

Mothers' Knowledge Levels Related to Poisoning

Birsen BILGEN SIVRI,¹ Funda OZPULAT²

¹Department of Health Services, Mevlana University, Nursing, Konya, Turkey;

²Department of Nursing, Selcuk University, Aksehir Kadir Yallagoz School of Health, Konya, Turkey

SUMMARY

Objectives

This study was done to evaluate mothers' level of knowledge regarding poisoning, to plan training for issues with an identified lack of knowledge, to collect required data regarding protection and approach issues on poisoning cases which may occur in children for various reasons.

Methods

This descriptive study was performed after obtaining permission from the County Health Department and involved mothers who applied to Family Health Centers No. 1-7 between April 1st and May 31st 2012, and who agreed to participate in the study (n=290). The questionnaire was composed of three parts: "Personal Information Form," "House Poisoning Evaluation Form" and "Home Poisoning Prevention Knowledge Level Form."

Results

Participant ages were between 16 and 50 years and the mean age was 33.09±7.10 years. The number of children ranged from 1 to 6, and 203 people had seven children under the age of six. 37.6% of the mothers were primary school graduates, while 74.5% were housewives. There was a significant relationship between the knowledge score of the mothers on poisoning and education, career, neighborhood, and social security (p<0.05).

Conclusions

Childhood poisoning is the most common cause of admission to the hospital. Protective precautions such as family education, storage of medication out of reach of children and use of secure lids are thought to be important.

Key words: First aid; level of knowledge; mother-child; nurses; poisoning.

Submitted: December 13, 2013 **Accepted:** January 30, 2014 **Published online:** February 14, 2014

Correspondence: Birsen BILGEN SIVRI, Mevlana Universitesi Saglik Hizmetleri Yuksekokulu, Konya, Turkey.

e-mail: bbilgensivri@hotmail.com



Introduction

Poisoning is an emergent condition that presents with signs and symptoms specific to the causative substance. It is caused by intake of a toxic substance in an amount harmful to the body through different ways. Poisonings are types of emergency pediatric diseases with preventable causes that lead to significant morbidity and mortality.^[1,2] In developed countries, accidents and poisonings represent the most significant causes of death among the 1-14 year age group.^[2,3] In developed countries 2% of child deaths are caused by poisoning, with this number being more than 5% in developing countries.^[3]

According to the American Association of Poison Control Centers Toxic Exposure Surveillance System records, 65.8% of the 2.3 million reported poisoning cases are constituted of children under the age of 19 years.^[4] Poisoning is common in 1-5 year old children. Because of curiosity and willingness to learn, investigation of children's surrounding is frequently seen in this age group, and the substances found can be taken by mouth by children which may lead to poisoning.^[5] Since children have a lesser ability to control themselves than individuals of other ages, yet cannot distinguish possible harmful substances and hazardous situations, they are particularly vulnerable to accidents and poisonings.

Table 1. Socio-demographic characteristics and knowledge score distribution

| | N | % | X ² | SD | P* |
|--------------------------------|-----|-------|---------------------------|-------------|--------------|
| Age of mother | | | | | |
| 16-24 years | 31 | 10.7 | 0.270 | 3 | 0.966 |
| 25-33 | 127 | 43.8 | | | |
| 34-42 years | 90 | 31.0 | | | |
| 43 years and older | 42 | 14.5 | | | |
| Mother education level | | | | | |
| Illiterate | 8 | 2.8 | 46.773 | 5 | 0.000 |
| Literate | 4 | 1.4 | | | |
| Primary school graduate | 109 | 37.6 | | | |
| Secondary school graduate | 43 | 14.8 | | | |
| High school graduate | 63 | 21.7 | | | |
| University graduate and higher | 63 | 21.7 | | | |
| Mother profession | | | | | |
| Housewife | 216 | 74.5 | 35.865 | 4 | 0.000 |
| Civil servant | 56 | 19.3 | | | |
| Employee | 13 | 4.5 | | | |
| Self employed | 3 | 1.0 | | | |
| Farmer | 2 | 0.7 | | | |
| Family type | | | | | |
| Core family | 253 | 87.2 | 4.142 | 2 | 0.126 |
| Large family | 29 | 10.0 | | | |
| Separated family | 8 | 2.8 | | | |
| Number of children | | | | | |
| 1 child | 84 | 29.0 | 6.769 | 3 | 0.080 |
| 2 children | 111 | 38.3 | | | |
| 3 children | 77 | 26.5 | | | |
| 4 children and more | 18 | 6.2 | | | |
| Social Insurance | | | | | |
| Have | 281 | 96.9 | Mann-Whitney U 947.500 | Z -1.288 | P** 0.198 |
| Do not have | 9 | 3.1 | | | |
| Total | 290 | 100.0 | | | |

*Kruskal-Wallis H test was used; **Mann-Whitney U test was used.

