A household survey: unintentional injury frequency and related factors among children under five years in Malatya

Nazlı Atak[1], Leyla Karaoğlu[2], Yasemin Korkmaz[2], Seda Usubütün[3]

[1]Department of Health Education, Ankara University Faculty of Health Sciences, Ankara, and [2]Department of Public Health, İnönü University Faculty of Medicine, Malatya, and [3]Ministry of Health, Ankara, Turkey

SUMMARY: Atak N, Karaoğlu L, Korkmaz Y, Usubütün S. A household survey: unintentional injury frequency and related factors among children under five years in Malatya. Turk J Pediatr 2010: 52; 285-293.

Accidents constitute a major public health problem around the world. They are one of the leading causes of death among children under five, with residential accidents accounting for the majority. Since there is no recording system that provides routine and reliable data about accidents, the data about the frequency of accidents and related factors are available only through researches. The aim of this study was to determine the frequency of injury-producing accidents and related factors among children aged under five who live in Malatya city center.

In this cross-sectional epidemiological study, we covered first each regional health center in Malatya city center, a total of 30 clusters out of the population using a proportional systematic sampling method, and in turn, a sample size of 704 children under five.

The frequency of injury-producing accidents was determined as 12.6%. The majority of the accidents occurred in the house, and 65.3% of them were due to falls; in 65.1%, accidents occurred in the presence of the mother. The frequency of the accidents was highest for the 4-5 age group (14.1%) and lowest among those ≤1 year. It was found that maternal age ≤30 (odds ratio [OR]=1.9) and patient age of 4-5 years (OR=5.4) primarily affected the chances of having an accident. A drawing of a kitchen setting, representing a total of 13 accident-producing risks, was given to the mothers, who were able to define an average of only 5.1±0.2 risks.

The average number of risks defined by the mothers was found to be associated with the age of the child, educational background of the mother, her occupation, type of family, and monthly family income. No relation was determined between the accident risk awareness and accident frequency.

In conclusion, the injury-producing accident frequency among children aged under five in central Malatya was found to be high. Given the finding that children have accidents in the presence of their mothers, it seems reasonable to provide mothers with parenting applications and training programs to reduce the home-based risks.

Key words: frequency, injury-producing accidents, residential/home accidents, children under five, risk awareness.

The World Health Organization (WHO) defines an accident as an event caused by the impact of an external agent emerging unintentionally, suddenly and quickly, and resulting in physical and/or mental damage[1]. Unintentional injury or accident patterns are road traffic crashes, falls, burns, fire, scalds, drowning, poisoning, and animal bites[2]. It has been estimated that at least 875,000 children and adolescents under the age of 18 years die as a result of either an unintentional or intentional injury each year[2].

Unintentional injuries are gradually being recognized as a major public health problem in both developed and developing countries[3-5]. They remain the leading cause of death among

children aged 1-18, lead to economic and social costs indirectly[2,6-9] and are preventable.

The patterns of non-fatal and fatal injuries in children are different. Falls are commonly a leading cause of unintentional injury, but not a leading cause of injury death. The defined risk factors for unintentional injuries are age, gender, poverty, and education level[2]. Children under five years of age constitute a high-risk group in terms of unintentional injuries, particularly in residential accidents, since they are generally not aware of the surrounding dangers, are more susceptible to the peripheral risks, and are considerably fond of discovering and learning[10]. Unintentional injuries in the home environment are due to preventable risks such as exposed electrical sockets, unlocked cupboards, balustrades, unguarded/unlocked windows, wet floors, poor housing, unsafe furniture, and psycho-social conditions of the parents[2,11].

The importance of injuries due to accident has been acknowledged only recently in Turkey[9], and little is known about patterns and rates at the community level[12]. In 2006, the number of deaths due to unintentional injuries due to accident was 3,091, and unintentional injuries due to accident accounted for 1.5% of all deaths in Turkey[13]. Accidents are reported to be the fourth leading cause of death among children under the age of five, and 6.3% of cause-specific mortality rates are caused by accidents[14]. However, the available data about the actual state of accidents based on a routine information system are not reliable, and thus specific researches on this issue are needed. The present study was planned to investigate the injury-producing accident frequency causing injury among children under five living in the province of Malatya and the related factors, including the mother's level of knowledge about potential accident risks at home.

