

Original Research

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Assessment of Knowledge, Emotion, and Attitude Levels of Kindergarten and Elementary School Teachers on the Disaster Management and Pediatric First Aid

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Abstract

Objectives: This study's aim is to assess the disaster management and pediatric first aid-related knowledge, emotion, and attitude levels of kindergarten and elementary school teachers, as the professionals that are first to provide interventions in the case of a disaster to children ages 0–8, who are considered to be among the vulnerable groups in the context of a disaster.

Methods: A total of 119 teachers working in the kindergarten and elementary schools located in the Gümüşhane province of Turkey were included in the study and were asked to fill in a questionnaire that comprises 3 sections. Data collection tools included a sociodemographic questionnaire, teachers' disaster management knowledge levels, and teachers' pediatric first-aid knowledge, emotion, and attitude levels.

Results: Analysis of the scores obtained by the teachers from the questionnaire revealed that the teachers, who participated in the study, had a high level of disaster management knowledge and a moderate-to-high level of pediatric first aid knowledge.

Conclusions: It is suggested as a result of this study that the disaster risks and injuries or losses of life associated with disasters that may occur at schools may be reduced with disaster management and first-aid interventions.

Background

Disasters are incidents that lead to the destruction of, or bring damages to, human, property, environmental, social, and economic resources and that expose the insufficiency of local resources thereby bringing the society closer together. Every society in the world has been exposed to various types of disasters of different scales for different reasons.^{1,2} Children are deemed to be among the vulnerable groups in the context of disasters.³ Children are more vulnerable to disasters than adults, as they are more fragile both physically and mentally. Hence, disasters potentially leave both physical and psychological marks on children.⁴ Many schools in operation around the world suffer material and moral damages as a result of unforeseeable disasters. Students and teachers can be seriously injured and even lose their lives due to disasters that occur during class hours.^{5,6}

A large part of the pediatric population is exposed to both natural and man-made disasters in schools.⁷ Children cannot sufficiently use their motor and cognitive abilities in times of a crisis or danger and thus are vulnerable.⁸ Emergency situations, such as intentional or unintentional injuries involving children, commonly occur at the schools, which are the places where children spend most of their time during the day.⁹ These emergency situations generally involve 1 or more of accidents such as falls,^{10–16} foreign body-induced airway obstruction,¹⁷ eye injuries,^{18,19} cuts, sprains, fractures, poisonings, and burns.²⁰

School management is responsible for planning for disaster risk reduction by continuously assessing local risks. School management must have procedures in place in relation to disasters and emergencies. Teachers should have sufficient knowledge about disaster management issues such as things to do during an earthquake, building evacuation, firefighting, search, and rescue.⁶ Many educational institutions in Turkey do not have health care personnel.²¹ Hence, teachers' competence in first aid becomes crucial.

For these reasons, teachers should be trained in first aid procedures and have the capacity to implement these procedures. The first aid training teachers receive during professional development is usually not enough, thus they should keep their first aid knowledge and skills up to date.²¹

This study is aimed to assess the disaster management and pediatric first-aid-related knowledge, emotion, and attitude levels of kindergarten and elementary school teachers, as the professionals that are first to provide interventions in the case of a disaster to children ages 0–8, who are considered to be among the vulnerable groups in the context of a disaster.

Methods

Study Group

This study was designed as quantitative research. The population of the research consisted of all kindergarten and elementary school teachers working in the Gümüşhane Province of Turkey during the 2020-2021 academic year. Convenience sampling method, which is one of the non-random sampling methods, was used to create the study sample. Consequentially, given the pandemic conditions, the study sample consisted of 119 teachers, of whom 36 were working in the kindergartens and 83 were working in the elementary schools.

Study Procedure

The official permission required to conduct the study was obtained from the Gümüşhane Provincial Directorate of National Education on July 7, 2020. Accordingly, all the kindergarten classrooms and elementary schools located within the borders of Gümüşhane Province, that is, both in the provincial center and in the surrounding districts, were visited between August 21, 2020, and September 28, 2020. The teachers who participated in the study were administered a questionnaire during these visits using the face-to-face interview technique.