[6,7] Much of the child's life up until the age of 7 is spent in a home environment; it is thus important for caregivers to understand protective precautions such as the storage of medication out of reach of children and the use of secure lids.[8] At this point, it is clear that nurses, who today have many tasks in terms of patient care, have great responsibility in family education regarding the prevention and reduction of poisoning (which is a significant cause of mortality and morbidity in childhood).[9]

Factors that led to poisoning may vary according to region, civic society's traditions and customs, the level of education and the season.[10] Therefore, precautions should be taken by identifying characteristics associated with poisoning of each country and even of each region.[11] In our country numerous studies related to childhood poisonings are performed; however, all of them contain regional characteristics.[5-8,10-37] Epidemiological data of each region are required be determined and updated for the development of appropriate protection and treatment methods, for health personnel education and raising society awareness.[29] Therefore, this study was aimed to evaluate mothers' knowledge level regarding poisoning, organize training about the topics in which inadequacies were detected and collect the required data about the approach and protection of poisoning events in children.

Materials and Methods

This descriptive study was applied to mothers who applied for examination and treatment to Family Health Centers No. 1-7 between April 1st and May 31st 2012 (1008 applied, 15-49 year old women), who have one or more children under the age of fourteen (496 people) and who agreed to participate in the study (n=290) after obtaining permission from the County Health Department. Because in the literature, rates of poisoning of children under of age seven years and younger are rapidly increasing, in this study the "Measuring information score about poisoning of mothers with children under the age of seven years and younger" was designed. However, due to difficulties in each sample group, we tried to reach mothers who had children aged fourteen and younger. Only 203 of mothers in the study were found to have children age seven and younger.

Collection of Data

The study data were collected through questionnaires completed by face to face interviews of mother and the researchers. Questions about poisoning were prepared by researchers by investigating literature data on the subject.[1,2,3-41] Pre-treatment of the survey was performed on 10 mothers who applied for treatment to the State Hospital, and had children under the age of seven (due to poisonings being

Table 2. Mothers' features related to poisoning stories

| Poisoning information source | N* | % |
|---|-----|-------|
| TV / internet | 146 | 50.5 |
| Newspaper, magazine, book | 61 | 21.1 |
| Family elders | 31 | 10.7 |
| Health care staff | 27 | 9.4 |
| Other | 24 | 8.3 |
| Total | 289 | 100.0 |
| Home poisoning cases during last one year | N** | % |
| Stove / heater poisoning | 12 | 34.3 |
| Chemicals | 9 | 25.7 |
| Medication poisoning | 6 | 17.1 |
| Fungus | 3 | 8.6 |
| Corrosive substance | 2 | 5.7 |
| Food | 2 | 5.7 |
| Other | 1 | 2.9 |
| Time of home poisoning | N** | % |
| Noon | 17 | 48.6 |
| Morning | 12 | 34.3 |
| Night | 3 | 8.5 |
| Evening | 2 | 5.7 |
| Afternoon | 1 | 2.9 |
| Place of home poisoning | N** | % |
| Hall | 12 | 34.3 |
| Kitchen | 9 | 25.7 |
| Bedroom | 5 | 14.3 |
| Living room | 4 | 11.4 |
| Bathroom | 4 | 11.4 |
| Balcony | 1 | 2.9 |
| Total | 35 | 100.0 |

*More than one answer was given; ** Number of poisoning occurred in the last year was considered.

more common in this age group). After making the necessary adjustments on the questionnaire we switched to the original application, mothers who participated in the pre-treatment group were not included in study again. Collection of research data occurred via a questionnaire that queried mothers regarding their knowledge of poisoning. The questionnaire consisted of three sections. The first section was termed the "Personal Information Form" and consisted of 15 questions including the sociodemographic characteristics of the mother, while the second section was the "Home poisoning Evaluation Form" which was made up of 12 questions including where they obtain their information about poisoning, whether they encountered poisoning, and poisoning type house features and the third section included the "House Poisoning Prevention Knowledge Level Form"

