ORIGINAL ARTICLE

ASSESSMENT OF PEDIATRIC FIRST AID KNOWLEDGE, ATTITUDE AND SKILL AMONG KINDERGARTEN TEACHERS IN ADDIS ABABA, ETHIOPIA

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ABSTRACT

Background*: kindergarten age children are vulnerable to injuries. Since they spend much of their time in school, teachers providing first aid are paramount important.*

Objective*: To assess the knowledge, attitude and skill of kindergarten teachers towards delivering first aid measures to children who sustain accidents and emergencies in the school compound.*

Methodology*: Across sectional study using stratified random sampling was conducted among kindergarten teachers in Addis Ababa, Ethiopia from December 2013 to August 2014. Pretested questionnaire was used after modifying from an instructor's resource manual published by American Academy of Pediatrics. The passing score was set at 80% correct. On the skill part participants were requested to write a short note on how they performed. A logistic regression analysis was used to estimate the adjusted odds ratio between knowledge score and prior first aid training.*

Results*: In this study 423 teachers participated. There were 401 questionnaires appropriately completed. 388(97%) were females. 243(60.3%) gave first aid at least once. Only 11(2.7%) teachers achieved a passing score of 80% or higher. The average accuracy of questions regarding first aid for convulsion, fainting, choking and insect bite was 23.7%, 25.4%, 30.7% and 31.9%, respectively. Frequently provided first aid was for nasal bleeding 171(71%), cut, puncture or bleeding from wound 110(45.45%), and choking 67(27.7%). Almost all agreed that giving first aid was helpful and important to learn. A logistic regression analysis showed scores significantly higher among teachers who took first aid before, adjusted Odds Ratio (AOR), 6.678; 95% Confidence interval (CI); 1.424-31.323 P-value = p=0.018).*

Conclusion*: The level of knowledge, attitude and skill of first aid practice among kindergarten teachers in Addis Ababa is low. There is a need to train teachers regarding first aid.*

Keywords: *first aid, Knowledge, attitude, practice, teachers*

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Background

Childhood injury and accident are among the primary causes of childhood mortality and morbidity globally [1]. Children are threatened by injury because they are physically vulnerable; they have decreased awareness of environmental dangers [2].

Most emergencies happen at home or at school; thus, teachers should have appropriate knowledge, attitude and skills for responding to emergencies [3]. Injuries are inevitable as our external environment is prone to accidents [4].Thus, administering correct first aid is essential to potentially save lives.

In developing countries, a cost-effective method to improve healthcare is imperative. Addis Ababa City Administration of Education set a standard for every school to have kits, rooms and other important items for delivering first aid [5]. The Ethiopian Ministry of Health also developed a first aid extension package in order to provide first aid services [6]. In Ethiopia, first aid is often administered by untrained personnel [6]. Healthcare professionals work in very few schools, and therefore school teachers can have great impact through school health programs [7]. Research done outside Ethiopia showed that most kindergarten teachers lack knowledge and skills in life threatening emergencies [8]. To our knowledge there is no such study in our country, but Courses about first aid are included only in few faculties of education in Ethiopia [9]. Therefore, we aim to assess the knowledge, attitude and skill of kindergarten teachers in Addis Ababa towards pediatric first aid measures.

Methods

Settings

This study was conducted in Addis Ababa, Ethiopia, from December 2013 to August 2014. The city had ten sub-cities and there were 952 kindergartens in the academic year 2014. Among these, 153 were owned by the government, 711 were private and 88 were classified as other schools. Other schools included religious and foreign-administered schools.

Participants

Teachers working for greater than one year were included and teachers who were not full-time workers were excluded.

Data/Measures

There were 952 kindergarten schools in the ten sub-cities with 7,215 teachers. Out of these, 1,177 work at governmental, 5,425 at private and 613 at other types of schools. A stratified random sampling was used to select 423 teachers based on the proportion of teachers in each sub-city and the school type. A cross-sectional survey was conducted using self-filled questionnaire which were collected by trained peoples.

The questionnaire had four sections**. Section A**: Socio-demographic data. **Section B:** Knowledge of principles of pediatric first aid as modified from pediatric first aid for caregivers and teachers' textbook and an

instructor's resource manual published by American Academy of Pediatrics [10]. A score of 80% or above was required to pass. **Section C**: Attitude toward pediatric first aid [11]. **Section D:** Assessment of pediatric first aid skills and a free response for prior experience.

Data Analysis

Data was coded, cleaned, and entered through SPSS version 20. The results of the questionnaire were expressed in percentages with average and range. A logistic regression was performed to assess independent factors of age, sex, and years of experience, level of education, sub-city and prior training on first aid. $P<0.05$ was considered statistically significant for all analyses.

First aid is defined emergency care or treatment given to an ill or injured person before regular medical aid can be obtained.