Survey Questionnaire

In order to look at the knowledge levels of teachers in our study, a data collection tool was created from studies including disaster knowledge approved from India (knowledge and practices of school teacher regarding disaster management)²² and pediatric first aid knowledge and emotional attitude levels approved from China (pediatric first aid knowledge and attitudes among staff in the preschools of Shanghai, China).²³ The teachers who participated in the study were asked to fill in a questionnaire that comprises 3 sections. The first section of the questionnaire consists of questions that address demographic characteristics of the participating teachers; the second section consists of 15 multiple-choice questions that address teachers' disaster management knowledge levels; and the third section consists of 35 multiple-choice questions that address teachers' pediatric first-aid knowledge levels and a 5-point Likert-type scale that addresses teachers' pediatric first-aid emotion and attitude levels.

Ethics

This study was carried out after obtaining the necessary permissions from Gümüşhane University Ethics Committee, number 2020/06, and Gümüşhane Provincial Directorate of National Education.

Statistical Methods

SPSS 15.0 (Statistical Package for the Social Sciences, Version 15.0) and Microsoft Office Excel 2013 software were used to analyze the data. Within the scope of reliability and validity studies of the tests, descriptive statistics (mean, standard deviation, standard error, number of correct answers, number of incorrect answers, mean number of correct answers, percentage of success), item difficulty, item discrimination, and item analysis (split-half reliability, KR (Kuder-Richardson)-21 alpha reliability, lower and upper quartile t-test, Cronbach's alpha, item total correlation) were used. Confirmatory factor analysis was used for the validity studies of the pediatric first aid scale, whereas item total correlation and

Cronbach's alpha methods were used for the reliability studies of the pediatric first aid scale. The Pearson's correlation was used to analyze the relationship between variables, and path analysis with intermediate variables (mediator) was used to determine the mediating effect of the personality traits on the effect of job alienation on cyberloafing, within the scope of the structural equation model. An independent samples t-test was used to analyze the scores that the teachers obtained from the scale based on their gender and marital status; and 1-way analysis of variance (ANOVA) was used to analyze the scores that the teachers obtained from the scale based on their age groups, educational levels, length of service, and positions. In cases where the ANOVA test indicated a significant difference, least significant differences (LSD) post hoc test was used to determine the groups subject to the significant difference.

Results

Sociodemographic Profile

Of the 119 teachers who participated in the study, 26.9% were female and 73.1% were male; 60.5% of the participants were married and 39.5% were single; 15.1% of the participants were in the 23-27 age group, 38.7% of them were in the 28-32 age group, and 46.2% of them were in the age group of 32 and older; 5% of the participants were holders of an associate's degree, 90.8% of them were holders of a bachelor's degree, and 4.2% of them were holders of any type of graduate degree; 30.3% of the participants were working in kindergarten classrooms and 69.7% of them were working in elementary schools; 29.4% of the participants had a length of service of less than 1 year in the teaching profession, whereas 17.6% of them had a length of service of 1-5 years, 25.2% of them had a length of service of 6-10 years, and 27.7% of them had a length of service of 11 years and above; 68.9% of the participants were determined to have previously received training on disaster management and first aid; 32.8% of these participants received in-service disaster management and first aid training, whereas 67.2% of them received disaster management and first aid training through other means; 31.1% of the participants who received disaster management and first aid training considered their training to be sufficient.

Results of the Validity and Reliability Analyses of the Tests

The higher the item discrimination indices, the higher the validity of the test. Accordingly, an item discrimination index of ≥ 0.40 indicates that the item is "very good"; an item discrimination index between 0.30 and 0.39 indicates that the item is "quite good"; an item discrimination index between 0.20 and 0.29 indicates that the item "can be used in cases where necessary, but it needs correction and improvement"; an item discrimination index of ≤ 0.19 indicates that the item is "very weak and should be removed from the test if it cannot be improved with corrections."²⁴

Item discrimination indices of 8 items in the disaster management knowledge test were found to be greater than 0.30, which meant that they can be included in the test. There was no item with an item discrimination index between 0.20 and 0.30, which meant that there was no item that needs to be corrected. Last, item discrimination indices of the remaining 7 items were < 0.20 , which meant that they should be removed from the test. An item analysis revealed that Cronbach's alpha coefficient, the KR20 reliability coefficient (α), and the Spearman-Brown split-half test correlation (r) of the disaster management knowledge test were determined as

Table 1. Distribution of participants by demographic characteristics (n = 119)