Table 3. Conditions of mothers' intervention during poisoning cases of the past year

| First aid / Intervention performed | N** | % | Mann-Whitney U | Z | P* |
|---|------|-------|----------------|--------|-------|
| Yes | 22 | 75.9 | 72.500 | -231 | 0.823 |
| No | 7 | 24.1 | | | |
| Total | 29 | 100.0 | | | |
| The person who performed first intervention | N*** | % | χ^2 | SD | P* |
| Father | 14 | 48.0 | 5.401 | 5 | 0.369 |
| Mother | 11 | 38.0 | | | |
| Older brother | 1 | 3.5 | | | |
| Aunt | 1 | 3.5 | | | |
| Caregivers | 1 | 3.5 | | | |
| Grandmother | 1 | 3.5 | | | |
| Total | 29 | 100.0 | | | |
| Status of applying to hospital after being poisoned | N** | % | Mann-Whitney U | Z | P* |
| Yes | 12 | 40.0 | 92.000 | -683 | 0.495 |
| No | 18 | 60.0 | | | |
| Total | 30 | 100.0 | | | |
| Condition of taking precautions after poisoning | N** | % | Mann-Whitney U | Z | P* |
| Yes | 27 | 93.1 | 25.500 | -0.130 | 0.896 |
| No | 2 | 6.9 | | | |
| Total | 29 | 100.0 | | | |
| The result of poisoning | N** | % | | | |
| Full recovery | 30 | 96.8 | | | |
| Death | 1 | 3.2 | | | |
| Total | 31 | 100.0 | | | |

*Mann-Whitney U test was used; **Incomplete answer was given; ***More than one answer was given.

which consisted of 20 questions identifying the symptoms observed in various poisoning cases and what should/should not be done as an intervention.

Analysis and Evaluation of Data

In this study, knowledge scores were calculated by evaluating each of the 20 questions, determining the level of knowledge of mothers, with each question scoring a maximum of 5 points. The lowest and the highest possible survey scores were "0" and "100".

Appropriate statistical tests were used depending on whether dependent or independent variables were being assessed. SPSS 17 statistical software package was used for the analysis of data. The "Kolmogorov-Smirnov" and "the Shapiro-Wilk" tests did not display a normal distribution of poisoning knowledge scores. According to test assumptions, for comparison of more than two groups measurements, Kruskal-Wallis H test, for comparison of two different groups of measurements, Mann-Whitney U test and for de-

termination of level and direction of the relationship, Pearson Product Moment Correlation Coefficient Analysis were used; the significance level was determined as 0.05.

Results

Participants were between 16 and 50 years old and the mean age was 33.09 ± 7.10 years. The number of children was between 1 and 6 persons, and 203 individuals had children under age of 7 years (Table 1).

37.6% of mothers were primary school graduate, 74.5% of them were housewives and 19.3% were civil servants. Incomes of 39.9% of the participants were found to be between 1,000 and 1,999 TL (Table 1).

Based on the correlation analysis results of "Age-Poisoning Knowledge Score" and "Number of Children-Poisoning Knowledge Score" of mothers participating in the study; the relationship between poisoning knowledge scores and the age of the mothers was not statistically significant ($r=-0.023$,

$p=0.698$). According to the number of children, a relationship in a negative direction was significant at the 0.05 error level ($p<0.05$) ($r=-0.125$, $p=0.035$).

50.5% of the mothers reported that they had received information on intoxication via television or internet. 34.3% of 35 individuals who indicated childhood poisoning had occurred during the last year stated that the event occurred by stove/heater, 25.7% by chemicals, 17.1% by medication; based on time 48.6% occurred in the morning, 34.3% in the afternoon; based on place, 34.3% occurred in the hall and 25.7% in the kitchen (Table 2).

As shown in Table 3, it was determined that in 7 out of 35 house poisonings no type of intervention was performed and in 22 cases an intervention was performed; 6 people did not answer this question. It was found that in 48% and in 38% of poisonings at home, first intervention was performed by the father and mother, respectively. It was defined that 40% of poisonings were brought to the hospital and that in 93.1% of poisonings, precautions after the accidents were taken. 96.8% of poisonings resulted with full recovery, with a death of one child (Table 3).

64% of mothers have water heaters in the bathroom, and 85.2% and 89% have sufficient bathroom ventilation and lighting, respectively. It was found that 61.1% of mothers had to clean the building chimney every year. 89.8% of mothers reported that they do not put materials such as pesticides or detergents into food containers, and 67.9% do not keep chemical substances such as pesticides and bleach. The percentages of mothers who keep drugs in their own containers, in the refrigerator and in the bathroom are 89.8%, 5.6% and 46% respectively (Table 4).

