

THE EFFECT OF HOME SAFETY EDUCATION PROGRAM GIVEN TO MOTHERS WITH CHILDREN WITH INTELLECTUAL DISABILITY ON THEIR ATTITUDES TOWARDS SAFETY MEASURES FOR HOME ACCIDENTS

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Received: 28.01.2022; **Accepted:** 23.02.2022; **Available Online Date:** 30.05.2022

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Cite this article as: Kılınc E, İnci FH, Kartal A. The Effect of Home Safety Education Program Given to Mothers with Children with Intellectual Disability on Their Attitudes Towards Safety Measures for Home Accidents. J Basic Clin Health Sci. 2022; 6: 455-464.

ABSTRACT

Introduction: To determine the effect of the Home Safety Education Program given to mothers with children with intellectual disability on their attitudes towards safety measures.

Material and Methods: This study, in a single group semi-experimental design, was carried out in a Special Education Application Center in 2020 (n= 29 mothers). The dependent variable in this study is the mothers' attitude score towards home accidents. The Scale for Mother's Identification of Safety Measures against Home Accidents was used as data collection tool in the study. The Home Safety Education Program, consisting of 3 sessions for 2 weeks, was applied to the participants for home accidents. The data of the study were collected pre-intervention and 3 months later the intervention based on self-report. Descriptive statistics and Wilcoxon signed rank test were used to analyze the data.

Results: In the study, the mean age of the mothers was 38.5±5.1, and the children were 13.5±2.6. Sixty-five percent of children with intellectual disability have had a home accident in the last year. The most common type of accident is falling with 51.7%. A statistically significant difference was observed between attitude scores pre-education (154.2±21.3) and post-education (188.0±4.3) regarding safety measures for home accidents of the mothers (z=4.704, p<0.001).

Conclusion: The study shows that mothers with children with intellectual disability can learn the necessary information and gain a positive attitude to keep their children safe in the home environment. For future studies, we recommend that intervention studies be conducted for the prevention of falls in children with intellectual disabilities and to examine mothers' attempts at safety measures through home visits.

Key Words: Intellectual disability, children, home accidents, injuries, education program

INTRODUCTION

Childhood injuries, which are a major public health problem, cause death or disability as well as cost problem (1,2). Studies indicate that children with intellectual disability (ID) have a higher risk of injury

due to cognitive limitations (3-8). In a study conducted by Ramirez et al. (2010) on children with and without cognitive impairments in the United States, the injury rate for disabled children is 3.5/100, while it is 1.5/100 for non-disabled children (9). In this study, the rate of

injury is 1.6 times higher in the 10-14 age group, and 2.5 times higher in the 15-19 age group (9). In a study conducted by Sherrard et al. (2001) on children with ID in Australia, 29.3% of children aged 5-14 years were injured (10). In children with ID, injuries are more common in areas where child control is limited, such as home, school and traffic areas. Most of these injuries (eg. falling, drowning, burning) occur in their own home or around the home where children with ID are thought to be safe (10,11,12). The most important factor in protecting children from accidents is taking necessary safety precautions (12,13).

Children with ID do not have developmental abilities to protect themselves from injuries. Therefore, it is the responsibility of adults to provide a safe environment for these children, to take protective measures and to control the safety of their living areas (12,13). In studies conducted in Turkey, the families have been reported to have insufficient knowledge about the prevention of injury to children and suggested the implementation of education programs to improve the information (14-18). Home safety measures implemented by parents have proven effective in preventing childhood injuries (15-20).

It is known that the people who care for children with ID in the family are mostly mothers (12,21,22). For this reason, it is important to include mothers in the education program for more effective results. In the literature, it has been reported that there is a relationship between injury types in individuals with ID and injury mechanisms in preschool children. For this reason, it is stated that the strategies to be applied to prevent injury in pre-school children can be applied to individuals with ID of all ages (23).

Issues related to home safety education to be given to mothers of children with ID; risk factors that cause injury, safety measures to be taken in environments where accidents occur most frequently (rooms, kitchen, bathroom, stairs, garden etc.) what kind of an emergency action should be taken according to the severity of the injury in case of any possible accident. It is recommended to use verbal and written/visual materials in education (12).

Education programs for mothers in the prevention of home accidents in children with ID are limited in the literature (16). While the risk of injury is higher in children with ID compared to children without ID, the absence of interventions directed at this vulnerable group creates an important gap in the literature. Therefore, the purpose of this study is to determine the effect of the Home Safety Education Program

(HSEP) given to mothers with children with ID on their attitudes towards safety measures.

