

Mother's Knowledge and Practices Regarding Care Of the Children with Accidental Poisoning at Zagazig University

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Abstract

Background: Accidental poisoning in children is an important pediatric emergency and is a worldwide problem. It is a common and preventable cause of morbidity, and mortality in children. **Aim of the study:** Assess mother's knowledge and practices regarding care of the children with accidental poisoning in poisoning control center at Zagazig University. **Subjects and Methods:** **Research design:** A descriptive design was used to conduct this study. **Setting:** This study was conducted at the poisoning control center in Zagazig University Hospital. **Subject:** A purposive sample consisted of 251 mothers accompanying their children. **Tools of data collection:** A structured interview questionnaire was used containing five parts: Part I: demographic data about the mothers and her family. Part II: The accident poisoning of the child. Part III: Mother's knowledge in selected health problems. Part IV: Mother's preventive practices in home safety. Part V: Mother's first aid practices related to the home poisoning of the child. **Results:** The majority of the families were extended (93.2%), parents together (80.9%), and living in rural areas (84.1%). There were a statistically significant relation between mothers' first-aid practice and their level of education ($p=0.02$). **Conclusion:** The current study revealed that less than two thirds of the mothers in the studied sample were having satisfactory knowledge and adequate preventive practice about poisoning in children. **Recommendations:** Provide health education programs for mothers about accidental poisoning and appropriate first aid measures.

Key word: Mother's Knowledge and Practices, Accidental Poisoning & Zagazig University

Introduction:

Accidental poisoning is a serious international problem. It is likely to remain one of the most common medical emergencies that confront physicians and casualty medical offices at any time 90% of accidents poisoning involved children under the age of five years. ⁽¹⁾ Poisoning in children is always an accident due to lack of supervision of the child or to carelessness in leaving poisonous substances within the child's reach. ⁽²⁾ ninety percent poisoning in children admitted to be below 5 years of age with the peak at 2 years of age and is seen more frequently among low socioeconomic. This can be attributed to lack of parent's, knowledge about toxic substances ⁽³⁾. Poisoning usually from toxic substances kept in the home, is one of the most serious of illness and death in childhood. ⁽⁴⁾ Poisoning is the result of the interaction of the agent, the child and family environment ⁽⁵⁾.

Family psychological stress and personality factors are important predisposing factors to accidental

poisoning among children below the age of 5 years ⁽⁶⁾. Mother's the responsibility of the parents towards children toxicity is very pronounced, as almost all of the recorded cases of intoxication among children occurred at home and the role of the parents in preventing toxicity of their children according to the nature of the toxic agents ⁽⁷⁾. Prevention of poisoning requires knowledge of the hazardous properties of substances by users. Parents must be educated to the dangers present in medicines and household chemicals, and must begin teaching their children at an early age the danger of touching eating, with medicines, pesticides and household chemicals ⁽⁸⁾. Community health Nurse should recommend keeping coal.

Wood or kerosene heaters safe operating condition, and the same for smoke and carbon monoxide detectors. They should advise parents to keep the phone number of the National institute of Toxicology within easy reach .They

should advise parents to apply all these measures not only in their own home but also in other homes frequented by children, at the grandparents' house⁽⁹⁾.

Significance of the study:

Childhood poisoning is a major cause of morbidity and mortality in both developing and developed countries. In spite of the success of some interventions to prevent accidental poisoning in the pediatric population, toxic ingestion continues to be a common occurrence. Although the incidence of serious accidental poisoning of children with seeds, drugs and chemical has declined in the developed countries, it remains a global problem and it has continued to be major causes of considerable morbidity and significant mortality in the developing world. So, this study is significant because it tries to shed light on the problem of accidental poisoning among children for determination of the factors related to accidental poisoning by the most common medication and household agents in poisoned children.

Aim of the study

Assess mother's knowledge and practices regarding care of the children with accidental poisoning in poisoning control center at Zagazig University.

Research Questions:

- 1- Does the mother have adequate knowledge regarding health care of children with accidental poisoning?
- 2- Does the mother have adequate practices regarding health care of children with accidental poisoning?

Subjects and Methods:

Research design:

A descriptive design was used to conduct this study.