Demographic variables	Groups	n	%
Gender	Female	32	26.9
	Male	87	73.1
Marital status	Married	47	60.5
	Single	72	39.5
Age	23-27 years	18	15.1
	28-32 years	46	38.7
	32 years and older	55	46.2
Educational level	Associate's degree	6	5.0
	Bachelor's degree	108	90.8
	Graduate (master's and doctorate) degree	5	4.2
Type of school	Kindergarten	36	30.3
	Elementary school	83	69.7
Overall length of service	Less than 1 year	35	29.4
	1-5 years	21	17.6
	6-10 years	30	25.2
	11 years and above	33	27.7
Any previous training on disaster management and/or first aid	Yes	82	68.9
	No	37	31.1
Type/location of disaster management and/or first aid training received	In-service training	39	32.8
	Other (eg, tutoring, formal training)	80	67.2
Whether the training received was deemed sufficient	Yes	37	31.1
	No	82	68.9

0.97, 0.97, and 0.96, respectively. Taking into consideration that any result that is equal to or more than 0.70 is generally deemed to be sufficient in terms of the reliability of the test scores, all 3 results were very high.²⁵ Based on the results of the validity and reliability analyses, it was determined that 7 items were not valid, that the reliability and validity of 8 items, which were found to be valid, were high, and that these 8 items can be used to measure similar attitudes and to assess the study sample in terms of disaster management knowledge (Table 1).

The item discrimination index test revealed that the item discrimination indices of the 20 items in the pediatric first aid knowledge test were greater than 0.30, and hence they could be included in the test. Four items, which were determined to have item discrimination indices between 0.20 and 0.30, were removed from the test, since it was not deemed to be possible to make the necessary corrections to be able to use these items. The item discrimination indices of the remaining 11 items were determined to be < 0.20, and thus were removed from the test. Cronbach's alpha coefficient, the KR20 reliability coefficient (α), and the Spearman-Brown split-half test correlation (r) of the pediatric first aid knowledge test were determined as 0.87, 0.87, and 0.84, respectively. Taking into consideration that any result that is equal to or more than 0.70 is generally deemed to be sufficient in terms of the reliability of the test scores, all 3 results were very high. Based on the results of the validity and reliability analyses, it was determined that 15 items were not valid, that the reliability and validity of 20 items, which were found to be valid, were high, and that these 20 items can be used to measure similar attitudes and to assess the study sample in terms of pediatric first aid knowledge (Table 2).

A review of the fit indices revealed that they were either at a good or very good level, that the factor loads were in appropriate

Table 2. Model fit indices of the Pediatric First Aid Emotion-Attitude Scale resulting from the CFA analysis (n = 119)

Model fit indices	(15 items, 2 subscales)
χ^2/SD	1.904
RMSEA	0.088
SRMR	0.039
GFI	0.944
NNFI	0.961
CFI	0.976

CFA, confirmatory factor analysis; CFI, Comparative Fit Index; GFI, Goodness of Fit Index; NNFI, Non-normed Fit Index; RMSEA, root mean square error of approximation; SD, standard deviation; SRMR, standardized root mean square residual.

intervals, and that the correlation between the 2 dimensions was in the negative direction as expected and significant. The χ^2/SD was calculated as < 3, indicating a perfect fit; RMSEA was calculated as ≤ 0.10 , indicating a good fit; SRMR was calculated as < 0.05, indicating a perfect fit; GFI was calculated as ≥ 0.90 , indicating a good fit; NNFI was calculated as > 0.95, indicating a perfect fit; and last, CFI was calculated as > 0.95, also indicating a perfect fit.²⁶

The Cronbach's alpha coefficient of the pediatric first aid emotion-attitude scale and its subscales were calculated as 0.85, 0.88, and 0.87, respectively. The item-total correlation of the items in the scale was found to be between 0.56 and 0.66 and thus > 0.30. Reliability and validity analysis revealed that the pediatric first aid emotion-attitude scale, consisting of 7 items and 2 subscales, is a valid and reliable scale.