Material and Methods

In this cross-sectional epidemiological study, first each regional health center in Malatya city center was taken as a cluster unit, and it was planned to select a total of 30 such clusters out of the population using a proportional systematic sampling method, and in turn, to collect data about 20 children from each of these 30 clusters (600 children in total). Since all the children under five in the visited houses were involved in the study, the size of the sample increased to 704. Prior to the data collection, the mothers of all participating children were asked for their verbal consent.

The data were collected using "face-to-face questionnaire" method in March-June 2005, and the questions relevant to unintentional injuries screened the number of the injuries due to accidents in the past one year, similar to other studies[5,15]. The questionnaire form included items regarding the sociodemographic profiles of the children and their family types, and frequency and place of injury they suffered. Moreover, an illustration of a kitchen setting, in which 13 spots of peripheral risks were illustrated, was shown to the mothers to determine their capacity to define the peripheral risks likely to cause injuries (Fig. 1). The spots illustrating possible risk factors included a toy truck on the step of the stairs to the kitchen, a tangled carpet that could cause stumbling, an easily accessible electric outlet, an unplugged iron on its board, low and easily accessible drawers, exposed piping under the kitchen sink, the open door of the oven with a hot dish inside, a boiling saucepan dangerously situated and likely to fall over, a box of pills on a stool in a child's reach, a pair of scissors hanging within a child's reach, the presence of a stove in the kitchen, and lastly a spilled drink on the floor. The findings concerning the defined risks were presented as mean ± SEM (standard error of the mean) values.

The minimum wage in 2005 was 350.15 YTL monthly. As the relevant question's classification in the questionnaire was different from the indicated minimum wage, monthly

Fig 1: An illustration of a kitchen with 13 spots of peripheral risks of injury

family income was classified as ≤ 300, 301-600, and ≥ 601 YTL.

For the comparison between the mean for defined risks and the independent variables having two groups, independent samples t-test (or Mann-Whitney U test in the case of non-homogeneous variances) was used. One-way ANOVA test was used, on the other hand, to find the association between the mean for defined risks and independent variables with more than two groups.

Chi-square test was conducted to assess the association between injury background (i.e. state of having experienced any injuries) and the independent variables of the study. Binary logistic regression test was conducted to assess the effect of multiple factors (if the p-value was less than 0.10 on univariate comparisons) on injury background. The data were analyzed using SPSS (Statistical Program for Social Sciences) v. 11.0 software program. A p-value of <0.05 was considered statistically significant.

Results

Sociodemographic Profiles

Among the participating children, 52.6% were boys and 47.4% were girls, and 59.5% were aged 2-3 years. Most of the mothers (34.5%) were aged 25-29 years, and 53.7% of them were primary school graduates. Regarding family type, 79.9% of the participating children belonged to nuclear families, and 79.1% of their families had no social insurance. In 55.5% of the families, monthly income was between 301-600 YTL (New Turkish Liras).

The Injury-Producing Accident Background and Related Factors

It was found that 89 of 704 participating children aged under five had experienced an injury-producing accident. The frequencies of injury-producing accidents and residential accidents were determined as 12.6% and 8.2%, respectively. Residential accidents represent 65.2% of all accidents. Among the children with an accident history, 89.9% had experienced only one accident while the remainder (10.1%) had experienced two accidents.

The distribution of injury-producing accident background according to some variables is shown in Table I. While 11.4% of the girls had an injury-producing accident, this rate was determined as 13.8% in boys. No statistically significant association was observed between the frequency of accidents and gender ($p=0.337$).

A statistically significant association was found between the frequency of injury-producing accident and age groups ($p=0.001$). The age group with the highest injury-producing accident frequency (18.9%) was the group aged 4-5 years. Accidents were found to happen least frequently (3.3%) among children aged ≤1 year.

