Identification of the number of home accidents per year involving children in the 0-6 age group and the measures taken by mothers to prevent home accidents

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This study was designed and carried out to determine the factors effective on the home safety measures taken by mothers with children in the 0-6 age group and to detect the frequency of home accidents among children in this group. The study was carried out with the participation of 514 mothers who were registered at the H. Ülgen Health Center affiliated with the Directorate of Mamak Health Group. The study data were collected through a questionnaire form and the "Scale for Identification by Mothers of the Safety Measures Taken by Mothers to Prevent Home Accidents in Children in the 0-6 Age Group". It was found that 37.9% of the 0-6 age group children had had a home accident, with "fall" the most common (75.4%). A statistically significant difference was recorded in the mother's total mean score from the scale with respect to the factors of educational status, age, family type, and number of children (p<0.05).

Key words: children, accident, injuries, mother, home safety.

Accidents are an important health problem throughout the world; they result in disabilities and even death¹. Unintentional injuries have been identified as a major threat to the health and well-being of children². Home accidents rank highly among all accidents and occur in or around the house (at home, in the garden, garage, etc.)3. The home is the place where children spend most of their time, and most injuries, especially those among children^{4,5}, occur at home. Children are in a high-risk group for home accidents since they are not aware of the hazards, are more susceptible to environmental risks and are curious^{1,3}. Injury in the home is extremely common, accounting for approximately one-third of all injuries in the United States. Children under the age of five are in the highest risk groups for home injury, both fatal and nonfatal⁶. An alarming 91% of unintentional injuries and nearly onehalf of injuries that eventuate in death occur in or around the place that children should feels safest, their home². The greatest risk

mechanisms are falls, poisoning and burns⁵. In 2003 in the United States, more than 1.8 million children under the age of four were nonfatally injured, and falls were the leading cause⁷.

According to a study conducted by the Ministry of Health in Turkey, 120,000 children were hospitalized and 2,000 people lost their lives through home accidents over the last five years⁸. The mortality data issued by the Turkish Statistics Institute (TUIK), on the basis of 150 reasons and age groups, showed that a total of 279 people lost their lives due to falling (place of the accidents not specified) in 2006 and 5.37% of the 279 people were in the 1-4 age group⁹.

Accidents do not simply happen by chance. The child him/herself, the people around him/her and environmental factors inevitably lay the groundwork for an accident to occur. In general, children are forced to live in an environment designed by adults, one that neglects the

safety of the children. In addition, the hazards and conditions threatening the safety of the children increase in line with technological developments¹⁰. Most of the accidents involving children stem from inadequate preventive measures taken at home 11,12. Home safety systems should be developed and used to minimize these hazards¹². Some houses make accidents more likely, if not inevitable. For instance, it is nearly impossible for a child to avoid home accidents in houses with vertical and non-illuminated stairs and nongrilled windows¹³. Overcrowding, a lack of playgrounds, banister-free balconies, stairs, and sharp-edged furniture, etc. are the factors that increase the risk of home accidents^{3,13}.

Personal and environmental factors must be controlled since they play an important role in home accidents. The first step to be taken to protect children from home accidents is to thoroughly analyze the environmental factors and learn how to prevent behaviors likely to result in such accidents. These behavioral changes can be classified as active measures. The changes to be made in the environment and the re-arrangement of the physical conditions, tools and materials in the house, on the other hand, can be classified as passive measures^{3,13}.

In rendering the child's environment safer, the family's education, especially that of the mother, is of vital importance¹⁴. Glik et al.¹⁵ measured the relationship between perceived risk of childhood injuries and demographic, sociocultural, and situational variables. They found parents showed increased home-safety-proofing behaviors if they believed these hazards were a threat to their children.

It is obvious that the home accident risk of children can be minimized through taking appropriate measures and the prioritization of this by the parents at home 10. Parents should control and supervise the environmental conditions. Elimination of the hazardous conditions from the areas where children play and live can minimize the frequency of home accidents. The best way to prevent accidents is to conduct studies on the detection of accident-related risks, to develop training methods to eliminate the damage that can occur through the environment, and to consider family-related factors. These should contribute to the

arrangement of a safer environment.

Therefore, this study was designed and carried out to determine the factors effective on the safety measures taken by the mothers with children in the 0-6 age group to prevent home accidents and to detect the frequency with which the 0-6 age group children had had home accidents over the period of the previous year covered by this research.

Material and Methods

The study was carried out with the participation of 514 mothers who were registered in the Dr. H. Ülgen Health Center, affiliated with the Directorate of Ankara Mamak Health Group; mothers who had children in the 0-6 age group and who agreed to take part in the study were included.

The data of this descriptive study were collected through a questionnaire form prepared by the researchers in interviews conducted with the mothers between 2-30 June 2008 using the "Scale for Identification by Mothers of the Safety Measures Taken by Mothers to Prevent Home Accidents in Children in the 0-6 Age Group" developed by Cınar¹⁶.

