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Original Article

Knowledge levels of pre-school teachers related with basic first-aid practices, Isparta sample*

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Abstract

Aim: The aim of this study was to evaluate the levels of knowledge of pre-school teachers working in the province center of Isparta related with basic first-aid practices and some factors which affected these levels of knowledge.

Material and Methods: In this cross-sectional, analytic study, 110 pre-school teachers working in the province center of Isparta constituted the population. A questionnaire questioning sociodemographic properties and the level of knowledge related with first-aid practices was applied under supervision. The level of knowledge was evaluated on a 20-point scale. In the analyses, Kruskal-Wallis and Mann-Whitney U tests and Spearman's rank correlation were used. The study was approved by the Ethical Committee for Clinical Studies of Süleyman Demirel University School of Medicine (registration number: 105).

Results: The mean score of first-aid knowledge of the pre-school teachers was found to be 11.9±2.9. The least known issues included washing the wound by soap and water after a dog bite, information related with the necessity of immobilization of a child who has fallen from a high level and the phone number of National Poison Information Center (16.4%, 20.9% and 22.7%, respectively). The scores of the subjects whose knowledge of first-aid was evaluated to be well were higher compared to the subjects whose knowledge of first-aid was evaluated to be moderate (p=0.009) and poor (p=0.001). It was found that first-aid scores did not show significant difference in terms of age, working period, having received first-aid training and having faced with a condition requiring first-aid previously (p>0.05, for all comparisons).

Conclusions: It was found that pre-school teachers had insufficient first-aid knowledge. Since the first-aid knowledge scores of the subjects who reported that they received first-aid training before did not show significant difference, it was thought that the quality of training was as important as receiving training. (Türk Ped Arş 2014; 49: 238-46)

Key words: Knowledge level, first aid, pre-school teacher

Introduction

Unintentional injuries occuring as a result of accidents encountered in the childhood are a global public health problem and are placed in the first order among the causes of mortality and disabled living (1, 2). In the whole world, at least 875 000 children aged below 18 years die because of unintentional injuries yearly and more than 95% of these deaths occur in countries with low and middle income levels (3).

Children are more vulnerable to injuries and carry a higher risk because of developmental and behavioral properties including unawarenes of hazards and being active as well as physical properties including narrower airways, smaller body mass and thinner and more vulnerable skin (4).

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In terms of childhood injuries, home accidents are important in the first four years, while school accidents are predominant after the age of four (5). In injuries which occur as a result of school accidents, teachers are the first people who can help the child and perform first aid practices. First aid practices are important in terms of preventing death and further harm with simple interventions (6). Therefore, teachers should know the rules of basic first aid practices. In this study, it was aimed to evaluate the levels of knowledge of pre-school teachers working in the province center of Isparta related with basic first-aid practices and some factors which affected these levels of knowledge.

Material and Methods

This cross-sectional analytical study was conducted between February, the 1st and February, the 28th 2010. 110 pre-school teachers working in the center of the province of Isparta constituted the population and it was aimed to reach the whole of the population without choosing a sample.

Ethics committee approval was obtained from the Süleyman Demirel University Medical Faculty Clinical Researches Ethics Committee (recording number: 105). The necessary approvals were obtained from the Isparta Provincial Directorate of National Education. In the stage of data collection, the aim of the study was explained to the teachers and their verbal consents were obtained. Afterwards, a questionnaire composed of 32 questions was applied under supervision. The dependent variable of the study was the score of knowledge related with basic first-aid practices of the teachers. The knowledge status of the teachers related with basic first-aid practices was evaluated with 20 questions (2 filling in the blanks, 5 multiple choice and 13 true/false questions). 1 point was given for each question answered correctly. The lowest score which could be obtained was 0 and the highest score which could be obtained was 20. The related literature was utilized in preparing the questions related with the knowledge of first-aid practices (7, 8). After application of the questionnaire, a visual weighted information paper containing the answers of the questions were given to the teachers. The independent variables which were thought to affect the states of knowledge of first-aid practices included age, gender, last school graduated, professional working time, previous exposure to a situation where first-aid was necessary, status of knowledge of first-aid practices, perception of level of knowledge, source of knowledge and requirment for inservice training related with the subject. The source of the knowledge of first-aid practices was examined and the groups who did and did not receive planned education (individuals who reported that they obtained knowledge by sources including only television, newspapers and journals and as a result of communication with different people including relatives and friends were considered not to have received planned education) were compared in terms of knowledge scores (9, 10). The data collection form of the study was tested on 20 pre-school teachers and the final version was established after necessary corrections.