Though the frequency of accidents was observed to follow a descending trend as the mother's age increased, the association was not statistically significant ($p=0.069$). The frequency of injury-producing accidents did not differ significantly in terms of mother's educational background ($p=0.105$) or the family type ($p=0.308$). The relevant frequency was the highest (17.8%) in families with a monthly family income of more than 600 YTL; however, the association was not significant ($p=0.108$).

Falling was found to be the leading (65.3%) type of injury-producing accident, followed by burns due to hot water and stove/oven (33.6%), cuts with sharp instruments (5.6%), poisoning and getting choked (2.2%), and injuries with various objects (1.1%). Further, 65.1% of the children were found to have experienced an accident in their mother's presence.

In terms of the location of the accidents, 65.2% occurred in the home and 34.8% outdoors; 75.8% of the indoor accidents occurred in the guest room and living room, while 13.8% occurred in the kitchen. For 61.8% of the accidents, the children received ambulatory treatment in a medical institution (Table II). Most of the children received such treatment after falling (59.6%) or hot water burns (20.0%). A statistically significant association was found between the type of accident and the receipt of ambulatory treatment in a medical institution ($p=0.023$). This difference stemmed from the children experiencing falls.

Mothers' Level of Knowledge About Peripheral Risks Likely to Cause Injury-Producing Accidents

The participating mothers were shown a picture illustrating a total of 13 peripheral risks likely

Table I. Distribution of Accident background According to Some Variables

Variables	Accident background					
	No		Yes		Total	
	n	%	n	%	n	%*
Gender						
Boy	319	86.2	51	13.8	370	52.6
Girl	296	88.6	38	11.4	334	47.4
Age of mother						
20-24	128	83.1	26	16.9	154	21.9
25-29	208	85.6	35	14.4	243	34.5
30-34	138	89.6	16	10.4	154	21.9
35+	141	92.2	12	7.8	153	21.7
Age of child						
≤ 1**	148	96.7	5	3.3	153	21.7
2-3	360	85.9	59	14.1	419	59.5
4-5**	107	81.1	25	18.9	132	18.8
Mother's educational background						
Primary school not completed	90	94.7	5	5.3	95	13.5
Primary school graduate	326	86.2	52	13.8	378	53.7
Secondary school graduate	78	83.9	15	16.1	93	13.2
High school/university graduate	121	87.7	17	12.3	138	19.6
Mother's occupation						
Non-working	590	87.0	88	13.0	678	96.3
Working	25	96.2	1	3.8	26	3.7
Type of family						
Nuclear	440	88.2	59	11.8	499	70.9
Extended	175	85.4	30	14.6	205	29.1
Residence						
Rural	20	90.9	2	9.1	22	3.1
Urban	595	87.2	87	12.8	682	96.9
Monthly family income (YTL)						
≤ 300	148	88.6	19	11.4	167	23.7
301-600	347	88.7	44	11.3	391	55.5
≥ 601	120	82.2	26	17.8	146	20.8
Total	**15**	**87.4**	**89**	**12.6**	**704**	**100.0**

* Percentage of the column, while the rest is percentage of each line

** Indicates difference between groups (chi-square test)

to cause an injury-producing accident, and they were asked to define these risks. The minimum and maximum number of risks mothers recognized was 0 and 13, respectively. The average number of risks identified was determined as 5.2±3.0. Moreover, 14.9% of the mothers were unable to identify any risks, while 0.3% of them noticed all of the risks. While 48.0% of the mothers correctly defined ≥6 risks, 52.0% of them correctly defined ≤5 risks.

The distribution of the average number of risks defined by the mothers according to some variables is shown in Table III. The average number of risks defined by the mothers was found to be associated with the age of the child, the mother's educational background and occupation, the type of family, and monthly family income. Mothers of the children aged ≤1 defined more risks on average than the mothers of 2-3 and 4-5 year olds (p=0.001).