The questionnaire developed by the researchers consisted of 27 questions in total, which focused on family and sociodemographic characteristics and on the home accidents the children had experienced. The "Scale for Identification by Mothers of the Safety Measures Taken by Mothers to Prevent Home Accidents in Children in the 0-6 Age Group" was a 40-item 5-point Likert-type scale composed of 34 positive and 6 negative statements (1. Always, 2. Usually, 3. Sometimes, 4. Rarely and 5. Never).

(Example: Item 1: I pay attention to keep the floor of the bathroom and the WC dry. Example, Item 2: I prefer furniture with no sharp edges and corners. Example, Item 4: I keep the doors of the bathroom and the WC closed.). Each item was scored within a 1-5 point range. The minimum possible score on the scale was 40 and the maximum possible score was 200. The highest possible score meant that the mother took the measures to protect her child from home accidents to the highest possible level. Negative statements were in the 6th, 9th, 23rd, 26th, 30th and 40th

items. The scores of the negative statements were evaluated on the opposite basis (from 5 to 1 point). Cınar¹⁶ evaluated the Validity-Reliability of the scale in Turkey and calculated the Cronbach Alpha coefficient as 0.8205 (0.82). The Cronbach Alpha coefficient of the present study was, on the other hand, calculated as 0.8589 (0.85). The SPSS 11.5 package program was used to analyze the data obtained in the present study. Number-percentage distributions, and Kruskal-Wallis and Mann-Whitney U tests were used for the statistical evaluation.

Results

Information Regarding Some of the Sociodemographic and Family Characteristics of the Mothers

Table I. Distribution of the Participant Mothers According to Sociodemographic Characteristics

Age of the mother	Frequency	%				
16-25	101	19.6				
26-35	293	57.1				
36-45	107	20.8				
46-55	12	2.3				
56+	1	0.2				
Total	514	100.0				
Educational status						
of the mother						
Primary school or						
lower	351	68.3				
Secondary school	136	26.5				
High school	27	5.2				
Total	514	100.0				
Years of marriage						
1-5	121	23.5				
6-10	189	36.8				
11-15	113	22.0				
16-20	64	12.4				
21-25	20	3.9				
26+	7	1.4				
Total	514	100.0				
Professional status						
of the mother						
Working	61	11.9				
Non-working	452	87.9				
Retired	1	0.2				
Total	514	100.0				
Monthly						
income (family)						
<750 TL	195	37.9				
751 TL - 1500 TL	255	49.6				
1501 TL - 2250 TL	55	10.7				
>2251 TL	9	1.8				
Total	514	100.0				

As seen from Table I, 57.1% of the mothers who took part in the study were in the "26-35" age group; 68.3% had an education level of primary school graduate or lower; 36.8% had been married for "6-10" years; and 87.9% were not working.

The analysis of some of the family characteristics of the mothers showed that 82.7% had a nuclear family; 42.6% had 2 children; the families of 37.4% had 5 or more members; 76.1% lived in high-rise apartment buildings; and 52.3% were tenants (Table II).

Home Accident Status of the 0-6 Age Group Children

It was found that 37.9% of the 0-6 age group children of the mothers who participated in the study had had a home accident over the last one-year period and that 53.3% of these children were boys. It was also determined that 21.0% of the children who had had a home

Table II. Distribution of the Participant Mothers According to Family Characteristics

According to Family	Characteri	Stics
Family type		
Nuclear	425	82.7
Extended	89	17.3
Total	514	100.0
No of children		
1	167	32.5
2	219	42.6
2 3	95	18.5
4 or more	33	6.4
Total	514	100.0
No of family members		
	1	0.2
2 3 4	131	25.4
4	190	37.0
5 or more	192	37.4
Total	514	100.0
House type		
High-rise block	391	76.1
Detached house	123	23.9
Total	514	100.0
Home ownership status		
Owner	245	47.7
Tenant	269	52.3
Total	514	100.0
Social security of the		
family		
Pension fund	52	10.1
Social security institution	302	58.8
Self-employed fund	57	11.1
Green card	37	7.2
Private insurance	10	1.9
None	56	10.9
Total	514	100.0

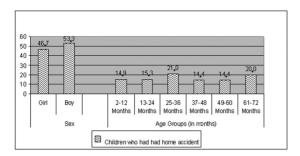


Fig. 1. Sex and age distribution of the 0-6 age group children who had had a home accident.

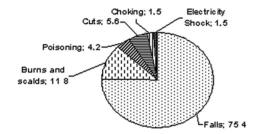


Fig. 2. Accident distribution of the 0-6 age group children who had had a home accident.

accident were in the "25-36 months" age range and 20.0% were in the "61-72 months" age range (Fig. 1).