METHODS

Study Design

This study was conducted with a single group quasi-experimental design.

The hypothesis of the study is as follows;

H1: The attitude scores of the mothers who received the HSEP towards safety measures after the education were higher than before the education.

Setting and Sample Selection

This study was conducted between January 2020-March 2020 in a Special Education Application Center (Stage 2) connected to the public in the west of Turkey. This center includes students aged seven to eighteen with moderate to severe ID. According to the special education services regulation, the aim of this center is to raise students as individuals who can perform the roles expected of themselves in the society they live in, adapt to the environment and social life they live in, become self-sufficient in basic life skills, and produce in line with their abilities and competencies (24).

The mothers of children with ID studying in this center constituted the universe of the study (N= 79). To determine the sample size, the effect size of a previous study on a similar topic was used. Using the data of the study named "The effect of education on the ability of mothers to identify safety measures for home accidents" conducted by Çapık and Gürol in 2014, the alpha error level was found to be 0.05, the effect size was 0.93, and the sample size was 24 when the power was taken as 99% (18).

The inclusion criteria were considered as (a) having a child with ID, (b) living with her child, (c) and the mother does not have any hearing, speaking, understanding or mental problems and (d) willingness to participate in the study. The exclusion criteria were considered as (a) someone other than the mother (caregiver) caring for the child, and (b) failure to attend the education program. 34 mothers who met the sample selection criteria were included in the study. Since five mothers did not attend all sessions, the research was completed with 29 mothers.

Data Collection Tools

Sociodemographic Identification Form

The form contains questions created by the researchers in line with the literature review. These

questions include the age and gender of the child, the type of ID, the age and education level of the mother, the partnership status of the parents, the number of children, the education level of the mother, profession, and income level.

Question Form on Home Accidents

The form contains questions created by the researchers in line with the literature review. These questions include whether the child has had a home accident in the last year, the type of home accident and the mother's previous education about home accidents.

Scale for Mother's Identification of Safety Measures Against House Accidents

It was developed by Çınar and Görak (2003) to identify mothers' attitudes towards safety measures to protect their children from home accidents.²⁵ This scale was developed for healthy children in the 0-6 age group. Permission was obtained from the owner of the scale for the use of the scale. The Cronbach Alpha internal consistency coefficient of the scale is 0.82. In this scale, each item was scored between 1-5 in a 5-point Likert-type scale consisting of a total of 40 items with 34 positive and 6 negative statements. In scoring; "Always: 5 points, most of the time: 4 points, sometimes: 3 points, rarely: 2 points, never: 1 point". The 6th, 9th, 23rd, 26th, 30th, 40th items are items with negative expression and the scores of the items with negative expression are reversed. The lowest score of the scale is 40 and the highest score is 200, and the highest score indicates that mothers take measures to protect their children from home accidents at the highest level (25). In the literature, it has been reported that there is a relationship between injury types in individuals with ID and injury mechanisms in preschool children (23). For this reason, it was thought that this scale could be used for the group in which we applied the study. Since mentally retarded children are completely dependent on their parents in terms of their self-care needs, the scale items were found to be appropriate for this group. In addition, the Cronbach alpha value of the scale was found to be 0.81 in this study.

Intervention and Data Collection Process

The data of the research were collected by applying the scale to the same group before the HSEP sessions were implemented and 3 months after the program was completed. The pre-test was filled out

based on self-report after the researchers informed about the application of the questionnaire. All participants gave informed consent. Pre-test data collection took an average of 15-20 minutes.

HSEP was carried out by a researcher expert in injury and accidents. HSEP consisting of 3 sessions for 2 weeks was applied to the intervention group by this researcher. The program includes an education booklet and PowerPoint slides prepared by the researchers. The education booklet includes that; (a) the most common home accidents and first aid interventions, (b) home accident risk areas and measures (rooms, kitchen, bathroom, toilet, stairs, garage, garden, and home environment), (c) first aid techniques in case of an accident at home. Education content was created in parallel with the measurement tool used. In accordance with the scale, "wet floor in the house, electric shock, sharp corners of furniture, chair height, drowning during feeding, burns with electrical equipment and boiling water, suffocation with water and cable, chemicals and plant poisoning, falling from a balcony, stab wounds" topics are included. In these topics, protective materials from accidents such as fire alarms, fire exit plans, stair doors, electrical outlet covers, storage of medicines and cleaning materials have been introduced. It was stated by their parents, school nurse and guidance teachers that children with ID in this school had similar accidents because their ID levels were moderate. In the literature, it has been reported that there is a relationship between injury types in individuals with ID and injury mechanisms in preschool children. For this reason, it is stated that the strategies to be applied to prevent injury in preschool children can be applied to individuals with ID of all ages (23). For this reason, all mothers were given the same education. In addition, the Cronbach alpha value of the scale was found to be 0.81 in this study.