An analysis of the average number of risks defined by the mothers in terms of their educational background revealed that high school/university graduate mothers were superior over other mothers. It was found that as maternal education increased, the mothers were able to identify more risks (p=0.001). The average number of risks defined by working mothers was determined to be greater than

Table II. A Descriptive Analysis of the Accidents Experienced by the Participating Children

Some features of accidents	Number (n= 89)	%
Place of accident		
Outdoor	31	34.8
Indoor	58	65.2
Guest room	44	75.8
Kitchen	8	13.8
Bedroom	6	10.4
Treatment after accident		
Ambulatory at a medical institution	55	61.8
Handled at home	34	38.2

that of non-working mothers (p=0.002). The average number of risks defined by mothers in nuclear families was found to be higher than that of mothers who belonged to extended families (p=0.048).

It was also found that as the monthly family income increased, the average number of risks acknowledged also increased. Accordingly, the mothers most successful in defining the risks were those with the highest monthly family income (p=0.001).

An analysis of the association between accident background and number of risks defined by mothers revealed that both the mothers with and without an accident history in their children were able to define a comparable number of risks (p=0.505). No statistically significant association was observed between the average number of risks defined by the mothers and number of children or type of accident (p=0.070 and p=0.903).

The number of risks defined was classified according to mean ± 1 standard deviation into three groups as "≤2", "2.1-8" and ">8". Those who defined ≤2 risks and those who defined >8 risks reported higher injury-producing accidents. However, the association was not statistically significant (p=0.089).

A regression analysis of the multiple factors, including child's age, mother's age and defined risks, that were found to be associated with accident background in one-way analyses at p<0.10 revealed that the child's age and mother's age were the factors primarily associated with accident background (Table IV).

For the children of mothers aged ≤30, the risk of injury-producing accident was 1.9 times more than for the children of mothers aged >30 (odds ratio [OR]=1.9225). For the children aged ≥2, the risk of injury-producing accident was 5.4 times more than that of children in the other age groups (OR=5.3787).

Discussion

In this study, the frequencies of injury-producing accidents in general and residential accidents in particular were determined as 12.6% and 8.2%, respectively, and these findings are quite similar to the body of literature in the relevant field[2,3,15,16]. Similarly, Alptekin[17] found a rate of 10.8% in a study on 800 households in middle Anatolia.

In this study, residential accidents were found to represent 65.2% of the accidents in general. Parents are potential important mediators of toddler injury because more than half of the injuries among children under the age of five occur in the home[15,18]. Therefore, children under five years old are vulnerable to injury-producing accidents in the home when their parents are not knowledgeable about potential hazards[19]. The fact that children under five spend more time at home may be a possible reason.

No significant association was found between the frequency of injury-producing accidents and child gender, which is consistent with some previous works in the related literature[8,15,20,21]. Insignificance of gender as a mediating factor implies that accidents are dependent more on environmental conditions and the socioeconomic backgrounds.

Frequency of injury-producing accidents increases during the 2nd and 3rd years, and reaches a climax in the 4th and 5th years of a child's life. It can be inferred from this finding that one-year-old children have moderately lower risk of having injury-producing accidents

Table III. Distribution of Average Risks Defined by the Participating Mothers According to Some Variables

Factors	Number of risks defined Mean ± SEM	Number of cases	P-value
Age of the child			
≤1	5.6 ± 0.2	153	0.001
2-3	5.3 ± 0.1	419	
4-5*	4.4 ± 0.3	132	
Age of the mother			
20-24	5.4 ± 0.3	154	0.822
25-29	5.1 ± 0.2	243	
30-34	5.1 ± 0.2	154	
35+	5.2 ± 0.2	153	
Mother's educational background			
Illiterate*	3.6 ± 0.2	95	0.001
Primary school graduate	4.9 ± 0.1	378	
Secondary school graduate	5.8 ± 0.3	93	
High school/university graduate*	6.6 ± 0.3	138	
Mother's occupation			
Working	7.0 ± 0.1	26	0.002
Non-working	5.1 ± 0.7	678	
Type of family			
Nuclear	5.3 ± 0.1	499	0.048
Extended	4.8 ± 0.2	205	
Monthly family income (YTL)			
≤ 300	4.2 ± 0.2	167	0.001
301-600	5.3 ± 0.3	391	
≥ 601*	6.2 ± 0.3	146	
Accident background			
Yes	5.3 ± 0.4	89	0.505
No	5.2 ± 0.1	615	
Total	**5.2 ± 0.1**	**704**	