Out of children the children who had had a home accident, 75.4% were reported to have had a "fall" and 11.8% had "burns and scalds" (Fig. 2).

Comparison of the Mothers' Scores on the "Scale for Identification by Mothers of the Safety Measures Taken by Mothers to Prevent Home Accidents in Children in the 0-6 Age Group" with Related Characteristics

As also seen in Table III, a statistically significant difference was found between the

total mean score from the scale and the home accident status of the children over the previous one-year period (p<0.05). The mean score of the mothers whose children did not have any home accidents (4.3183) was found to be significantly higher than that of the mothers whose children had had a home accident (4.0617) in this period.

As can also be concluded from Table IV, there was a statistically significant difference between the mean scale score with respect to the factors of educational status, age, family type, family income, and number of children (p<0.05).

Analysis of the mothers' mean scale scores on the basis of their educational status revealed a statistically significant difference (p<0.05). The mean scale score of the mothers who graduated from high school (4.5352) was found to be significantly higher than that of the mothers who had primary or lower level of education (4.1521) (Table IV).

A statistically significant difference was identified in the analysis of the mothers' mean scale scores in terms of their ages. It was found that mean score of the mothers in the "16-25 age group" (4.2884) was higher than that of the "36+ age group" (4.1319) (p<0.05).

Analysis of the mothers' mean scale scores in terms of family type revealed a statistically significant difference (p<0.05). The mean score of the mothers who had an extended family (4.3219) was found to be higher than that of the mothers who had a nuclear family (4.1998) (Table IV). A statistically significant difference was found in the analysis of the mothers' mean scale scores in terms of the number of their children (p<0.05). The mean scale score of the mothers who had one child (4.3087) was recorded as higher than that of the mothers who had three children (4.1405).

Table III. Distribution of the Mothers with 0-6 Age Group Children According to their Scale Scores and the Home Accident Status of their Children

Home accident status		n	Minimum	Maximum	Mean	Standard deviation	MWU*	P
Whohada Home accident	Mother's mean score from attitude scale	195	2.70	4.95	4.0617	.45254		
No home accident	Mother's mean score from attitude scale	319	3.05	4.93	4.3183	.38101	20366	0.000

^{*}Mann-Whitney U test p<0.05

Table IV. Distribution of the Mothers with 0-6 Age Group Children According to their Mean Scale Scores and Some Explanatory Variables

		SCALE	SCORES		Std.		
Educational status	n	Minimum	Maximum	Mean	deviation	KW*	P
Primary education or lower	351	2.70	4.93	4.1521	.43634	37.465	0.000
Secondary education	136	3.20	4.90	4.3360	.37136		
High school	27	3.60	4.95	4.5352	.30879		
Age	n	Minimum	Maximum	Mean	Std. Deviation	KW**	P
16-25	101	2.70	4.93	4.2884	.41964		
26-35	293	3.03	4.90	4.2341	.41943	9.131	0.01
36 +	120	2.85	4.95	4.1319	.44364		
Family type	n	Minimum	Maximum	Mean	Std. deviation	MNU***	P
Nuclear	425	2.70	4.95	4.1998	.44141		
Extended	89	3.18	4.88	4.3219	.33964	16.2003	0.033
No of children	n	Minimum	Maximum	Mean	Std. Deviation	KW****	P
1	167	3.08	4.93	4.3087	.40509		
2	219	2.70	4.95	4.1857	.43113		
3	95	3.08	4.90	4.1405	.41979	15.135	0.002
4+	33	3.13	4.85	4.2417	.47924		
Monthly income (family)	n	Minimum	Maximum	Mean	Std. Deviation	KW****	P
< 750 TL	195	2.70	4.90	4.1360	.45456		
751 TL-1500 TL	255	3.03	4.93	4.2357	.41157	20.969	0.000
≥1501 TL	64	3.60	4.95	4.4207	.32698		

KW: Kruskal-Wallis test.

Analysis of the mothers' mean scale scores in terms of the family income factor showed that the mean score of the mothers who were in "≥1501 TL family income" group (4.4207) was significantly higher than that of the mothers in the "≤750 TL family income" group (4.1360) (Table IV).

The average score achieved by mothers from the scale was 158.12±1.14 (min 110, max 185).

From the items of the scale used in the study, the safety measures most and least frequently cited by mothers were analyzed. The item cited as a safety measure most often by the mothers (4.77) was "I close the caps of medicine bottles firmly so that my child cannot open them", while the least cited safety measure (2.77) was "I seat my child in a chair of appropriate size for his/her age".