Descriptive Findings in Relation to the Scale and Test Scores

The disaster management knowledge scale mean score of the teachers, which was calculated as 6.90 ± 2.50 , as shown in Table 3, was determined to be a high score, given that the maximum total score that can be obtained from the 8 items remaining in the disaster management knowledge scale was 8. The pediatric first aid knowledge scale mean score of the teachers, which was calculated as 13.73 ± 4.48 , as shown in Table 3, was determined to be a moderate-high score, given that the maximum total score that can be obtained from the 20 items remaining in the disaster management knowledge scale was 20. In terms of the emotion-attitude scale mean scores of the teachers in relation to the pediatric first aid scale, which are shown in Table 3, and the answer choices that correspond to these scores in the 5-point Likert type scale, the negative emotion-attitude scale mean score of the teachers was calculated as 3.36 ± 1.04 , which corresponds to the "I agree" choice in the 5-point Likert type scale; the positive emotion-attitude scale mean score of the teachers was calculated as 3.11 ± 0.85 , which corresponds to the "undecided" choice in the 5-point Likert type scale; and the overall emotion-attitude scale mean score of the teachers was calculated as 2.91 ± 0.77 , which corresponds to the "undecided" choice in the 5-point Likert type scale, as well.

Results of the Pearson's Correlation Analysis (Table 4)

A negative and significant relationship was found between the scores obtained from the disaster management knowledge and the pediatric first aid negative emotion-attitude scales ($r = -0.20$; $P < 0.05$). Teachers, who were found to have a high level of disaster management knowledge, were found to have a low level of negative emotion-attitude toward pediatric first aid. A positive and significant relationship was found between the

Table 3. Descriptive statistics in relation to the scale scores (n = 119)

Scales	n	\bar{x}	SD	Skewness	Kurtosis
Disaster management knowledge scale	119	6.90	2.50	-1.02	1.55
Pediatric first aid knowledge scale	119	13.73	4.48	0.14	0.60
Pediatric first aid negative emotion-attitude scale	119	3.36	1.04	-0.09	-0.62
Pediatric first aid positive emotion-attitude scale	119	3.11	0.85	-0.75	0.70
Overall pediatric first aid emotion-attitude scale	119	2.91	0.77	-0.53	0.40

SD, standard deviation.

Table 4. The relationship between the scale scores obtained by the teachers (n = 119)

Scales	2	3	4	5
Disaster management knowledge scale	0.25**	-0.23*	0.36**	0.36**
Pediatric first aid knowledge scale	1	-0.24**	0.31**	0.33**
Pediatric first aid negative emotion-attitude scale		1	-0.38**	-0.81**
Pediatric first aid positive emotion-attitude scale			1	0.84**
Overall pediatric first aid emotion-attitude scale				1

* $P < 0.05$; ** $P < 0.01$.

Table 5. The effect of disaster management and pediatric first aid knowledge on the pediatric first aid emotion-attitude (n = 119)

Independent variables	B	SE _B	β	t	P
Coefficient	3.459	0.179		19.333	0.000
Disaster management knowledge	0.294	0.092	0.282	3.206	0.002
Pediatric first aid knowledge	0.272	0.105	0.227	2.584	0.011
		$R^2 = 0.163$	$\Delta R^2 = 0.149$	$F_{(2, 116)} = 11.335$	$P = 0.000$

B, unstandardized regression coefficient; SE_B, standard error for the unstandardized regression coefficient; β , standardized regression coefficient; t, the t-test statistic; P, the probability value; R², proportion of the variance; ΔR^2 , increment to R²; F, ratio of 2 variances.

scores obtained from the disaster management knowledge and the pediatric first aid positive emotion-attitude scales ($r = 0.36$; $P < 0.05$). Pediatric first-aid-related positive emotion-attitude levels of the teachers, who were found to have a high level of disaster management knowledge, were found to be high as well. A positive and significant relationship was found between the scores obtained from the disaster management knowledge and the overall pediatric first aid emotion-attitude scales ($r = 0.36$; $P < 0.05$). Overall pediatric first-aid-related emotion-attitude levels of the teachers, who were found to have a high level of disaster management knowledge, were found to be high as well.