Statistical analysis

The data were evaluated using PASW (Predictive Analytics SoftWare) Statistics 18 (SPSS Inc., Chicago, IL, USA) program. The descriptive data were presented as numbers, percentages, mean and standard deviation values. Kolmogorov-Simirnov test was used to evaluate if the data were compatible with the normal distribution. Since the data were not compatible with the normal distribution, Mann-Whitney U test and Kruskal-Wallis variance analysis (non-variable tests) were used in comparison of the groups. The relation between age and professional working time and the knowledge score was examined using Spear-man rank correlation analysis. A p value of <0.05 was considered statistically significant. When significance was found in the Kruskal-Wallis test, Bonferroni-corrected Mann-Whitney U test was used as a post hoc test to determine which group the difference arised from and a p value of <0.0167 was considered statistically significant.

Results

The whole of the study group was reached at the end of the study (100%).

The mean age of the teachers was 32.9±7.3 years (the youngest: 21, the oldest: 55). 50% of the teachers were in the age group of 30-39 years. 98.1% were female (n=108) and 97.3% (n=107) were university graduates. It was found that 1.8% of the teachers were postgraduates (n=2) and 0.9% (n=1) were high school graduates. The mean professional working time was 10.6±7.2 years (the shortest 1-the longest 33). It was found that 48.2% of the group (n=53) worked as a pre-school teacher for 11 years and longer and 29.1% (n=32) worked as a pre-school teacher for 1-5 years.

68.2% of the teachers (n=75) reported that they confronted with a situation where first-aid practices were required in their professional life. The most common situation requiring first-aid was bleedings (n=42, 56%). This was followed by suspicious fractures (n=21, 28%), loss of conscousness/fainting (n=11, 14.7%), burns (n=8, 10.7%), foreign body aspiration (n=4, 5.3%), febrile convulsions (n=1, 1.3%), cardiorespiratory arrest (n=1, 13%). 69.3% of the teachers (n=52) who confronted with a situation requiring first-aid reported that he/she intervened and 30.7% (n=23) reported that he/she called an ambulance without intervention.

All of the teachers reported that they had knowledge about first-aid (n=110, 100%). When they were asked to evaluate

their levels of knowledge, 74.5% (n=82)reported to have a moderate level of knowledge, 15.5% (n=17) reported to have a good level of knowledge and 10% (n=11) reported to have a poor level of knowledge. The most commonly reported sources of knowledge included the media (n=67, 60.9%) and driving courses (n=63, 57.3%). Undergraduate lessons (n=28, 25.5%), inservice conferences (n=21, 19.1%), first-aid courses (n=8, 7.3%) and information obtained from relatives/friends (n=7, 6.4%) were reported as a source of knowledge with a lower rate.

When the teachers who reported that they obtained information from the media and/or relatives or friends which are unplanned sources of education were excluded, 73.6% of the teachers (n=81) were found to have received planned first-aid education. It was found that the most common institutions from which education was received was driving courses (n=63, 57.3%).

97.3% of the teachers (n=107) reported that they were willing to receive inservice education about first-aid and 19.1% (n=21) reported that they could perform cardio-respiratory resuscitation on a child with cardio-respiratory arrest.

The mean score of knowledge of first-aid was found to be 11.9±2.9 (the lowest 1, the highest 20). The rate of answering the questions correctly ranged between 16.4% and 100%. The questions which were answered correctly with the lowest rate included the knowledge that the wounded area should be washed with water and soap for at least 5 minutes in cases of dog bites (n=18, 16.4%), knowledge that a child who has fallen from a high level should not be moved (n=23, 20.9%) and the phone number of the national poison information center (n=25, 22.7%). All of the teachers (n=110, 100%) knew that the emergency call center 112 should be called to provide transportation of injured individuals/patients to the nearest healthcare institution in Turkey (Table 1). The questions related with basic first-aid practices and the answers given are presented in Table 1.