The content of this education was prepared by the researchers through a literature review and the validity of the content was evaluated by an expert group (six nursing academician). The readability level of the education booklet was calculated with the Flesch Reading Ease Readability Formula (26) and was determined as 75 (fairly easy). The education sessions were held in the seminar room with a computer and slide projection belonging to the special education center. Each session was conducted by including the whole group and presented using PowerPoint slides, pictures, and video clips. Pictures

and video clips were prepared by the researchers and include examples of home accidents. In the first session, the reasons for children with ID to pose more risks in terms of home accidents, the risk of accidents in the kitchen, bathroom and toilet and their precautions were explained. In the second session, the risk of accidents and precautions around the house (stairs, garden) and rooms were explained. In the third session, the most common home accidents and first aid interventions were explained. During the sessions, questions and answers, brainstorming and group discussion were made regarding these risk areas. The duration of the sessions varied between 45 and 60 minutes, depending on the content of the presentations and the discussion of the participants on the questions. Three months after the education was completed, the post-test data were collected by the researchers by calling each mother individually and it took an average of 20-25 minutes for each participant.

Statistical Analysis

The SPSS 22.0 statistics program was used to analyze the data. The compliance of the data to normal distribution was examined by Shapiro-Wilk test. Number, percentage, and mean were used in the analysis of descriptive variables for mothers and their children. The Wilcoxon signed ranks test was used in repeated measurements to compare the difference between the mean scores obtained by the mothers from the Scale for Mother's Identification of Safety Measures Against Home Accidents before and after the education. The level of significance was set at $p < 0.050$.

Ethical Considerations

The study was conducted according to the Declaration of Helsinki. Ethics committee permission was granted by a Pamukkale University, Non-Invasive Clinical Research Ethics Committee (Approval Date: 06.08.2019, Approval Number: 60116787-020/54304). Permission was obtained from the Provincial Directorate of National Education for the work to be carried out at the school. The informed consent of the volunteer participating was obtained. Permission was also obtained from the developers for the use of the scale for mother's identification of safety measures against house accidents for children. Personal information of all participants was kept confidential.

RESULTS

In our study, the average age of the mothers was 38.5 ± 5.1 years, 72.4% were primary school graduates, 93.3% were not working, 86.2% were married, 72.4% were middle-level and 55.2% had two children. The average age of children with ID are 13.5 ± 2.6 , 69.0% is male and 37.9% has severe ID (Table 1).

Characteristics of children with ID regarding home accidents, 65.5% of the children have had a home accident in the last year, 51.7% of these home accidents are falling. Only 10.3% of the mothers stated that they had received education for home accidents before (Table 2).

The item scores of the mothers' attitude scale regarding safety measures before and after the intervention are shown in Table 3.

The Wilcoxon Signed Ranks test, which was conducted to reveal whether there is a difference between pre-education and post-education safety measures, of 29 mothers participating in HSEP. According to the results of this analysis, a statistically significant difference was observed between attitude scores the pre-education (154.2 ± 21.3) and post-education (188.0 ± 4.3) regarding the safety measures of the mothers participating in the education program ($z = 4.704$, $p < 0.001$) (Table 4). Figure 1 shows the change in attitude scores regarding safety measures for protection from home accidents before and after the home safety program.

The attitude scores of the mothers of the children who had and did not have an accident in the last year, towards safety measures were examined. As a result of this examination, the scale scores of the two groups increased significantly as a result of the intervention (Table 5).