A negative and significant relationship was found between the scores obtained from the pediatric first aid knowledge and pediatric first aid negative emotion-attitude scales ($r = -0.24$; $P < 0.05$). Teachers, who were found to have a high level of pediatric first aid knowledge, were found to have a low level of negative emotion-attitude toward pediatric first aid. A positive and significant relationship was found between the scores obtained from the pediatric first aid knowledge and the pediatric first aid positive emotion-attitude scales ($r = 0.31$; $P < 0.05$). Pediatric first-aid-related positive emotion-attitude levels of the teachers, who were found to have a high level of pediatric first aid knowledge, were found to be high as well. A positive and significant relationship was found between the scores obtained from the pediatric first aid knowledge and the overall pediatric first aid emotion-attitude scales ($r = 0.33$; $P < 0.05$). Overall pediatric first-aid-related emotion-attitude

levels of the teachers, who were found to have a high level of pediatric first aid knowledge, were found to be high as well.

Results of the Regression Analysis (Table 5)

The model that demonstrates the effect of the independent variables on the dependent variable, that is the pediatric first aid emotion-attitude, is determined to be appropriate: $F_{(2,116)} = 11.33$; $P < 0.05$. Disaster management knowledge and pediatric first aid knowledge variables together explain 15% of the change in the emotion-attitude toward pediatric first aid ($\Delta R^2 = 0.149$).

The standardized regression coefficient (β) and the significance of the coefficient (t) in the model revealed that the disaster management knowledge ($\beta = 0.28$; $t = 3.21$; $P < 0.05$) and pediatric first aid knowledge ($\beta = 0.23$; $t = 2.58$; $P < 0.05$) variables have a positive and significant effect on the emotion-attitude toward pediatric first aid. Hence, it was concluded that the disaster management knowledge and pediatric first aid knowledge result in an increase in the positive emotion-attitude toward pediatric first aid.

Findings in Relation to the Distribution of Scale and Subscale Scores by the Demographic Variables

The scores that the teachers obtained from the disaster management knowledge scale, pediatric first aid positive attitude subscale, and the pediatric first aid attitude scale were found not to have differed significantly in terms of gender ($P > 0.05$). On the other

hand, the scores that the teachers obtained from the pediatric first aid knowledge scale were found to have differed significantly in terms of gender ($t = -3.03$; $P < 0.05$) in that the pediatric first aid knowledge scores obtained by the male teachers were significantly higher than the respective scores obtained by the female teachers. The scores that the teachers obtained from the pediatric first aid negative attitude subscale were found to have differed significantly in terms of gender ($t = -2.02$; $P < 0.05$) in that the pediatric first aid negative emotion-attitude scores obtained by the male teachers were significantly higher than the respective scores obtained by the female teachers.

The scores that the teachers obtained from the disaster management knowledge scale and the pediatric first aid knowledge scale were found not to have differed significantly in terms of educational level ($P > 0.05$). On the other hand, the scores that the teachers obtained from the pediatric first aid negative attitude subscale were found to have differed significantly in terms of educational level ($F = 3.58$; $P < 0.05$). The LSD post hoc test, which was carried out to determine the groups subject to the significant difference, revealed that the scores obtained by the teachers, who hold a bachelor's or a graduate degree, were significantly higher than the respective scores obtained by the teachers, who hold an associate's degree. Additionally, the scores that the teachers obtained from the pediatric first aid positive attitude subscale and the pediatric first aid emotion-attitude scale were found not to have differed significantly in terms of education level ($P > 0.05$).

The scores that the teachers obtained from the disaster management knowledge scale were found to have differed significantly in terms of the type/location of the disaster management and first aid training that they have received ($t = 2.40$; $P < 0.05$). The scores that the teachers, who received disaster management and first aid training as an in-service training, obtained from the disaster management knowledge scale were found to be significantly higher than the respective scores obtained by the teachers, who received disaster management and first aid training by other means. The scores that the teachers obtained from the pediatric first aid knowledge scale, pediatric first aid emotion-attitude scale, pediatric first aid positive emotion-attitude subscale, and pediatric first aid negative emotion-attitude subscale were found not to have differed significantly in terms of the type/location of the disaster management and first aid training that they have received ($P > 0.05$).