It was found that there was a significant difference between the perception of first-aid knowledge and the scores obtained from the questions related with first-aid knowledge (Kruskal-Wallis test, p=0.002) (Table 2). The teachers who evaluated their knowledge to be good had significantly higher scores compared to the ones who evaluated their knowledge to be moderate and poor (Bonferroni-corrected Mann-Whitney U test, p=0.009, p=0.001, respectively).

Although the scores of the teachers who were found to have received first-aid education were higher compared to the ones who did not receive education, the difference was not statistically significant (Mann-Whitney U test, p=0.086). The scores of first-aid knowledge did not show a significant difference in terms of age, working time and history of previous confrontation with a situation requiring first-aid (p>0.05, for all comparisons) (Table 2).

When the relation of age and professional working time with scores of knowledge were examined, it was found that there was a weak negative relation; as the age and working time increased, the score of knowledge decreased. However, this relation was not statistically significant (r=-0.053, p=0.581 for age; r=-0.078, p=0.421 for working time).

Discussion

In this study which aimed to determine the level of first-aid knowledge of pre-school teachers working in the provincial center of Isparta, all teachers reported that they had knowledge about first-aid practices. The most commonly reported source of knowledge was the media (60.9%). When planned education was interrogated, it was found that 73.6% of the teachers received first-aid training and the most common institution where first-aid training was received was found to be driving courses (57.3%). Driving courses was followed by undergraduate lessons and inservice education. In a study conducted in Afyonkarahisar, it was found that 69.1% of the teachers working in pre-school education institutions received first-aid training and the most common institutions where first-aid training was received included school (59.6%) and driving courses (40.4%) (11). In a study conducted in Ankara with pre-school educators, the rate of having received first-aid training was found to be 37.7% and driving courses were the most common source of education (55.8%) (12). In a study conducted with the last grade students attending Ordu Girls' Vocational School Division of Child Developmen, the rate of the students who reported that they received first-aid training at school was found to be 12.7% (13). In a study conducted with teachers working in elementary and high schools in Isparta, the rate of having received first-aid traning was found to be 38.5% and the most common source of education was driving courses (60.6%) similar to our study (14). As is seen, the frequencies and education sources related with first-aid education of pre-school teachers show variance. However, driving courses are the most common source of education in most of the studies and it is observed that first-aid education is not given adequately during undergraduate education. In the study of Hırça (15), this inadequacy was emphasized and it was reported that first-aid training should be compulsorily and regularly included in the curriculum in all schools training teachers.

In our study, it was found that only 15.5% of the teachers evaluated their level of first-aid knowledge as good and this group had significantly higher knowledge scores. In the stud-

Table 1. Questions related with knowledge of basic first-aid practices and distribution of the answers given

Questions related with knowledge of basic first-aid practices	Score value	Distribution of answers n=110	%
1. .....should be called for transportation of injured/patient in Turkey			
The ones who wrote 112	1	110	100
2. .... is the phone number to be called in cases of poisoning for information/consultation			
The ones who wrote 114	1	25	22.7
3. How do you assess if a child is breathing?			
a. Look, listen, feel method	1	47	42.7
b. Checking pulse	0	60	54.5
c. Checking body temperature	0	1	0.9
d. Asking "Are you ok?"	0	0	0.0
e. I don't know	0	2	1.8
4. Which order should be the first assessment performed with in an unconscious child?			
a. Pulse-breathing-airway	0	27	24.5
b. Breathing-pulse-airway	0	32	29.1
c. Airway-breathing-pulse	1	40	36.4
d. Airway-pulse-respiratrion	0	3	2.7
e. I don't know	0	8	7.3
5. What would you do for a child with open consciousness whose airway is fully obstructed (ingested foreign body) and who cannot cough			
a. I would get back and apply pressure on the abdomen	1	54	49.1
b. I would perform cardiac massage	0	0	0.0
c. I would lie him/her face downwards, hit the back	0	13	11.8
d. I would lie him/her back	0	40	36.4
e. I don't know	0	3	2.7
6. Which one is true for animal and insect bites?			
a. The area of wound is washed with soap and cold water for at least 5 minutes in dog bites	1	18	16,4
b. Heat should be applied on the injured area in cases of bee and scorpion stings	0	1	0.9
c. Tourniquest is applied around the wound if the animal bite is in the head and neck region	0	3	2.7
d. The wound is cut with knife and the venom is sucked and spit in cases of snake bite	0	77	70
e. I don't know	0	11	10
7. What should be done primarily in burns due to pouring of hot water?			
a. Ice should be applied on the injured area	0	26	23.6
b. The burned area should be kept under running tap water for at least 5-10 minutes	1	36	32.7
c. Burn cream should be applied on the burned area	0	32	29.1
d. Yogurt or toothpaste should be applied on the burned area	0	12	10.9
e. I don't know	0	4	3.6
Please assess the following sentences			
8. In case of fracture, the ends of fractured bone should be pushed inside, if they are out.			
a. True	0	1	0.9
b. False	1	101	91.8
c. I don't know	0	8	7.3
9. A child who has ingested cleaining material including bleacher, detergent should be immediately regurgitated.			
a. True	0	36	32.7
b. False	1	39	35.5
c. I don't know	0	35	31.8