Diploma-is 10^{th} grade plus 3-year study

Certificate-10^{th} grade plus 1-year study

Ethical Considerations

The research approval was obtained from Department of Pediatrics and Child Health research committee and Addis Ababa Education Bureau and selected school administrators and informed consent was obtained from teachers.

RESULTS

Section A: **Socio-demographic:** A total 423 teachers participated. There were 401 questionnaires appropriately filled. Most of the teachers were female (97%). Only 167 (41.1%) teachers had prior training on first aid (Table 1).

Table 1: Demographic characteristic among Kindergarten teachers in Addis Ababa, Ethiopia and average knowledge score of subgroups for N-401 from December to August 2014

Characteristics	N (%)	Mean ± SD
Age(years)		
<30	285(71.1%)	54.4±13.1
30-49	109(27.2%)	56.8±13.4
≥50	7(1.7%)	56.4±9.5
Level of education		
Certificate	200(49.6%)	52.7±12.8
Diploma	201(50.2%)	57.4±13.02
Year of experience(years)		
1-5	265(66.1%)	54.2±13.1
6-10	103(25.7%)	56.7±12.9
≥11	33(8.2%)	56.7±13.9
Types of schools		
Governmental	64(15.9%)	55.9±11.9
Private	301(75.1%)	54.8±13.4
Others	36(9%)	54.8±12.9
Previous first aid training		
Yes	235(58.6%)	58.8±13.1
No	166(41.4%)	52.4±12.5

Section B: **knowledge:** The average score was 55.1±1.3. No participants answered all questions correctly, and only 11(2.7%) achieved passing score. Accurate answers to each question ranged from 23.7% to 96.5%. Two participants (0.85%) with no prior training in first aid achieved passing score, compared to 9/166 (5.4%) with prior training. Multivariate analysis showed significant difference between knowledge score and prior training in first aid, adjusted odds ratio, 6.678; 95% CI; 1.424-31.323 p=0.018 (Table 2).

Table 2: Multiple Logistic regressions of factors associated with knowledge scores among Kindergarten teachers in Addis Ababa, Ethiopia from December 2013 to August 2014

Covariate hazard	**Knowledge Failed, N (%)**	**Knowledge passed**	COR***(95 CI)**	AOR**** **(95 CI #)**
Age (years)				
< 30	285(98)	5(2)	**0.33(0.01-1.01)**	**2.95(0.73-11.92)**
≥30	110(94.8**)**	6(5)	1	1
Level of education				
Diploma	194(97)	7(3)	**0.566(0.16-1.96)**	**2.10(0.53-8.02)**
Certificate	196(98)	4(2)	1	1
Experience(year)				
1-5	259(98)	6(2)	0.36(0.10-1.85)	0.98(0.60-1.61)
6-10	100(97)	3(3)	0.46(0.74-2.91	
≥11	31(94)	2(6)	1	1
Type of school				
Governmental	62(97)	2(3)	**0.55(0.07-4.06)**	**1.13(0.33-3.82)**
Private	294(98)	7(2)	**0.41(0.08-2.02)**	
Others	34(95)	2(5)	1	1
Previous training				
Yes	157(96)	9(4)	**6.678(1.42-31.32)**	**6.64(1.38-31.79)]**
No	**233(99)**	**2(1)**	**1**	**1**

Section C: Attitude: 98.8% of the participants have positive attitude towards giving first aid and 96.5% believe that importance of learning to administer first aid.

Section reported skill: How they administer first aid to common pediatric emergencies (Table3)

Table 3: Pediatric First Aid Skill among Kindergarten teachers in Addis Ababa, Ethiopia from Dec.2013 to Aug. 2014

Type of skill	N*(%)
First aid for nasal bleeding	**171**
*Pinch the soft part of the nose, press against bone of the face	77(45)
Tilt head back and place cold pack on forehead	70(41)
Blow nose until the bleeding stop	18(11)
Put soft paper or clean cloth in the nostrils	6(4)
First aid for insect bite	**9**
*Squeeze the area of sting	4(44)
Clean the area with alcohol	5(56)
First aid for human or animal bite	**21**
*Wash the wound with soap and water then take to health center	8(38)
Clean the area with clean cloth, then take to health center	13(62)
First aid for bleeding from cut, puncture or any wound	**110**
*Press with clean cloth or gauze	47(43)
Clean with antiseptic	59(53)
Apply plaster	4(4)
First aid skill for Back or neck injury	**7**
*Avoid moving neck and support so that the head and neck aligned	6(86)
Take to health center directly	1(14)
First aid skill for asthma	**21**
*Take the child outside to get fresh air and give rescue medication	3(14
Take the child outside to get fresh air and if no response inform family	18(86)
First aid skill for burn	**16**
*Flush with cool water in case of scald burn	12(75)
Take the child Directly to health center	4(25)
First aid skill for choking	**67**
*Give abdominal thrust just below chest with hands	9(13)
Give back blows	38(57)
Give water to drink	20(30)
First aid skill for fainting	**17**
Lay the child on his/her side and check as the airway is open	7(41)
Lay the child on his/her back and struck match near his nose	2(12)
*Lay the child on his/her back and raise legs	8(47)
First aid skill for fracture, dislocation and sprain	**9**
*Keep the injured part from moving by wrapping with clean cloth	5(56)
Take the child to health center	4(44)
Apneic or grunting	**13**
*Mouth to mouth breathing and chest compression	6(46)
Lay the child on his/her back and allow to get fresh air till arrive to health center	7(54)
First aid on convulsive seizure	**27**
Lay the child on his/her back	14(52)
Lay on his/her back and struck match near his nose	3(11)
*Lay the child on his/her side and check the airway is open	10(37)