Discussion

Ganpatrao investigated the knowledge levels and the practices of teachers working in 30 secondary schools in Pune, India, in 2014 in relation to disaster management. Consequently, Ganpatrao found that the female teachers were more knowledgeable than the male teachers, that 26% of the teachers previously received training on disaster management or first aid, that 82.96% of the teachers had a moderate level of knowledge on disaster management, that the 7.22% of the teachers had a good level of knowledge on disaster management, that 4.26% of the teachers had a poor level of knowledge on disaster management, and that, in general, teachers lacked disaster management knowledge.²²

In comparison, the teachers who participated in this study were found to have a high level of disaster management knowledge. The scores that the teachers obtained from the disaster management knowledge scale were found not to have differed significantly in terms of gender ($P > 0.05$), whereas the scores that the teachers obtained from the disaster management knowledge scale were

found to have differed significantly in terms of the type/location of the disaster management and first aid training that they have received ($t = 2.40$; $P < 0.05$). The scores that the teachers, who received disaster management and first aid training as an in-service training, obtained from the disaster management knowledge scale were found to be significantly higher than the respective scores obtained by the teachers, who received disaster management and first aid training by other means.

Mersal and Aly investigated the disaster management and first aid knowledge of the teachers working at an elementary school in Cairo, Egypt, between November 2014 and April 2015. Consequently, Mersal and Aly found that the female teachers were more knowledgeable and skilled than the male teachers, and that 86.4%, 83.1%, 91.5%, and 83.1% of the teachers had insufficient first aid knowledge in relation to wounds, fractures, burns, and faintings, respectively.²⁷

In comparison, in this study, the scores that the teachers obtained from the disaster management knowledge scale were found not to have differed significantly in terms of gender ($P > 0.05$). Moreover, contrary to the findings reported by Mersal and Aly, it was found as a result of this study that 75.6%, 98.3%, 69.7%, 63%, and 84.9% of the teachers correctly answered the questions on first aid related to the wounds and bleeding, fractures, faintings, burns, and to the blisters that form in the area of the burns, respectively, and that the teachers had a high level of first aid knowledge on the said types of injuries. On the other hand, it was found that 32.8% of the teachers had insufficient first aid knowledge on puncture wounds due to splinters, and so on.

Awad Allah et al. investigated the knowledge levels and skills of the elementary school teachers working in the elementary schools in Zagazig, Egypt, between November 2015 and April 2016 on first aid and disaster management, and the effectiveness of the first aid and disaster management training on the knowledge levels and skills of elementary school teachers. Consequently, they did not find any statistically significant relationship between teachers' demographic characteristics, such as gender, age and marital status, and the first aid and disaster management levels of teachers both in respect of knowledge and practice. Additionally, before the teachers received first aid and disaster management training, 86%, 93%, 93%, 81.4%, 74.4%, and 83.7% of the teachers were found to have insufficient knowledge on first aid related to the wounds, burns, animal bites, nosebleeds, faintings, and fractures and sprains, respectively, compared to 30.2%, 55.8%, 30.2%, 39.5%, 53.5%, and 44.2% of the teachers, who were found to have insufficient knowledge on first aid related to the wounds, burns, animal bites, nosebleeds, faintings, and fractures and sprains, respectively, after they received first aid and disaster management training, indicating a significant increase in the teachers' knowledge levels related to first aid and disaster management.²⁸

The findings of this study were found to be comparable to the findings reported by Awad Allah et al., in that no statistically significant relationship was found between teachers' demographic characteristics, such as gender, age and marital status, and disaster management scores ($P > 0.05$). In parallel to the findings reported by Awad Allah et al., it was found as a result of this study that 75.6%, 98.3%, 69.7%, 63%, 84.9%, and 94.1% of the teachers correctly answered the questions on first aid related to the wounds and bleeding, fractures, faintings, burns, and blisters that form in the area of the burns and dog bites, respectively, and that the teachers had a high level of first aid knowledge on these types of injuries.

Li et al. investigated the pediatric first aid knowledge and attitude levels of the personnel working in the kindergarten classrooms located in Shanghai, China, in 2012. Consequently, they found that the personnel who previously received first aid training had higher levels of knowledge than those who did not, that only 21% of the personnel knew how to examine the scene of an accident as the first thing to do, that 23%, 27.6%, 38.8%, and 30.1% of the personnel were knowledgeable about the chemical injuries to the eye, inhaled poison, tongue biting, and choking and coughing, respectively, and that the knowledge levels of the personnel on first aid were not sufficient. The scores obtained by the personnel from the questions related to the faintings and heat strokes were also found to be low. Additionally, it was found that the majority of the personnel had a positive attitude toward first aid.²³