Table 1. Continued

Questions related with knowledge of basic first-aid practices	Score value	Distribution of answers n=110	%
10. A child with head trauma should be kept awake.			
a. True	1	99	90
b. False	0	6	5.5
c. I don't know	0	5	4.5
11. A child who has fainted should be laid down on a flat background and the feet should be elevated.			
a. True	1	66	60
b. False	0	13	11.8
c. I don't know	0	31	28.2
12. The organ with pain should be forced to move to understand if there is fracture in a child who has been injured after falling.			
a. True	0	45	40.9
b. False	1	50	45.5
c. I don't know	0	12	13.6
13. A child who has been struck by electricity whould not be contacted directly.			
a. True	1	98	89.1
b. False	0	4	3.6
c. I don't know	0	8	7.3
14. A child who has been struck by electricity who has open consciousness does not need to be taken to hospital.			
a. True	0	1	0.9
b. False	1	103	93.6
c. I don't know	0	6	5.5
15. A child who has fallen from a high level should be laid down in the supine position and the head should be turned sideways.			
a. True	0	22	20.0
b. False	1	23	20.9
c. I don't know	0	65	59.1
16. When foreign body including knife, iron is stuck in a child's hand should be taken to the nearest healthcare institution without pulling out the foreign body.			
a. True	1	103	93.6
b. False	0	1	0.9
c. I don't know	0	6	5.5
17. Direct pressure should be applied on the injured area in case of injury with bleeding.			
a. True	1	80	72.7
b. False	0	19	17.3
c. I don't know	0	11	10
18. The head of a child who has epistaxis should be laid down backwards.			
a. True	0	24	21.8
b. False	1	63	57.3
c. I don't know	0	23	20.9
19. Cold should be applied in cases of sprain with resting the sprained organ.			
a. True	1	74	67.3
b. False	0	20	18.2
c. I don't know	0	16	14.5
20. If the jaw of a child with seizure (epileptic attack) is locked, it should be forced to be opened by placing objects including fork, spoon.			
a. True	0	20	18.2
b. False	1	72	65.5
c. I don't know	0	18	16.3

Table 2. Distribution of the scores obtained by the teachers from the questions related with basic first-aid practices according to some variables

Variables	n	Mean±standard deviation	p
Age group			
20-29 years	37	12.32±2.52	
30-39 years	55	11.67±3.28	0.780*
40 years and above	18	11.78±2.90	
Professional working time			
0-5 years	32	12.69±2.57	
6-10 years	25	10.68±3.33	0.047*
11 years and above	53	12.02±2.89	
Status of having received first-aid education			
Yes	81	12.31±2.67	0.086†
No	29	10.79±3.50	
Perception of level of first-aid knowledge			
Poor	11	8.36±4.80	
Moderate	82	11.98±2.24	0.002*
Good	17	13.88±2.74	
Previous confrontation with injury requiring first-aid			
Yes	76	11.93±2.65	0.660†
No	34	11.85±3.64	