The poisoning knowledge score of the participants ranged from 5 to 65 points and the mean knowledge score was 43.34 ± 14.84 . It was found that 83.1% of the mothers gave correct answers to first aid during drug poisoning questions, 80% to non-poisoning symptom questions and 71.7% to general poisoning symptom questions. It was detected that at most, first aid to gas poisoning question (87.6%), and actions that should not be done during water heater poisoning question (84.1%) were answered wrong; in addition, the poison control center number was not known by mothers (12.1%) (Table 5)

Discussion

Advancement of technology and improvement of socio-economic status has led to more industrial and petroleum products, drugs and bleaches in homes. The negligence of families and those who are involved in child care, ignorance about poisoning, packaging of produced drugs in attractive

colors, launch of pesticides for cheapest price to the market, uninformed use of drugs, nonprescription sale of some drugs and leaving them within reach of children lead to increase in poisonings.^[27]

Our study is one of the few studies measuring the level of knowledge about the poisoning of mothers living in a town. In our study, 37.6% of the mothers were primary school graduates and an increase of poisoning knowledge scores during increase of mothers' education level was observed ($p<0.05$). In the study of Coşkun et al about first aid knowledge level of mothers who have children aged 0-14 years, in a similar manner first aid knowledge level increases with mothers' education level.^[15] Uskun and colleagues, in a study performed on 180 women in Aksaray, reported an increase of first aid knowledge with increased level of education. Increasing knowledge of first aid in the community and for eliminating need of training on this issue may benefit more from formal education institutions.^[23]

In our study, when we examine the socio-demographic characteristics, 74.5% of the mothers were housewives and 19.3% were civil servants. Mothers who are civil servants and who have a higher income level have greater knowledge scores; in addition, it was determined that poisoning knowledge scores changed according to the mother's profession status ($p=0.000$, <0.05). Similar to our study, Uskun and his friends reported that women with good economic status and a higher education level have higher level of knowledge about first aid.^[23]

In our study, a negative correlation between number of children and poisoning knowledge scores occurred ($r=-0.125$, $p=0.035$) and this correlation appeared to be significant ($p<0.05$). Coşkun and his friends in their work in Eldivan found that in a similar way average knowledge decreased with increase in children number.^[15] It was considered that a decrease in knowledge scores may be due to a possible decrease of child care caused by increased number of children.

In our study, 48.6% of the 35 people indicating intoxication indicated morning and 34.3% indicated afternoon poisonings. This may be due to housewives being busy with household chores and are unable to deal with children in the morning. Akçay and friends in their study in Denizli reported that poisonings mostly occurred in the afternoon (48.5%) and in the evening (28.4%); Yılmaz et al toxicity study conducted in the Çukurova region reported that poisoning cases occur between 09:00 and 12:00 hours (24.9%).^[10,30]

In the home environment there are many factors (bleach, drain openers, stove, drugs, etc.), that can easily cause poisoning in children. These substances are sold exposed and unbranded, which can be stored in water or other beverage

Table 4. Features related to the precautions taken by mothers against poisoning

| | | |
|--|-----|-------|
| Presence of water heater in the bathroom | N* | % |
| Yes | 181 | 64.0 |
| No | 102 | 36.0 |
| Total | 283 | 100.0 |
| Sufficiency of the bathroom ventilation | N* | % |
| Yes | 241 | 85.2 |
| No | 42 | 14.8 |
| Total | 283 | 100.0 |
| Sufficiency of bathroom enlightenment | N* | % |
| Yes | 252 | 89.0 |
| No | 31 | 11.0 |
| Total | 283 | 100.0 |
| Building chimney cleanliness condition | N* | % |
| Yes | 173 | 61.1 |
| No | 110 | 38.9 |
| Total | 283 | 100.0 |
| Presence of automatic switches of the stove | N* | % |
| Yes | 143 | 50.5 |
| No | 140 | 49.5 |
| Total | 283 | 100.0 |
| Switching off tube/gas appliances from the gas valve after usage | N* | % |
| Yes | 189 | 66.8 |
| No | 94 | 33.2 |
| Total | 283 | 100.0 |
| Placing materials such as pesticide and the detergent in food containers | N* | % |
| Yes | 29 | 10.2 |
| No | 254 | 89.8 |
| Total | 283 | 100.0 |
| Keeping chemicals such as bleach, pesticides in the kitchen | N* | % |
| Yes | 90 | 32.1 |
| No | 190 | 67.9 |
| Total | 280 | 100.0 |
| Placing drugs into other containers than their own containers | N* | % |
| Yes | 29 | 10.2 |
| No | 254 | 89.8 |
| Total | 283 | 100.0 |
| Drugs storage places | N* | % |
| Refrigerator | 152 | 52.6 |
| Bathroom | 133 | 46.0 |
| Over the loom | 3 | 1.0 |
| Beneath the loom | 1 | 0.4 |
| Total | 289 | 100.0 |
| Place of buying mushrooms | N* | % |
| Bazaar | 144 | 50.2 |
| Shop | 143 | 49.8 |
| Total | 287 | 100.0 |

*Incomplete answer was given.