* Indicates difference between groups (Bonferroni)

since they are not physically very active. The risk of accident increases by the 12th month when the baby starts walking. The risk is expected to decrease after the 4th year with the completion of the development of motor coordination. This can be asserted, based on the findings of this study, to be the very reason for a decrease in the caring for and monitoring of the child and an increase, in turn, in the number of accidents during these ages[2].

Socioeconomic status has been documented to be an important determinant of injury, although the effect depends on the socioeconomic indicator considered[5,9]. The frequency of injury-producing accidents was the highest (17.8%) among families with a monthly income of ≥601 YTL, although this finding was not statistically significant when compared to the other income groups. This result was contradictory to some studies in this field[9,24], but similar to Alptekin's study[17]. O'Campo[7] reported that as the family income decreases, accidents occur more frequently, since physical conditions at home also become deteriorated. However, in this study, no statistically significant difference in the frequency of injury-producing accidents was found among groups according to the different income levels. An explanation may be that the mothers with low monthly family

Table IV. Logistic Regression Analysis of the Factors Regarding Accident Background

Related factors	ß	*P*-value	Odds ratio	95% confidence interval
Age of the child (categorical) ≥2 years old	1.6825	0.0004	5.3787	2.138 - 13.5303
Age of mother (categorical) ≤30	0.6536	0.0125	1.9225	1.1510 - 3.2109

income may not have reported the accidents if the child was not seriously hurt, since they were more preoccupied with providing food for the family and other living conditions. The slightly greater frequency of accidents in families with higher income may be due to the fact that those families with higher income did not belong to upper socioeconomic status but only had an income above minimum wage. It was obvious that the participants were mostly from low and middle income groups. Similarly, illiterate mothers reported the lowest unintentional injury frequency, though the difference was not significant. Since most of the illiterate mothers were also from families with low income in our study, it could be said that unintentional injury of the child may not be a problem they consider a priority. On the other hand, the mothers with higher level of education reported slightly more injuries. In fact, the average numbers of defined risk factors by mothers with a higher level of education and higher monthly family income were significantly higher than the average numbers of defined risk factors by mothers with low education level and low income. Thus, we could comment that mothers with higher education and income have more risk perception since they defined more risk factors. There seems to be a multifactorial association between both income and education level and accident frequency that needs to be investigated thoroughly in further studies.

The findings of the study show that falling is the leading cause of injury-producing accidents (65.3%). In their study, Tezcan et al.[3] reported this rate as 52.9%. The rate of falling reported as a cause of accidents in other relevant studies varied between 30.0% and 70.0%[5,7,8,15,16]. Thus, it can be concluded that falling is the leading cause of injury-producing accidents among children under five[5,15,16,22]. This can be justified with the stage of development of a child, and with the strong association between life-stage and the rate and type of accidents[2]. Of the children who fell, 59.6% received ambulatory treatment in a medical institute, which suggests that falling is the most dangerous type of injury-producing accidents for children under five.

The second most common type of accident was caused by burning (33.6%) as a result of contact with hot water and stove/oven. This finding suggests that the mothers are either not sufficiently careful/prudent or are not sufficiently knowledgeable about the measures to be taken.

Most of the residential accidents (75.8%) occurred in the guest room and living room. This finding is in agreement with the study by Tezcan et al.[3], who found that 70.6% of home accidents occurred in the guest room. This can stem from the fact that family members spend most of the day in the guest room or living room. Since falling was the most frequent type of accident, it seems necessary to remove to the extent possible all possible risk factors that could cause falls in these rooms.