Study setting:

The study was carried out in a poisoning control center at Zagazig University Hospital, which is located on the fourth floor of the clinical center building, Zagazig University Hospitals Sednawy at Sharkia Governorate. All citizens have access to this center. In which health care services, medical and pharmaceutical are provided for free or

at a minimum charge. Working schedule was from 8.00 am and end 1.00 pm, from Saturday to the Thursday. It's composed of two examination rooms, a wide waiting room, also there are 6 rooms, one room for nursing staff, one room for doctors and two rooms for patients and two rooms used as classroom for teaching medical student.

Study Subjects:

A purposive sample was used of 251 mothers accompanying their school age children to the poisoning control center, at Zagazig University Hospital, for treatment of poisoning. They were eligible for being selected in the study sample according to the following criteria.

Sampling technique:

The sample size was calculated to estimate the prevalence of an expected rate of mothers' satisfactory knowledge or adequate practice regarding care of the children with accidental poisoning of 50% or higher. Using the Open EPI software package for sample size calculation at 95% level of confidence and 3.5 standard error, and accounting for a non-response rate of about 20, the required sample size turned to be 251 mothers.

Tools of Data Collection:

A structural interview questionnaire form was used for data collection. It consists of the following five parts:

- **Part I:** A demographic data of the child and family such as child's age, gender, siblings, birth order, etc. As for the family included parents' age, education, job, family type, residence, crowded index, income, as well as the child caregiver.
- **Part II:** This part covered the details of the poisoning accident such as place, any witness, type of poison and route. It also detailed the symptoms and signs of poisoning such as diarrhea, vomiting, breathlessness, convulsion, etc. The mother was also asked about the action taken, whether the child was hospitalized, and her opinion about possible cause of the incident. Lastly, there were questions about the history of previous similar

incident, regular intake of medications, and previous hospitalization of the child.

• **Part III:** This part was intended to assess mother's knowledge about child accident poisoning. It included 30 questions about the definition of poisoning, magnitude of the problem, risk factors, types, routes, symptoms and signs, and severity.

• **Part IV:** This was focused on mother's reported preventive practices. It included practices related to home safety (10 item such as keeping toxic agents out of child each and security locked, not taking medication in front of child, etc.), medications safely (4 items such as not giving child medication in dark place, etc.), and safe storage of hazards material

Scoring system:

For correct response was scored one and the incorrect zero. For each area of knowledge, the complete correct response, the incomplete correct response and the wrong response, these responses were scored, 2, 1, and zero degree respectively and for the total score were 50. These scores were converted into percent scores. Mother's knowledge was considered satisfactory if the present score was 60% or more and unsatisfactory if less than 60%.

Content validity and Reliability:

Once prepared in their preliminary form, the tools were presented to a panel of three experts in Community Health Nursing and Medicine. They reviewed the tool and content validation through assessing its relevance, clarity, comprehensiveness and understandability. Modifications were done according to their comments and suggestions. Reliability of the tools was done by using the questions to collect data from group similar to the studied sample (test, retest) and applied different of time to be sure the consistency of answer. Also used Cronbach's alpha, it was 0.80.

Field work:

Once the investigator obtained the required permissions to start the study,

the fieldwork was inaugurated. The investigator met with the director of the poisoning control center, explained the aim and procedure of the study, and sought cooperation in the sample recruitment and data collection.

The investigator met with the eligible mothers accompanying their children to the center, introduced herself to them, explained to them the aim of the study in simple terms, and invited them to participate. Those who gave their consent were interviewed using the structured interview questionnaire form. The interview was done individually to ensure privacy. Its duration ranged between 15 and 20 minutes. The fieldwork lasted for six months from January to July 2015.

Pilot study:

It was carried out on a sample representing about 10% of the main study sample. The purpose was to test the data collection tool and the procedure to be used in this study. Based on the results of the pilot study, some items were modified, omitted, or added as needed. The mothers included in the pilot study were not included in the number of the main study sample.

Administrative and ethical considerations:

The study protocol was approved by the research ethics committee at the Faculty of Nursing, Zagazig University. An oral informed consent was obtained from each participant after explaining the purpose of the study in simple understandable terms. Each mother was informed about the right to refuse participation or withdraw from the study at any time. They were reassured that many information obtained would be treated confidentially and used only in research. No harm could be anticipated to participants. An official permission to carry out the study was obtained from the pertinent authorities. This was done through an official letter issued from the Dean of the Faculty of Nursing, Zagazig University to the director of the Poisoning Control Center explaining the aim of the study and its procedures.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistical in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2 x 2 tables was less than 5, Fisher exact test was used instead. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent prediction of the knowledge and practice scores, multiple linear regression analysis was used, and analysis of variance for the full regression models done. Statistical significance was considered at p-value > 0.05.