Table 5. Poisoning knowledge questions (n=290)*

| Questions | False | | Correct | | Do not know | |
|---|-------|------|---------|------|-------------|------|
| | n | % | n | % | n | % |
| When you notice that your child taken medicine which of the following applications would you apply? | 241 | 83.1 | 40 | 13.8 | 9 | 3.1 |
| In which of the following situations you would not think that your child is poisoned? | 232 | 80.0 | 47 | 16.7 | 11 | 3.8 |
| Which of the following is not a symptom of the common symptoms of poisoning? | 208 | 71.7 | 75 | 25.9 | 7 | 2.4 |
| In which of the following situations certainly child should not be induced to vomiting? | 204 | 70.3 | 74 | 25.6 | 12 | 4.1 |
| Which is the wrong first aid application for unknown reasoned digestive tract poisoning? | 197 | 67.9 | 80 | 27.6 | 13 | 4.5 |
| What should be the first attempt to apply to a child who had drunken petroleum products? | 193 | 66.6 | 84 | 28.9 | 13 | 4.5 |
| What is the phone number of national poison control center? | 187 | 64.5 | 68 | 23.4 | 35 | 12.1 |
| What should be the first attempt to apply to a child who had taken pesticides? | 185 | 63.8 | 97 | 33.4 | 8 | 2.8 |
| What should be the first attempt to apply to a child who had drunken bleach? | 184 | 63.4 | 102 | 35.2 | 4 | 1.4 |
| Performing of which of the followings is false for poisoning through skin? | 180 | 62.1 | 99 | 34.1 | 11 | 3.8 |
| Imagine that you entered environment poisoned with gas which you would use to protect yourself while intervention? | 179 | 61.7 | 95 | 32.8 | 16 | 5.5 |
| What symptoms you would not wait to be observed primarily in a child who is conscious and know that he had eaten rotten food? | 178 | 61.4 | 101 | 34.8 | 11 | 3.8 |
| Which of the following information is wrong about prevention of water heater poisoning? | 174 | 60.0 | 108 | 37.2 | 8 | 2.8 |
| Which of the following is the correct information about the mushroom consumption? | 172 | 59.3 | 92 | 31.7 | 26 | 9.0 |
| In which of the following poisoning routes feeding yogurt to the child is sufficient for the first aid? | 161 | 55.5 | 118 | 40.7 | 11 | 3.8 |
| Which of the following provided information is the correct about mushrooms? | 130 | 44.8 | 138 | 47.6 | 22 | 7.6 |
| In poisoning occurred by inhalation in what position patient should be kept? | 128 | 44.1 | 147 | 50.7 | 15 | 5.2 |
| Which of the following are symptoms for stove poisoning? | 64 | 22.1 | 214 | 73.8 | 12 | 4.1 |
| Which of the following should not be performed in water heater poisoning? | 29 | 10.0 | 244 | 84.1 | 17 | 5.9 |
| Which of the following first aid applications should be performed to respiratory poisonings caused by gas? | 27 | 9.3 | 254 | 87.6 | 9 | 3.1 |

* Line percentage was taken.

bottles in the kitchen are within easy reach of children.^[5-7]

In a study conducted in the past year, it was found that in 35 poisoned children, 34.3% were due to stove/heater, 25.7% were from chemicals and 17.1% were poisoned by a drug. Of poisoning cases admitted to the Child Emergency Department of İzmir Training and Research Hospital mostly medical drugs (50.6%), effective corrosive ingestion (20%) and carbon monoxide poisonings (16.6%) were found.^[31] Polat et al (2005) in his study that examined the causes of poisonings observed that food poisonings (50%) occurred most frequently, followed by drugs (33.4%) and chemical poisonings (16.6%).^[17] In a study investigating poisoning cases admitted to Trakya University Medical Faculty it was identified that in 221 cases, toxic substances were taken orally, four cases occurred by inhalation and two cases through the skin; based on complications, there were four cases with liver failure, four cases with disseminated intravascular coagulation complication (DIC), two cases with status epilepticus and two cases with renal failure (0.9%).^[11] Epidemiological studies conducted in different regions of our country and at different time intervals support our research findings.^[5-8,10,15,31-33]

While mortality rates in poisoning cases vary according to region; these rates had decreased compared to previous years. In our country, the mortality rate was reported as 0.5% by Çitak and colleagues (2002), as 0.6% by Akbay-Öntürk and Uçar and as 5.5% by Ertekin et al (2001).^[6,40,41] In our study, number of children died as a result of poisonings occurred during past year is one. The rate of mortality we obtained in our study is lower than in other regions of our country, which is pleasing. However, significant improvement is made in the treatment of poisonings, taking preventive measures is more valid method for solving this problem.