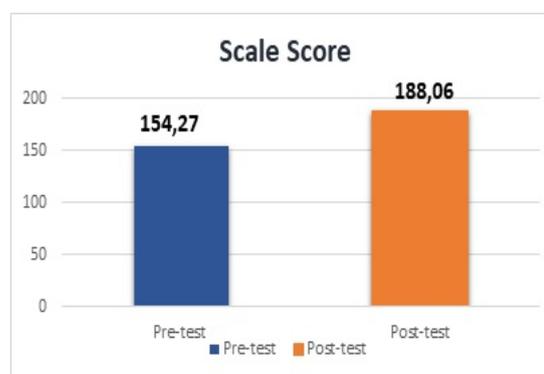


Figure 1. Change in attitude scores regarding safety measures

DISCUSSION

It is known that children with ID do not have developmental abilities to protect themselves from injuries (12,13). In our study, it was determined that most common type of accident they had was falls. Falls have been identified as the most common cause of injury among children with ID in previous studies (4,10,16,23,27). According to the results of a study, 70% of children with ID had a home accident and 44.3% of those who had an accident were injured due to falling (22). Among the children with ID in this study, the rate of injury due to falls is similar to the

results of previous studies. Our research finding has shown that children with ID are at risk for home accidents, similar to the findings of previous studies. Parents (especially mothers) should take the necessary safety measures to prevent these accidents (17,18,20,28). Although the measures taken by mothers in the home environment are important to reduce the frequency of child injuries (17), families are not well informed about protecting their children from injuries. In most studies, it was found that the rate of mothers receiving education on

Table 1. Demographic Characteristics of the Mothers and Children's (n= 29)

Characteristics	n (%)	Mean \pm SD (min-max)
Mothers age (years)		38.5 \pm 5.1 (31-53)
Age of the child with ID		13.5 \pm 2.6 (9-18)
9-13 years	15 (51.7)	
14-18 years	14 (48.3)	
Gender of the child with ID		
Female	9 (31.0)	
Male	20 (69.0)	
Mother's education		
Not literate	3 (10.3)	
Literate	1 (3.4)	
Primary school	21 (72.4)	
High school and above	4 (13.8)	
Profession type		
Housewife/not working	27 (93.3)	
Worker	1 (3.4)	
Retired	1 (3.4)	
Economic level		
Bad	6 (20.7)	
Moderate	31 (72.4)	
Good	2 (6.9)	
Relationship with her husband		
Together	25 (86.2)	
Separate	4 (13.8)	
Number of children		2.1 \pm 0.7
One	5 (17.2)	
Two	16 (55.2)	
Three	7 (24.1)	
Four	1 (3.4)	
Type of disability		
Attention deficit and hyperactivity disorder	4 (13.8)	
Cerebral palsy	3 (10.3)	
Down syndrome	6 (20.7)	
Severe mental disability	11 (37.9)	
Hydrocephalus	2 (6.9)	
Noonan syndrome	1 (3.4)	
Spastic disabled	2 (6.9)	

SD= Standard Deviation

Table 2. Characteristics of Home Accidents (n= 29)

Characteristics	n (%)
Has your child had a home accident in the past year?	
Yes	19 (65.5)
No	10 (34.5)
Type of home accident	n= 19
Falling	15 (51.7)
Incision	2 (6.9)
Drop a cupboard on	2 (6.9)
Mother's previous education about home accidents	
Yes	3 (10.3)
No	26 (89.7)

this subject before was very low (15,17). In this study, almost all mothers did not receive any previous education on home accidents in children, in line with the literature. However, there were studies in the literature that indicate that education programs given to parents provide positive improvements in knowledge or attitude in taking safety measures against home accidents (15-20).

In our study, it was determined that while the attitude scores of mothers regarding safety measures towards home accidents were low before the education, their attitude scores towards safety measures increased after the education. In a similar study by Satir on the subject, the parents of children with ID were trained on home accidents. In the study, educations were given on the definition of home accidents, the importance of home accidents, types of home accidents and measures to be taken to prevent home accidents. After the interventions, parents' scores on the scale of defining safety precautions for preventing injuries increased (16). In an experimental study conducted by Çapık et al., to examine the effect of planned education on mothers' level of defining safety measures for home accidents, it was found that the scale scores of mothers who received education through home visits increased positively after the training (18). In a randomized controlled study conducted by King et al., to prevent childhood home accidents, parents were trained by visiting their homes. To the intervention group; (1) home injury prevention information package; (2) review of visit findings and instruction on how to correct any safety deficiencies identified; (3) training was provided on detailed instructions for each targeted injury, along with demonstration of the proper use of safety devices. As a result of the research, the knowledge, beliefs, and attitudes of the