In comparison, in this study, 68.9% of the participants were determined to have previously received training on disaster management and first aid, and it was found that the teachers had a moderate-to-high level of pediatric first aid knowledge. In parallel to the findings reported by Li et al., it was found that only 27.7% of the teachers who participated in this study knew how to examine the scene of an accident as the first thing to do, that 21.8% of the teachers had insufficient knowledge in relation to the first aid on choking, and that the negative, positive, and general attitude levels of teachers with high levels of pediatric first aid knowledge were low, high, and high, respectively, toward pediatric first aid. However, contrary to the findings reported by Li et al., it was found as a result of this study that 77.3%, 91.6%, 58.8%, 69.7%, and 80.7% of the teachers were knowledgeable about the chemical injuries to the eye, inhaled poison, tongue biting, fainting, and heat strokes, respectively.

Slabe and Fink investigated the first aid knowledge levels of the teachers and assistant teachers working in 45 of the 289 kindergarten classrooms in Slovenia in 2013. Consequently, they found that 23.8%, 13.1%, 71.9%, and 77.4% of the participants correctly answered the questions related to cardiopulmonary resuscitation (CPR), choking and severe cough, fractures, and burns, respectively. The authors interpreted these results as that the participants had sufficient first aid knowledge about burns and fractures and insufficient first aid knowledge about cardiac arrest, choking, and severe cough.²⁹

In comparison, in this study, contrary to the findings reported by Slabe and Fink, the knowledge levels of teachers on CPR were found to be high. Accordingly, it was found that 69.7%, 96.6%, 84.9%, and 83.2% of the teachers correctly answered the questions related to mouth-to-mouth resuscitation, decision-making concerning whether to perform cardiac massage and mouth-to-mouth resuscitation, heart massage in babies, and cardiac massage and mouth-to-mouth resuscitation in children, respectively. On the other hand, in parallel to the findings reported by Slabe and Fink, in this study, it was found that only 21.8% of the teachers correctly answered the questions on first aid related to choking, and thus that the teachers who participated in this study had insufficient knowledge related thereto. Additionally, it was found as a result of this study that 98.3%, 63%, and 84.9% of the teachers correctly answered the questions on first aid related to the fractures, burns, and blisters that form in the area of the burns, respectively, and that the teachers had a high level of first aid knowledge on the said types of injuries, which is a finding comparable to the findings reported by Slabe and Fink.

Lee et al. investigated the knowledge levels of kindergarten teachers working in Seoul, South Korea, in 2010, in relation to the cardiopulmonary resuscitation, using a data collection tool.

Consequently, 58.8% of the teachers were found to have previously attended first aid courses. Additionally, it was found that 289 of the teachers who participated in the study did not have information about chest compressions in infants and children and that only 2 of them knew how to give CPR correctly.³⁰

In comparison, in this study, 68.9% of the participants were determined to have previously received training on disaster management and first aid, and it was found that the teachers had a moderate-to-high level of pediatric first aid knowledge. Additionally, the knowledge levels of teachers on CPR were also found to be high. Accordingly, it was found that 69.7%, 96.6%, 84.9%, and 83.2% of the teachers correctly answered the questions related to mouth-to-mouth resuscitation, decision-making concerning whether to perform cardiac massage and mouth-to-mouth resuscitation, heart massage in babies, and cardiac massage and mouth-to-mouth resuscitation in children, respectively.

Abdella et al. investigated both theoretical and practical pediatric first aid knowledge levels of teachers working in all kindergarten classrooms located in Port Said, Egypt, in 2015, in 3 stages, namely before and after teachers received first aid training and within the scope of intervention programs. Consequently, they found significant differences between the pediatric first aid practices of the teachers in the said 3 stages. Accordingly, compared to 26%, 10%, 28%, 12%, and 28% of the teachers who correctly rendered first aid on wounds, chokings, nosebleeds, fractures, and burns, respectively, before the training, 54%, 62%, 58%, 64%, and 58% of the teachers correctly rendered first aid after the training on wounds, chokings, nosebleeds, fractures, and burns, respectively, after the training.³¹

In comparison, in this study, it was found that 75.6%, 32.8%, 80.7%, 98.3%, 63%, 84.9%, and 94.1% of the teachers correctly answered the questions on first aid related to the wounds and bleeding, puncture wounds due to splinters and such, chokings, nosebleeds, fractures, burns, and blisters that form in the area of the burns, respectively.