Family education about poisonings, production of child-proof box and covers, sticking warning labels and increasing the number of educated individuals, will significantly decrease the number of poisoning. This will lead to a significant decrease of morbidity and mortality rates.

50.5% of the mothers get information about poisoning via TV/internet. Coşkun et al (2008), in his study stated that mothers mostly get knowledge on first aid from television (37.6%) and books, newspapers, magazines (18.2%).^[15] In a study performed by Örsal et al (2011), it was reported that the main resources of information on first aid used by women in home accidents was television and internet (40.4%).^[34] This result lead us to think that the number of television programs giving basic information about first aid during encountered home accidents and poisonings should be increased.

In poisoning cases, getting help form "poison information center" or by calling "112" for application of early and appro-

priate interventions is an important factor in reducing risks of mortality and morbidity. In a study of Coşkun et al (2008), it was found that 47.5% of the mothers know the Hızır Emergency phone number.^[15] A study by Örsal et al (2011) determined that almost all the women (98.8%) knew the phone number of the emergency ambulance service as "112".^[34] In our study, only 64.5% of mothers knew the number of the poison control center; this may be due to educational level of mothers who participated in the study.

Poisoning is an important public health problem which makes a significant part of the emergency department, requires a serious approach and when early intervention is performed, it responds well to a treatment.^[18] Due to frequent accidents among children, it is important for the child's health that caregivers know what to do in cases of poisoning. In our study, poisoning knowledge score of the mothers ranged from 5 to 65 points and the mean knowledge score was 43.34±14.84. In a study conducted in Ankara - Gölbaşı, mothers were found to have insufficient knowledge of first aid to children during possible home poisoning.^[35] In a study of Örsal et al (2011) in Eskisehir, women received scores regarding first aid in home accidents that ranged from 10 to 36, with an average score of 24.4±3.6.^[34] In research by Turan et al (2010) performed in Denizli within the scope of "0-6 years Prevention Group of Children Home Accidents" project, as the result of studies performed on home accidents and first aid, providing training leads to an increase in the level of knowledge of housewives and results showed a positive behavior change.^[36] As a result of our study, it has been suggested that healthcare institutions and organizations in their own region should perform protective measures and training on topics such as possible home poisonings, poisonings requiring immediate intervention, and accidents. We should remember that the future of our children is closely related to unintentional injuries during childhood.

Limitations

Limitations of this study included not being a multicenter study, including only mothers who applied to the Family Health Centers, and the collection of information based solely on the statement of mothers. Also, trying to reach to mothers with children under age of seven years during permitted dates, led to difficulties in reaching a sufficient sample group. In order to take the epidemiological generalization of mothers' level of knowledge about poisoning further, studies with a larger sample group should be performed.

Conclusion

In conclusion, our study determined that mothers' knowledge regarding poisoning is insufficient. Informative courses about poisoning for mothers should be planned and in the

future, more correct use of visual media should be shown. Nurses who have a significant role in the development and protection of a child's health should educate families about the proper storage of substances that can cause poisoning and about applications which should be performed during material ingestion.

Conflict of Interest

The authors declare that there is no potential conflicts of interest.