Many of the victims (61.8%) received ambulatory treatment in a medical institution. This is another finding that is consistent with the study by Tezcan et al.[3], who reported a rate of 77.8% for victims receiving ambulatory treatment in a medical institution. In fact, this may be only because accidents treated in a medical institution are more easily recalled.

The average number of risks defined by the mothers of children aged ≤1 year was greater than that defined by mothers of 2-3 and 4-5 year olds, which may suggest that mothers with younger children are more careful and alert.

It was also found that the higher the mother's education, the greater the average number of risks they were able to define. This seems both a reasonable finding and one that is supported by the findings of the study. High school/university graduate mothers defined the highest number of risks. Similarly, it was found in a previous study that as mothers' level of education increased, they become more aware of the risks[23]. Laursen[24] also reported that high school graduate mothers defined 1.5 times more risks than primary school graduate mothers.

Working mothers were found to define more risks on average than non-working mothers. This can be attributed to the fact that the former are more sensitive in terms of noticing the risks that cause injury-producing accidents because they work, thus it is easier for them to notice the home-based risks.

It was also found that as the monthly family income increased, the average number of defined risks also increased. The number of risks defined was reported to be low in families with low income[24]. This can stem from the fact that mothers from families with low income are at the same time less educated or they concentrate on basic needs such as feeding and clothing their family rather than accidents.

No significant association was found between the average number of defined risks and the type of accident, which is another finding consistent with those of Tezcan et al.[3]. Similarly, accurate definition of the risks was not found to be associated with injury-producing accident frequency. In fact, similar numbers of accidents were reported by the mothers both more aware and less aware of the risks. If we assume that more aware mothers reported more accidents because they had more risk perception, then less aware mothers experienced a higher frequency of accidents because they were unaware of the risks. This may suggest that the frequency of accidents among children under five depends on several predictors, including developmental, socioeconomic, environmental, and parenting factors. Imprudence and the reasons for it should also be kept in mind.

Some findings of the study are subject to a number of limitations, since the number of children, dwelling type and rank of birth were not taken into consideration. The information is based on self-reported data elicited through interviews, which is subject to recall bias.

In conclusion, this study showed that the frequency of injury-producing accidents among children under five in Malatya city center is rather high, and such injuries are a serious problem that can require treatment at a medical institution.

The majority of the injury-producing accidents occur at home. Home accidents can be prevented by improving the environmental conditions, particularly the conditions at home. The finding that most of the children experience accidents at home and in their mother's presence stresses the need to give priority to measures to prevent home accidents, which recognize mothers as important factors.

Falling is the primary cause of injury-producing accidents among children under five. Preventing children of this age group from falling can have a great impact in terms of public health. The fact that 59.6% of the children received ambulatory treatment in a medical institution after falling suggests that it is the most dangerous type of injury-producing accident in this age group.

Given the findings that the ages of both mother/child are relevant in terms of injury-producing accident frequency, though not a variable one can control or manipulate, and that awareness of the risks has no effect on accident frequency, we suggest that all mothers should be given priority in the planning of some training and consciousness-raising services, thus improving the home-based conditions and helping to prevent unintentional injuries.