*Kruskal Wallis test, †Mann-Whitney U test

ies conducted in Afyonkarahisar and Ankara, it was observed that the rates of feeling sufficient in the area of first-aid were low similar to our study (13.6%, 16.7%, respectively) (11, 12). It was thought that the perception of sufficieny of pre-school teachers should be increased with qualified education programs. Similarly, in studies conducted with other profession groups with a high potential of intervention in cases of accidents/injuries, the rates of feeling sufficient in terms of first-aid knowledge were found to be low. In studies conducted with traffic polices, students of police school and motorbus and truck drivers, the rates of feeling sufficient in terms of first-aid knowledge were found to be 19.6%, 19.5% and 8.3%, respectively(16-18). These results show the requirement for education in terms of other profession groups who have the potential of intervening in cases of emergencies and the problem is not limited only to pre-school teachers.

The mean score of the teachers obtained from the first-aid questions was found to be 11.9±2.9. In the study conducted in Afyonkarahisar, the mean score of the pre-school teachers was found to be 54.5 on the scale of 100 (11). In the study conducted with elementary school and high school teachers in Isparta, the mean score of first-aid knowledge was found to be 7.07 on the sclae of 12 (14). It is observed that the mean score of first-aid knowledge found in our study was at a moderate level which was compatible with the other studies.

The answers given to the questions related with first-aid knowledge were examined and the first-aid practices which were known less were evaluated in detail. It was found that only 16.4% of the teachers marked the option which stated that the wounded area should be washed with water and soap for at least 5 minutes in cases of dog bites. It was notable that a great portion of the group (70%) marked the option of "In snake bites, the wound is cut with a knife and the venom is sucked and spit out" in a multiple-choice question. It was thought the fact that this intervention which has no place in first-aid practices was chosen as the correct answer by an important portion of the group might be related with erroneous scenes in movies and serials. In the study conducted in Ankara, it was found that only 16.7% of the pre-school educators knew the necessary first-aid practice in cases of insect bites (12). In a study conducted in China, it was found that 41.7% of the pre-school teachers knew that the wounded area should be washed under running water in case of injury (19). The different rates of correct answers found may be related with the differences in the levels of knowledge of the participants or the differences in the ways of establishing the questions and lack of use of a standard measurement method. Thus, comparison of the results obtained from different studies should be approached with suspicion. Nevertheless, it was thought that examination of the results of the other studies was important in terms of demonstrating the areas about which pre-school teachers had insufficient kowledge.

When a child falls from a high level, it is important that he/she should not be moved considering the possibility of spine injury and head-neck-body axis should be maintained. However, in our study, it was observed that only 20,9% of the teachers knew this approach and a great portion answered "I don't know". In the study conducted in China, it was found that 80.7% of the pre-school teachers reported that the child should not be moved and the neck-body axis should be maintained in case of a suspicious spine injury (19). Falling from a high level is an important cause leading to paraplegia and unconscious first-aid practices performed during the event may cause to injury in the spinal cord or may transform an incomplete cut to a complete cut. This may lead to permanent neurological damages, great psychological and social problems and change in the life style (20). Considering the individual and social importance of the subject, it is worrisome that this information was known only by 1/5 of the teachers. Therefore, it is thought that this subject matter should be emphasized more intensively in future educations.

It was found that only 22.7% of the teachers knew the phone number of the national poison information center and it was

concluded that more efforts should be made to publicize this center.

32.7% of the participants knew that the burned area should primarily be washed under running tap water for at least 5-10 minutes in cases of burns resulting from pouring of hot water. This question was answered by more than half of the teachers as "burn cream should be applied on the injured area" or "ice should be applied on the injured area". However, burning and tissue damage continue to advance to deeper layers, hyperemia increases and bullae form, when burn cream is applied on the burned area without cooling (21). Again, direct application of ice on the burned area leads to vasoconstriction and increases the damage due to the burn because of decreased blood flow (22). 35.5% of the participants knew correctly that a child who has drunk a caustic/corrosive substance should not be made regurgitate. 16.7% of the pre-school educators in Ankara knew the first-aid practive to be performed in case of intake of a caustic substance (12). Thus, it is observed that pre-school teachers are insufficient in terms of approaching to both thermal and chemical burns.

