledge about safety measures in earthquakes.

Since in most cases, earthquake is a primary disaster and fire may occur afterwards and because of the fact that children who are in nursery schools form the most vulnerable group in the community, teachers must learn how to enhance their readiness to save both themselves as well as the children. Teachers should attend courses about children evacuation, observing safety measures, the proper structural facilities of the buildings and etc. Also schools must be equipped with the required facilities in this regards.

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*All correspondences to: Narges Khanjani, MD, PhD, Unit of Epidemiology & Biostatistics, Faculty of Public Health, Kerman Medical University (KMU), Haft Bagh Alavi Highway, Kerman, IRAN, 76169-13555 Email: n_khanjani@kmu.ac.ir Mailing Address: PO Box 76175-513, Kerman, IRAN