Results:

Table 1 According to the studied preschool children, their age ranged between 2 and 5 years with median 3.0 years, with slightly more than half of them were females (52.2%) as Table 1 presents most of them were having siblings (80.5%), and more than half of them were firstborn children (55.8%), and not going to nursery (57.0%). As illustrated in **Figure 1**, the majority (81.7%) of the poisoning accidents occurred at home and 16.3% at the nursery.

Figure 2 demonstrates that slightly less than two thirds of the mothers in the studied sample were having total satisfactory knowledge (61.8%).

Figure 3 illustrates that more than a half of the mothers (56.2%) were having total first-aid practices.

As illustrated in **Figure 4**, slightly less than two thirds of the mothers in the studied sample were having total adequate preventive practices (63.7%).

Table 2 According to mothers' opinions, the lack of supervision was the most common cause of the poisoning accident (64.9%), followed by under-

estimation of child behavior (29.1%). Conversely, the least reported cause was the lack of compliance to instructions (2.4%). The table also indicates that only one (0.4%) child had a history of previous poisoning and 9.6% had previous hospitalization.

Table 3 shows statistically significant associations with parents being together ($p=0.004$), and with family type ($p=0.004$). It can be noticed that more mothers were having satisfactory knowledge when parents were living together and in nuclear families.

Table 4 shows a statistically significant weak positive correlation with father age ($r=0.13$). Conversely, they had a weak negative correlation with the number of child siblings ($r=-0.15$). Meanwhile, their knowledge and first-aid practice scores had no statistically significant correlations with any of the characteristics examined.

Discussion:

In many countries, accidental poisoning is a main problem in childhood. It is an important cause of morbidity and mortality at this age worldwide by Jacobsen et al. ⁽¹⁰⁾

Accidental poisoning in children results from interaction of the agent, the child and the family environment. The agent is usually insecurely stored and readily available to the child who is frequently known to be impulsive, curious, and overactive, trying new things, and the environment that may not be safe enough to prevent accidental poisoning by UI Hassan et al. ⁽¹¹⁾.

The lack of mothers' knowledge and misconception not only affects the prevention and management of the poisoning event, but it also increases the complications, disability, and fatality by Edelu et al. ⁽¹²⁾

The aim of this study was to assess mother's knowledge and practices regarding care of the children with accidental poisoning in poisoning control center at Zagazig University. The study findings indicate generally low mothers' knowledge, as well as their preventive and first-aid practices. These are

influenced by a number of child and family characteristics.

The demographic characteristics of the families of the poisoned children in the present study indicate an average standard level. Thus, the highest percentages of mothers and fathers were having intermediate level of education; almost all mothers were housewives, and most fathers were workers. The majority of the families were extended, and living in rural areas. The present study focus on children in the preschool age, ranging between two and five years old. This age group was selected because it is the peak age of childhood accidents and poisoning incidents also this is because at this age the children are very active and curious. They try to explore their environment, imitate adult behavior, and more likely to ingest any substances at hand with no thoughts about its hazard'

Accidental poisoning occurs most often in children under 5 years old and typically 1.5-3 years. On the same line with Meadow.⁽¹³⁾

Concerning the poisoning incident, the present study results indicated that the majority of the events occurred at home, and in the presence of the parents. This is expected since the great majority of the mothers in the sample were housewives, i.e. present at home all the time. However, mothers could be busy washing or cooking while the hazardous are left at reach of the child. Hence, the children at this age need constant supervision because they are able to move alone, and their curiosity is very high In agreement with this, Polakoff⁽¹⁴⁾ carried a study in Russia which mentioned that the great majority of accidental poisoning involving children occurred at home. Moreover, in a study done by Poud Fost⁽¹⁵⁾, in England highlighted that accidental poisoning was common among toddlers because of their newly acquired independent mobility, and innate curiosity.