participants in the intervention group about preventing child injuries at home have increased positively (29). Altundağ et al., conducted an experimental study to examine the effect of education given to mothers on the level of defining safety measures for home accidents. The booklet "Protection from Home Accidents" prepared by the researchers was used in the education given to mothers. An average of 30-35 minutes of training was given to mothers in the home environment. At the end of the study, it was determined that the knowledge level of mothers who received face-to-face education for home accidents increased significantly after the education (28). Kahriman et al. conducted an experimental study on mothers to prevent childhood home accidents. In the study, mothers were given practical education in theoretical and simulation environment for childhood home accidents. While theoretical educations were explained through home visits, simulations were provided in the area created by the researchers. The simulation application included the living room, kitchen, bathroom, and staircase areas. After the interventions, the score that mothers got on the scale for determining safety precautions for preventing injuries increased (17). Since there is a gap in the literature regarding educational attempts to prevent home accidents in children with ID in previous studies, our study was mostly discussed with the education given to parents with children without ID. In these studies, many educational interventions with different techniques were applied for parents. As a result of these interventions, a positive increase was achieved in parents' knowledge and attitudes towards home accidents (20,23,28,29). In parallel with the literature, in the study, face-to-face interviews with mothers, providing interactive education and using the

Table 3. Item Scores of the Mothers' Attitude Scale Towards Safety Precautions Before and After the Intervention

	Items	Pre-test	Post-test
		Mean ± SD	Mean ± SD
1.	I take care to keep the bathroom and toilet floor dry.	4.2±1.1	4.9±.3
2.	When choosing furniture, I pay attention not to have sharp edges and sharp corners.	4.2±1.1	4.82±.46
3.	I cover the unused electrical outlets with plastic protectors or pull items such as seats that will obstruct them.	3.8±1.5	5.0±.0
4.	I keep the toilet and bathroom doors closed.	4.2±1.3	4.7±.6
5.	Let my child sit in a chair that is the right size for his/his age.	3.8±1.3	4.6±.7
6.	I leave my washing machine plugged in and the door open*	3.2±1.5	4.6±.6
7.	I keep materials such as oxygenated water tincture iodine at home to be used in emergency accidents.	3.6±1.6	4.7±.5
8.	I find it dangerous for children to talk or play with food in their mouths.	4.2±1.2	4.6±.6
9.	I put hot food and beverages within easy reach of the child*	2.2±1.6	4.7±.4
10.	I make sure that stone fruits are fed to my children by removing the seeds.	4.1±1.3	4.6±.6
11.	I put items such as matchmakers out of my child's reach.	4.5±1.0	4.8±.3
12.	I monitor my child's safety when visiting or visiting.	4.4±.9	4.8±.3
13.	I put protective bars around heating devices such as stoves, fireplaces, and radiators.	3.2±1.5	4.7±.5
14.	I avoid leaving my child alone in the bathtub.	3.8±1.4	4.8±.3
15.	I think that stripped and frayed electrical cables pose a danger to children.	4.1±1.3	4.8±.3
16.	If I have to leave my child alone in the room, I take care to create environments such as a barred playground.	3.5±1.4	4.7±.4
17.	I close the medicine bottles tightly so that my child cannot open it.	4.2±1.2	4.8±.3
18.	I take the necessary precautions to prevent my child from falling out of bed.	3.7±1.2	4.2±.4
19.	After using the extension cables, I remove them by pulling them from the socket.	3.5±1.2	4.0±.5
20.	I keep cutting tools out of the reach of my child.	4.0±1.1	4.1±.4
21.	I do not leave a bucket full of water or a bowl within my child's reach.	3.2±1.8	3.2±.7
22.	I think that poisonous plants in the home or garden pose a danger to children.	4.0±1.3	4.1±.3
23.	I attach my child's pacifier or evil eye bead to the clothes with a safety pin*	3.1±1.8	4.9±.3
24.	I keep the garbage out of the reach of my child.	3.4±1.7	3.9±.5
25.	I check the temperature of my child's bath water with degrees or elbows.	3.8±1.6	4.1±.3
26.	I let my child walk around the kitchen while I cook*	3.3±1.2	4.9±.3
27.	I take care to choose my child's toys from materials that do not burn easily.	3.6±1.4	4.9±.1
28.	When I use electrical appliances such as irons and toasters, I put them in places where my child cannot reach.	4.3±1.1	4.9±.3
29.	I use toilet adapters suitable for the height of my child in the toilet.	3.8±1.5	4.9±.1
30.	I leave empty unused boxes and plastic bags around*	2.9±1.5	4.9±.1
31.	I pay attention to place the pan handles on the oven and stove in a direction that my child cannot reach.	4.5±.8	4.8±.3
32.	I take care not to have objects around babies that they can bring to their mouths.	4.6±.8	4.9±.3
33.	I take care that ropes, belts and nylon straps are not out of reach, thinking that they may be dangerous for my child.	4.3±1.1	4.9±.1
34.	I take care that the balconies have borders and no gaps.	4.4±.9	4.9±.3
35.	When choosing a toy for my child, I take care that it is not piercing, cutting, piercing and small pieces.	4.3±1.1	4.9±.1
36.	When buying a toy for my child, I make sure that it is made of non-dyed material.	4.1±1.1	4.7±.5
37.	I keep balcony or garden doors locked, even when I'm at home.	3.8±1.3	4.8±.3
38.	I ensure that iron bars or similar obstacles are placed on windows.	3.7±1.4	4.7±.4
39.	I do not leave toxic substances within easy reach of my child.	3.5±1.5	4.8±.3
40.	I punish my child when she/he has an accident *	3.1±1.1	4.7±.4
	Total Scale	154.2±21.3	188.0±4.3