36.4% of the teachers knew correctly how the primary evaluation should be made in an unconscious child and 42.7% knew correctly how respiration should be evaluated. The fact that only 1/5 of the teachers stated that they could perform cardio-respiratory resuscitation supports this finding and shows the requirement for knowledge and skill training related with basic life support.

It was notable that the sentence "The painful organ is forced to move to understand if there is fracture in a child injured by falling " was answered as "true" by 40.9% of the teachers and as "I don't know" by 13.6%. Considering that falls and related suspicious fractures have an important place in childhood injuries, it was thought that all teachers should know that the organ with a suspicious fracture should not be moved and should be made rest. Bracing which is a very simple application prevents vascular and nerve injuries and is beneficial in terms of decreasing pain of the child. In the study conducted in Ankara, it was found that 51.4% of the teachers knew that the region with a suspicious fracture should be immobilized (12). In the study of Küçükoğlu et al. (23) in which the first-aid practices performed to children who presented to emergency department with fracture, dislocation and sprain before presentation were evaluated, it was found that wrapping/suspending was performed in only 19.2% of the cases. Bombacı et al. (24) found that 42 of 120 children who presented to the emergency department becasue of injury were intervened before presentation and transient fixation was performed in only 26.2% of the children who were intervened.

57.3% of the study group knew correctly that the head of a child with epistaxis should not be leaned backwards. In the study conducted in Ordu, 53.7% of the students of the division of child development knew correctly that the head of a child with epistaxis should be leaned forward, pressure should be applied and if the bleeding does not stop, the child should be referred to a physician (13).

In the study of Nayir et al. (14), it was emphasized that the teachers had insufficient knowledge about the approach to a patient with burn (21.4%) and to a patient who has drunk an acidic or basic substance (29.4%).

In our study, it was found that the mean score of first-aid knowledge was higher in the 20-29 age group compared to the other age groups and a weak negative correlation was found between age and knowledge score, but both were statistically insignificant. In the study of Nayir et al. (14), it was found that there was a significant weak negative correlation between age and knowledge score; as the age increased the score decreased.

It was observed that there was no statistically significant relation between the mean score of first-aid knowledge and professional working time. Similarly, no significant relation was found between the working time of the teachers and the level of first-aid knowledge in the study conducted in Ankara (12).

Although the mean scores of the teachers who received first-aid education were higher compared to the ones who did not receive education, the difference was not statistically significant. Similarly, no significant difference was found in the knowledge scores between the ones who received and did not receive education in the study of Nayir et al. (14).

Conclusively, it was found that a minor portion of the teachers evaluated their level of knowledge about first-aid practices as good and the scores obtained from the questions related with first-aid knowledge were not so poor, but insufficient.

It was thought that subject matters related with first-aid practices should be included more intensively in pre-graduate education given in institutions training pre-school teachers. Considering that first-aid subjects are considerably dynamic, it is important to support the present knowledge with in-service educations. Public health centers which schools are connected with, provincial public health directorates and provincial national education directorates should work simultaneously in the area of inservice education and collaboration with the universities (if present) in the region should be made. However, the fact that the teachers who stated that they received education did not have significantly high scores shows the importance of the quality of education as well as

receiving education and that the quality of education should be evaluated. The principles of adult education should be pursued for the first-aid education given to adults to be beneficial and permanent. The education should be face to face, the subject matters should be presented visually as much as possible, applications should be included, the question-answer technique and methods in which the participants can actively participate in the process including small group exercises should be used. Psychomotor objectives directed to skills should also be included in the objectives of education. In this study, the levels of knowledge of the teachers were evaluated only in terms of cognitive objectives. Thus, the fact that the levels of first-aid skills of the teachers were not evaluated is a limitation of this study. This should be considered in further studies which will be conducted in this area.

Considering that the most common institution where first-aid education was received was driving courses in our study, it was thought that the quality of education given in these institutions should be questioned and more importantly, driving courses should not be the first education institution for pre-school teachers. First-aid education of pre-school teachers is too important and too indispensable to be provided by driving courses. It should be kept in mind that a child's life can be saved or disabilities which might last for a life time can be prevented with a qualified education given to this group.

Ethics Committee Approval: The study was approved by the Ethical Committee for Clinical Studies of Süleyman Demirel University School of Medicine (Registration Number: 105).

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