References

1. Arısoy N, Aji DY. Zehirlenmeler. In: Onat T, editor. *Cocuk sagligi ve hastaliklari*. Istanbul: Eksen Yayinlari; 1996. p. 1037-55.
2. Uzel N. Zehirlenmeler. In: Neyzi O, Ertugrul T, editors. *Cocuk sagligi ve hastaliklari*. Istanbul: Nobel; 2002. p. 1529-55.
3. Riordan M, Rylance G, Berry K. Poisoning in children 1: general management. *Arch Dis Child* 2002;87:392-6. [CrossRef](#)
4. Watson WA, Litovitz TL, Klein-Schwartz W, Rodgers GC Jr, Youniss J, Reid N, et al. 2003 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med* 2004;22:335-404. [CrossRef](#)
5. Bicer S, Gulcan EM, Yesinel S, Yildirim S, Sengul A, Aydogan G. Analysis of children who ingested caustic materials. [Article in Turkish] *Bozok Tıp Dergisi* 2011;1:1-10.
6. Akbay Onturk Y, Ucar B. Retrospective analysis of childhood poisoning in Eskisehir region. [Article in Turkish] *Cocuk Sagligi ve Hastaliklari Dergisi* 2003;46:103-13.
7. Cam H, Kiray E, Tastan Y, Ozkan HC. Review of poisoning cases followed in the pediatric emergency division of Istanbul University, Cerrahpasa Medical Faculty, Department of Pediatrics. [Article in Turkish] *Turk Pediatri Arsivi* 2003;38:233-9.
8. Peltek Kendirci HN, Yagli Colakoglu E, Hizli S, Kocak M, Saylam E, Polat E, et al. Evaluation of intoxication cases who referred to pediatric emergency room in our hospital. [Article in Turkish] *Turkiye Cocuk Hast Derg / Turkish J Pediatr Dis* 2011;5:29-35.
9. Potts NL, Mandleco BL. *Pediatric nursing caring for children and their families*. 1st ed. USA: Delmar Company; 2002.
10. Yilmaz HL, Derme T, Yildizdas D, Alhan E. Evaluation of childhood poisonings in Cukurova region. [Article in Turkish] *Nobel Medicus* 2009;5:35-44.
11. Oner N, Inan M, Vatanserver U, Turan C, Celtik C, Kucukgurluoglu Y, et al. Poisoning in children living in Trakya region. [Article in Turkish] *Turk Pediatri Arsivi* 2004;39:25-30.
12. Alptekin F. Aksaray il merkezinde ev kazalari epidemiyolojisi korumaya yönelik tutum ve davranislar ev kazalarina yönelik ilkyardim bilgi duzeyi [Yukse Lisans Tezi] Suleyman Demirel Universitesi Saglik Bilimleri Enstitusu Halk Sagligi Anabilim Dalı. Isparta: 2004.
13. Altundağ S, Oztürk MC. The effects of home safety education on taking precautions and reducing the frequency of home accidents. [Article in Turkish] *Ulus Travma Acil Cerrahi Derg* 2007;13:180-5.
14. Soyucen E, Aktan Y, Saral A, Akgün N, Numanoğlu AU. Retrospective analysis of childhood poisoning in Sakarya region. [Article in Turkish] *Cocuk Sagligi ve Hastaliklari Dergisi* 2006;49:301-6.
15. Coskun C, Ozkan S, Maral I. The first aid knowledge of the mothers having children at age 0-14 and the frequency of the situations requiring first aid in Cankiri-Eldivan District Center. [Article in Turkish] *Turkiye Cocuk Hastaliklari Dergisi* 2008;2:5-10.
16. Kahveci M, Celtik C, Karasalioglu S, Acunas B. Bir üniversite hastanesi acil servisine basvuran cocukluk cagi zehirlenmelerinin degerlendirilmesi. *Sted* 2004;13:19-1.
17. Polat S, Ozyazicioglu N, Tufekci Guducu F, Yazar F. The investigation of 0-18 year age group cases applying to the pediatric emergency department. [Article in Turkish] *Ataturk Universitesi Hemsirelik Yuksekokulu Dergisi* 2005;8:55-62.
18. Deniz T, Kandis H, Saygun M, Buyukkocak U, Ulger H, Karakus A. Evaluation of intoxication cases applied to emergency department of Kirikkale University Hospital. [Article in Turkish] *Duzce Tıp Fakultesi Dergisi* 2009;11:15-20.
19. Genc G, Sarac A, Ertan U. Evaluation of intoxication cases who referred to emergency room in pediatric hospital. [Article in Turkish] *Nobel Medicus* 2007;3:18-22.
20. Guzel SI, Kibar AE, Vidinlisan S. Evaluation of demographic characteristics in intoxication cases who admitted to emergency room in pediatric unit. *Genel Tıp Dergisi* 2011;21:101-7.
21. Atak N, Karaoglu L, Korkmaz Y, Usubutun S. A household survey: unintentional injury frequency and related factors among children under five years in Malatya. *Turk J Pediatr* 2010;52:285-93.
22. Kasem M. Zehirlenme nedeni ile cocuk acil unitesine basvuran hastaların degerlendirilmesi ve risk faktörlerinin belirlenmesi. [Uzmanlık Tezi] Hacettepe Universitesi Tıp Fakultesi Cocuk Sagligi ve Hastaliklari Anabilim Dalı. Ankara: 2010.
23. Uskun E, Alptekin F, Oztürk M, Kisioglu AN. The attitudes and behaviors of housewives in the prevention of domestic accidents and their first aid knowledge levels. [Article in Turkish] *Ulus Travma Acil Cerrahi Derg* 2008;14:46-52.
24. Penbegül LM. Ilac zehirlenmesi olan cocuk olgularda demografik özellikler ve ailesel etkenlerin degerlendirilmesi [Uzmanlık Tezi]. Haydarpaşa Numune Eğitim ve Arastirma Hastanesi Cocuk Klinigi. Istanbul: 2006.
25. Karaarslan B, Turla A, Aydın B. Corrosive Poisoning Cases Consulted at OMU Faculty of Medicine, Emergency Service. [Article in Turkish] *Van Tıp Dergisi* 2007;14:109-13.
26. Sümer V, Güler E, Karanfil R, Dalkıran T, Gürsoy H, Garıparıcı M, et al. Evaluation of the poisoning cases who applied to the pediatrics emergency unit. [Article in Turkish] *Türk Ped Arş* 2011;46:234-40. [CrossRef](#)
27. Kaya U. Klinikimizde 2001-2005 yılları arasında yatırılarak izlenen zehirlenme olgularının geriye donuk degerlendirilmesi [Uzmanlık Tezi] Selcuk Universitesi Meram Tıp Fakultesi Cocuk Sagligi ve Hastaliklari Anabilim Dalı. Konya: 2007.
28. Kılıç B, Demiral Y, Özdemir Ç, Özdemir S, Djemalaj F, İlim O, et al. Incidence of Home Injuries in a Slum Settlement District in İzmir. [Article in Turkish] *Toplum Hekimliği Bülteni* 2006;25:27-32.
29. Kondolot M, Akyıldız B, Görözen F, Kurtoğlu S, Patıroğlu T.