SD= Standard Deviation, **Reverse coded

Table 4. Mothers' attitude scores towards safety measures against home accidents before and after the home safety program (n= 29)

	Pre-test Mean ± SD Median (min-max)	Post-test Mean ± SD Median (min-max)	z	p	d
Attitude scale towards safety measures	154.2±21.3 157.0 (86-189)	188.0±4.3 189.0 (170-196)	4.704	p<0.001	1.73

Based on positive ranks. z= Wilcoxon test, SD= Standard Deviation. d= Effect Size

safety precautions for home accidents after the intervention.

Limitations

One of the limitations of this study is that the research was conducted on mothers in a single Special Education Application Center. This situation limits the generalizability of the study. Another limitation is the absence of home visits among the implementation interventions. Researchers could not evaluate the safety measures taken by mothers against home accidents due to the lack of home visits. This research findings are based on the statements of mothers. Since it is possible for mothers to give appropriate answers to correct information, this created a limitation in this study. Safety measures of the mothers were measured only by mothers' self-reports. In addition, the study was carried out as a single-group pre-test post-test study, since the sample size was not large enough to separate the experimental control group and in order for all mothers to benefit from the education. Therefore, the absence of a control group in the study is an important limitation.

CONCLUSION

As a result, most children with ID have a home accident. Among these accidents, the most common type of accident is falling. Most of the mothers in the

study did not have any previous education to prevent home accidents in children. HSEP specially designed for mothers with children with ID increases the attitude level of mothers towards safety measures. This research shows that mothers with children with ID can learn the necessary information and gain a positive attitude to keep their children safe in the home environment. The successful results of this research contribute to this large gap in the literature to increase mothers' attitudes towards home safety in children with ID. For further research, it is recommended to conduct randomized controlled trials, to include multi-center special education institutions, and to examine mothers' attempts at safety measures through home visits.

* This study was presented as an oral presentation at International Symposium on Multidisciplinary Approach towards the Disadvantaged Groups.

Author contributions: Study conception and design: EK and HEİ designed the study. Data collection: EK. Data analysis and interpretation: EK, HEİ and AK. Drafting of the article: EK, AK and HEİ. Critical revision of the article: EK, AK and HEİ. All listed authors meet the authorship criteria, and all authors agree with the content of the manuscript. All authors contribute to the data collecting and writing the manuscript.

Conflict of interests: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval: Ethics committee permission was granted by a Pamukkale University, Non-Invasive Clinical Research Ethics

Table 5. Change in scale scores according to children who had and haven't had an accident in the last year

	Pre-test Mean ± SD	Post-test Mean ± SD	z	p	d
Children who had a home accident	155.0±22.2	187.4±4.7	-3.823	p<0.001	1.60
Children who haven't had home accident	152.9±20.7	189.2±3.5	-2.805	p<0.001	1.89

z=Wilcoxon Signed Ranks Test. d= Effect Size

Committee (Approval Date: 06.08.2019, Approval Number: 60116787-020/54304).

Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Peer-review: Externally peer-reviewed.

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