Başer et al. investigated the first aid knowledge and attitude levels of teachers working in elementary schools in Kayseri between February 9 and February 20, 2004. Consequently, they found that 45.5% of the teachers were knowledgeable about first aid; 60.2% of these teachers were determined to have gained their first aid knowledge through the printed media, whereas the remaining 39.8% were determined to have gained their first aid knowledge via the training they received in a driving school. Additionally, the authors found that 65.1%, 63.5%, and 88.5% of the teachers incorrectly answered the questions on first aid related to nosebleeds, bee stings, and contusions, respectively, whereas 70.5% of the teachers correctly answered the questions on first aid related to burns.³²

In comparison, in this study, 68.9% of the participants were determined to have previously received training on disaster management and first aid; 32.8% of these participants received in-service disaster management and first aid training, whereas 67.2% of them received disaster management and first aid training through other means; 31.1% of the participants who received disaster management and first aid training considered that the training they received was sufficient. In parallel to the findings reported by Başer et al., it was found as a result of this study that 80.7%, 63%, and 84.9% of the teachers correctly answered the questions on first aid related to nosebleeds, burns, and blisters that form in the area of the burns, respectively, and thus that they had a high level of first aid knowledge on the said types of injuries. On the other hand, contrary to the findings reported by Başer et al., it

was found as a result of this study that only 29.4% of the teachers correctly answered the questions on first aid related to bee stings, and thus that they had a low level of first aid knowledge in that respect.

Joseph et al. investigated the first aid knowledge, attitudes, and practices of teachers working in Mangalore, India, in March 2013. Consequently, the authors found that 87% of the teachers had a moderate level of first aid knowledge. Additionally, they did not find any significant relationship between age, gender and length of service, and first aid knowledge levels. They found that 56.2% and 55.5% of the teachers had insufficient knowledge on first aid related to stomach pain and heat strokes, respectively, whereas 80.8% and 78.8% of the teachers had sufficient knowledge on first aid related to burns and wounds, respectively.³³

In comparison, in this study, no significant relationship was found between the age and length of service in the profession, and the pediatric first aid knowledge levels ($P > 0.05$), which is in parallel to the respective finding reported by Joseph et al. On the other hand, contrary to the findings reported by Joseph et al., a significant relationship was found as a result of this study between gender and the pediatric first aid knowledge levels ($P < 0.05$) in favor of the male teachers. Additionally, 68.9% of the participants were determined to have previously received training on disaster management and first aid, and it was found that the teachers had a moderate-to-high level of pediatric first aid knowledge. In parallel to the findings reported by Joseph et al., it was found as a result of this study that 75.6%, 32.8%, 80.7%, 63%, and 84.9% of the teachers were determined to have correctly answered the questions on first aid related to the burns, blisters that form in the area of the burns, wounds and bleeding, heat strokes, and puncture wounds due to splinters and such, respectively, and that the teachers had a high level of first aid knowledge on the said types of injuries.

Limitations

This study had some limitations. First, the population of the study consisted of teachers working in kindergarten classrooms and elementary schools in the Gümüşhane Province only. Second, the period during which the visits were performed and questionnaires administered was a period when the rate of COVID-19 pandemic was high in Gümüşhane, as was across Turkey and all over the world. Last, the fact that not all the questionnaire forms handed out in the visited kindergarten classrooms and elementary schools could be received back due to reasons such as illness, COVID-19 outbreak, reluctance, annual or administrative leave, and so forth, was another limitation of the study.

Conclusion

Disasters and the resulting physical and mental effects negatively affect every individual of the society, regardless of place and time. Therefore, it is crucial that the teachers and students who spend most of their days in schools are aware of the importance of the subject. Pediatric first aid to be provided as a disaster response and in case of accidents is of great importance for kindergarten and elementary school teachers. As a reason, the perceptions and defense mechanisms of children between ages 0 and 8 are highly insufficient, considering the response levels required at the time of a crisis, compared to those of adults. The results obtained as a result of this study revealed that the teachers working in schools should have higher levels of knowledge and emotion-

attitude with respect to both disaster management and pediatric first aid. In conclusion, the higher the disaster management and pediatric first aid knowledge and emotional attitude levels of the teachers, the more any possible injuries and deaths that may occur during disasters and their aftermath can be averted.

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