- Evaluation of the poisoning cases who applied to the Pediatrics Emergency Unit. [Article in Turkish] *Cocuk Sagligi ve Hastaliklari Dergisi* 2009;52:68-74.
30. Akcay A, Gurses D, Ozdemir A, Kilic I, Ergin H. The childhood poisoning in Denizli. [Article in Turkish] *Adnan Menderes Universitesi Tıp Fakultesi Dergisi* 2005;6:15-9.
 31. Eliacik K, Kanik A, Karanfıl O, Rastgel H, Metecan A, Oyman G, et al. An evaluation of the admissions to a tertiary hospital pediatric emergency department with intoxication. [Article in Turkish] *Smyrna Tıp Dergisi* 2012;41-4.
 32. Küçük F, Balcı S. Characteristics of children between 1-6 ages who drink corrosive substances and the first applications of families. [Article in Turkish] *Anadolu Hemsirelik ve Sağlık Bilimleri Dergisi* 2011;14:32-9.
 33. Gundogdu F. Ondokuz Mayıs Üniversitesi Tıp Fakultesi Çocuk Acil Poliklinigine basvuran ilaç ile zehirlenme olgularının değerlendirilmesi. [Uzmanlık Tezi] Ondokuz Mayıs Üniversitesi Tıp Fakultesi Çocuk Sağlığı ve Hastalıkları Anabilim Dalı. Samsun: 2011.
 34. Orsal O, Tozun M, Unsal A. Kadınların ev kazalarında ilk yardım bilgi düzeylerinin değerlendirilmesi. *Sted* 2011;20:202-8.
 35. Maral I. Ankara Golbasi bölgesinde yaşayanların kaza durumlarının incelenmesi. [Uzmanlık Tezi] Gazi Üniversitesi Tıp Fakultesi Halk Sağlığı Anabilim Dalı. Ankara: 1996.
 36. Turan T, Altundağ Dündar S, Yorgancı M, Yıldırım Z. The prevention of home accidents among children aged 0-6 years. [Article in Turkish] *Ulus Travma Acil Cerrahi Dergisi* 2010;16:552-7.
 37. Genç G, Saraç A, Ertan Ü, Yüksel S, Yüksek M. Ascending Danger in Childhood Intoxication: Amitriptyline. [Article in Turkish] *Fırat Tıp Dergisi* 2007;12:41-3.
 38. Tekin D, Suskan E. Çocukluk çağında zehirlenmelere genel yaklaşım. *Klinik Pediatri* 2005;4:41-5.
 39. Yang CC, Wu JF, Ong HC, Hung SC, Kuo YP, Sa CH, et al. Taiwan National Poison Center: epidemiologic data 1985-1993. *J Toxicol Clin Toxicol* 1996;34:651-63. [CrossRef](#)
 40. Cıtak A, Soysal DD, Yıldırım A, Karabocuoğlu M, Uçsel R, Uzel N. Çocukluk yaş grubu zehirlenmelerinde tehlikeli deęisim. *Cocuk Dergisi* 2002;2:116-20.
 41. Ertekin V, Altınkaynak S, Alp H, Yigit H. Çocukluk çağında zehirlenmeler. Son uç yıldıaki vakaların değerlendirilmesi. *Cocuk Dergisi* 2001;1:104-9.