Discussion

This study showed that 37.9% of the 0-6 age group children included in the study had had a home accident over the previous oneyear period. Fifteen point five percent of the children included in the study conducted by Özmen et al.19; 16.5% of the children in the study by Turan and Ceylan¹⁷; 32.8% of the children in the study by Köse and Bakırcı8, and 28.8% of the children in the study by Erkal and Şafak¹⁸ were reported to have had a home accident in the previous one-year period. More than half of the children who had had a home accident were boys. Among the children who had had a home accident over the most recent one-year period, the "25-36 months old" children ranked the highest (21.0%), followed by the "61-72 months old" (20.0%) children. The studies carried out by Özmen et al.¹⁹, Gallegher et al.²⁰, Laffoy²¹, Morrongiello et al.²², and Balibey²³ revealed that accidents were more frequent among boys than girls. This situation may be due to the fact that boys are generally more active than girls.

Falling was the most frequently recorded home accident (75.4%), followed by burns and scalds (11.8%). In their studies, Karataş et al.²⁴, Mayda et al.²⁵, Tursz et al.²⁶, Laffoy²¹, Pauline et al.²⁷, Phelan et al.²⁸, Agran et al.²⁹, Özmen et al.¹⁹, and Köse and Bakırcı⁸ stated that "fall" was the most frequently recorded home accident. This result shows that there are places where children can fall within the house. By taking measures against falling and by paying the required attention, it is possible to reduce the risk of falling, which is the most important among the home accidents involving children.

The mean scale score of the mothers whose children did not have a home accident (4.3183) was found to be significantly higher than that of the mothers whose children did (4.0617). This result creates the impression that the mothers with high mean scores took more measures to prevent home accidents and thus they experienced a lower number of home accidents. This finding is parallel to that produced by the study of Turan and Ceylan¹⁷.

Comparison between some descriptive characteristics of the mothers and their mean scores on the scale revealed that mothers in the "16-25" age group and those with one

child scored higher, with statistically significant results (p<0.05). As the number of the children increases, the time spent with each child decreases and the risk of accident increases. This finding suggests that the mothers with fewer children pay more attention to the measures that need to be taken to prevent home accidents. This result is in line with the findings of the studies conducted by Turan and Ceylan¹⁷ and Koştu³⁰. However, Özmen et al.¹⁹ recorded in their study that the mothers with three or more children had higher mean scores on the scale.

Analysis of the mothers' mean scale scores on the basis of their educational status revealed a statistically significant difference (p<0.05). The mean scale score of the mothers who were high school graduates (4.5353) was found to be significantly higher than that of the mothers who had primary or lower level of education (4.1521) (Table IV). This finding reflects the importance of education. Mothers with a higher level of education are more aware of the importance of protecting their children from home accidents. In their study, İnanç et al.31 stated that the higher the educational status of families, particularly the mothers, the more frequently they exhibit positive behaviors towards protecting and improving the health of their children. The study carried out by Erkal and Şafak¹⁸ suggested that the higher the educational level of a mother, the lower the possibility of a child having a home accident.

The mean score of the mothers who had an extended family (4.3219) was found to be higher than that of the mothers who had a nuclear family (4.1998). This result was found to be statistically significant (p<0.05). However, the study by Özmen et al. 19 suggested that the mean scale score of the mothers who had a nuclear family was higher. The difference between the results of these two studies may be due to the difference in study groups. The mean scale score of the mothers who were in the "≥1501 TL family income" group (4.4207) was significantly higher than that of the mothers in the "≤750 TL family income" group (4.1360). The underlying reason for the low mean score of the mothers in the low-income group could be the low level of education of the mothers in this income group. In their study, Altundağ and Öztürk³² stated that the risk of home accidents increased by two-fold in the families in the low-income group.

The mothers' average score from the scale was 158.12 ± 1.14 (min 110, max 185). As the maximum possible score is 200, it may be said that although the mothers' efforts to take safety measures against home accidents is near the desirable level, there are still deficiencies in safety measures to prevent accidents and thus trainings should be provided in an effort to rectify these deficiencies. The average score of the mothers was 158.98 ± 14.48 in the study by Altundağ and Öztürk³², 162.13 ± 22.39 in the study by Koştu³⁰, and 76.92 ± 12.45 in the study by Özmen et al.¹⁹

From the items of the scale used in the study, the safety measures cited most and least frequently by mothers were analyzed. The item most frequently cited as a safety measure by the mothers was "I close the caps of medicine bottles firmly so that my child cannot open them" (4.77), while the least frequently cited was "I sit my child in a chair of appropriate size for his/her age" (2.77). This finding can be interpreted as follows: Mothers paid the most attention to closing the tops of the drug bottles to prevent the child from opening them in protecting their children from home accidents.

In conclusion, most home accidents can be prevented through measures that can be taken by mothers at home. Therefore, measures should be taken to prevent children from the most frequently recorded home accidents such as falls and burns/scalds. Training should be given to parents on risk factors and the ways to prevent home accidents so as to protect the 0-6 age group children from such accidents, and houses should be also be designed and arranged in such a way as to prevent home accidents.

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