REFERENCES

1. Bertan M, Cakir B. Halk sagligi yonunden kazalar. In: Bertan M, Guler C (eds). Halk Sagligi Temel Bilgiler (1st ed). Ankara: HAVSAK; 1995: 462-472 (in Turkish).
2. World Health Organization Document. Child and adolescent injury prevention: A WHO plan of action 2006-2015. Available at http://www.who.int/violence_injury_prevention/publications/other_injury/en/index.html. Accessed 15 November 2008.
3. Tezcan S, Aslan D, Yardim N, et al. Determination of the frequency of accidents and the relationship between accidents and some risk factors in the catchment area of Altindag Health Center, Ankara. Ege Tıp Dergisi 2001; 40: 165-173 (in Turkish).
4. Peden M, McGee K, Krug E. Injury: a leading cause of the global burden of disease, 2000. Geneva: World Health Organization; 2002.
5. Moshiro C, Heuch I, Astrom AN, Setel P, Hemed Y, Kvale G. Injury morbidity in an urban and rural area in Tanzania: an epidemiological survey. BMC Public Health 2005; 5: 11-20.
6. King WJ, Klassen TP, LeBlanc J, et al. The effectiveness of a home visit to prevent childhood injury. Pediatrics 2001; 108: 382-388.
7. O'Campo P, Gielen AC, Royalty W, Wilson M. Injury-producing events among children in low-income communities: the role of community characteristics. Bull N Y Acad Med 2000; 77: 34-49.
8. Garzon DL, Lee RK, Homan SM. There's no place like home: a preliminary study of toddler unintentional injury. J Pediatr Nurs 2007; 22: 368-375.
9. Garzon DL. Contributing factors to preschool unintentional injury. J Pediatr Nurs 2005; 20: 441-447.
10. Nazlican E, Demirhindi H, Karaomerlioglu O, Akbaba M, Gokel Y. Evaluation of home accidents among people applying to the adult emergency department of the Faculty of Medicine, Cukurova University. TAF Prev Med Bull 2008; 7: 137-140 (in Turkish).

11. Towner E, Dowswell T, Jarvis S. Updating the evidence. A systematic review of what works in preventing childhood unintentional injuries: Part 2. Inj Prev 2001; 7: 249-253.

12. Hang HM, Ekman R, Bach TT, Byass P, Svanström L. Community-based assessment of unintentional injuries: a pilot study in rural Vietnam. Scand J Public Health Suppl 2003; 62: 38-44.

13. Mortality statistics, 2006. Available at http://www.tuik.gov.tr Accessed 16 June 2008 (in Turkish).

14. Ozcebe H. Cocuk sagligi politikalari ve dunyada cocuk sagliginin durumu. In: Guler C, Akın L (eds). Halk Sagligi Temel Bilgiler. Ankara: Hacettepe Universitesi Yayinlari; 2006: 418-452 (in Turkish).

15. Kose OO, Bakirci, N. Domestic accidents in children. Sağlık ve Tıp Eğitimi Dergisi 2007; 16: 31-35 (in Turkish).

16. Tercero F, Anderson R, Pena R, Rocha J, Castro N. The epidemiology of moderate and severe injuries in a Nicaraguan community: a household-based survey. Public Health 2006; 120: 106-114.

17. Alptekin F, Uskun E, Kisioglu AN, Ozturk M. Unintentional non-fatal home related injuries in Central Anatolia, Turkey: frequencies, characteristics, and outcomes. Injury 2008; 39: 535-546.

18. Phelan KJ, Khoury J, Kalkwarf H, Lanphear B. Residential injuries in U.S. children and adolescents. Public Health Rep 2005; 120: 63-70.

19. Saluja G, Brenner R, Morrongiello BA, Haynie D, Rivera M, Cheng TL. The role of supervision in child injury risk: definition, conceptual and measurement issues. Inj Cont Saf Promot 2004; 11: 17-22.

20. Laflamme L, Eilert-Petersson E. Injuries to preschool children in a home setting: patterns and related products. Acta Paediatr 1998; 87: 206-211.

21. Spady DW, Saunders DL, Schopflocher DP, Svenson LW. Patterns of injury in children: a population-based approach. Pediatrics 2004; 113: 522-529.

22. Centers for Disease Control and Prevention. Surveillance summaries: surveillance for fatal and nonfatal injuries-United States. MMWR Morb Mortal Wkly Rep 2004; September 3:1-4.

23. Coskun C. Çankırı Eldivan ilçe merkezinde 0-14 yaşlar arasında çocuğu olan annelerin ilkyardım bilgi düzeyleri ve ilkyardım gerektiren durumların sıklığı [First aid knowledge levels of mothers with children aged 0-14 living in center of Eldivan district, Cankırı and the incidence of events requiring first aid]. Ankara: Gazi University, Institute of Health Sciences; 2004. Unpublished MA thesis (in Turkish).

24. Laursen B, Nielsen JW. Influence of sociodemographic factors on the risk of unintentional childhood home injuries. Eur J Public Health 2008; 18: 366-370.