*are the correct answers

DISCUSSION

This study showed a marked knowledge gap in the appropriate administration of pediatric first aid among kindergarten teachers in Addis Ababa, Ethiopia. The study further demonstrated inadequate training in first aid among kindergarten teachers. Less than half of the teachers had prior first aid training. This percentage is like the study conducted in Shanghai where only 30.6% of the participants had ever received first aid training before [8]. A similar study conducted among Turkish primary school's teachers found nearly half had not taken courses on first aid [12]. In our study, only 2.7% of the teachers achieved a passing score. This is similar to the Shanghai study, where only 3.7% teachers achieved a passing score. This extremely low rate of knowledge may be due to lack of effective training and further continuing education. Teachers who had prior first aid training scored high on the knowledge section. There was similar finding in the Shanghai study too [8]. In a study performed in India, 65% of the teachers indicated they weren't sure how to deliver first aid prior to intervention [13].

In our study, questions related to seizures (74.6%), choking (69.3%) & insect bite (68.1%) were most often answered incorrectly. This is similar to the Shanghai study with corresponding percentages of seizure (83.5%), choking (69.9%), and insect stings (56.1%) incorrectly answered [8].

In this study, only 25.4% of the respondents indicated they would enact the correct measure for a convulsing child. Also, they have a wrong believe that seizure could stop if they strike a match. The Brazil study also demonstrated knowledge for seizure was unsatisfactory [14]. In Shanghai only 16.5% of the teachers answered seizure management questions correctly [8].

The study showed that as the most frequently delivered first aid was for nasal bleeding, but only 44.4% answered correctly. Of these, half tried to control bleeding by tilting the head back or blow to the nose. This is considered inappropriate as this leads to swallowing of the blood and initiates gastric irritation [15].

A severe reaction to an insect sting can be fatal if first aid is not given immediately [14]. This study showed only 31.9% of the teachers demonstrated the correct knowledge. This result is even lower than from Shanghai where they report 56.1%. [8].

In our study, 59% of teachers try to control bleeding by cleaning with antiseptic or with running water, but the principal aim should have been to control the bleeding by applying gentle pressure on the wound; removing foreign body and cleaning the area can be done later [15]. In addition to this, 48.4% of the participants thought making the head higher is the appropriate management for fainting, but this is harmful as it decreases further blood flow to the brain [15].

The majority of the teachers felt first aid was very important and a useful skill to learn. From a survey done in Israel nurses, parents and school principals agree that providing first aid is essential [16]. The study done in China showed that most teachers' attitude towards giving or learning first aid was positive [8]. A study done in Nigeria among drivers also showed that as 79.9% of the participants believe learning first aid is important & they had a positive attitude toward giving first aid [17].

This study clearly shows there are marked deficiencies in knowledge and skill of first aid and low rates of prior first aid training. This could be due to gaps in delivering effective and formal emergency care training in the curriculum of teachers training colleges and a lack of continuing education. All staff members, not just kindergarten teachers, need to be trained in first aid [18]. An analysis of kindergarten-related injuries in Austria showed the necessity of a continuous child safety training program [19]. In a study done in Pennsylvania, 77% of childcare centers required first aid training [18]. The Ethiopian Red Cross Society gives first aid training for teachers, and this should be continued and strengthened in kindergarten teachers [20].

LIMITATIONS

This study was limited in not determining teachers 'actual skills in implementing first aid and there is recall bias on those who provided.

CONCLUSION

Despite teachers are interested in obtaining proper training and readiness to give first aid, most teachers don't have correct knowledge and skill on first aid.

RECOMMENDATIONS

Pediatric first aid training should be more widely available to kindergarten teachers. Teachers training centers need to include first aid courses. A manual on first aid management of common pediatric emergency should be prepared for teachers.

Computing interest

The authors declare that they have no competing interest.

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