According to the present study findings, almost all poisoning incidents occurred through ingestion of the hazardous material. The finding is

expected since the children at this age begin to crawl on the floor, and put anything at their hand-reach into their mouths. They explore the environment with their mouth as well as their eyes and fingers. Also the adults may facilitate this form of poisoning by leaving household cleaning agents and drugs within easy reach of their children. In agreement with this, a recent study in Saudi Arabia by Alzahrani et al .,⁽¹⁶⁾ which reported that the most common route in childhood accidental poisoning was through ingestion when the mothers in the current study were asked about their opinions regarding the main factors underlying children's exposure to poisoning accidents, the lack of supervision was the most common reported cause. This is a major cause reported in childhood accidents literature. Actually, supervision does not mean just the presence of the mother or other caregiver at home with the child, but rather keeping an eye all the time on him/her since an accident occurs in seconds.

In agreement with the foregoing, Cann et al .,⁽¹⁷⁾ in a study in U.S.A found that 80.9% of accidental poisoning occurred when children were supervised by their parents, 6.1% when observed by any adult other than parents, and 3.2% when supervised by another child or unsupervised at all. The authors explained this by the fact that although parents were present they were probably busy and children were not adequately supervised. On the same line, Parekh and Gupta, in a study in India stressed that accidental poisoning in children was always due to lack of parents close supervision of the child along with their carelessness. Hence, parents are responsible for creating a safe environment for their children as reported in a study in New York done by Sliver et al.,⁽¹⁸⁾

The second most important cause underlying children's exposure to poisoning accident, according to the opinions of the mothers in the current study was the under-estimation of child behavior. Thus, the parents often do not realize that the child can open a drawer

or a drug container, or reach something at a certain height.

Thus, parents and child caregivers should expect anything from the child, and should be quite alert when attending to a child. In line with this, Cann et al.,⁽¹⁷⁾ in U.S.A clarified the lack of parents' insight of the potential toxicity of different substances and of their children's ability to reach lead to accidental poisoning.

A mother leaving chemical substance within easy reach of their children is another predisposing factor leading to accidental poisoning. This result was supported by Marlow,⁽²⁾ a study done in London who reported that accidental poisoning in children is always due to lack of supervision of the child or to carelessness in leaving poisonous substances within his reach. Sliver et al.,⁽¹⁸⁾ in New York who indicated that parents are responsible to create safe environment for the child. Gossel,⁽¹⁹⁾ in New York who emphasized that medicine should never be given or referred to as candy. Adults should not take their medications in front of young children in order to not to be imitated by them. Overall, less than two thirds of the mothers in the current study had satisfactory total knowledge. Alternatively, more than one-third lack such information, which is quite alarming for such a critical issue. None of the child or parents personal characteristics had a significant relation to mother's knowledge. However, mothers' knowledge was significantly better when both parents were living together and in nuclear families. This was confirmed in multivariate analysis, which also added the previous history of child poisoning as a positive predictor of the knowledge score. Thus, a stable nuclear family enhances mother's knowledge, and a previous experience with poisoning adds to it. In the same line with this result, a study done in Turkey related mothers' knowledge of childhood poisoning to their sub-optimal socio-demographic characteristics as reported by Bilgen Sivri and Ozpulat,⁽²⁰⁾

Overall, less than two-thirds of the mothers in the current study had total adequate preventive practices. Mothers' preventive practices were significantly better when parents were not living together, and when the child was firstborn. This could be attributed to the more care the mother gives to her child when she is the only one responsible for him/her, in addition to the higher attention often given to the firstborn child. In line with this, inadequate preventive practices were revealed among low socioeconomic Mexican mothers in a study in the United States, and this was shown to be an important underlying cause of childhood poisoning accidents as reported by Crosslin and Tsai,⁽²¹⁾. Concerning mothers' first-aid practices, the current study found that almost all mothers had adequate practices related to the need to call emergency and to respiratory exposures. On the other hand, only around a half of them had adequate practice of the first-aid measures for skin and eye exposures.

Thus, overall, only slightly more than a half of the mothers had adequate total first-aid practices, which is quite worrying since the first-aid measures when applied appropriately and in due time may be lifesaving. In agreement with this, a study in Sri Lanka demonstrated that approximately one-third of the parents or caregivers of children exposed to accidental poisoning had inadequate or even harmful first-aid practice by Dayasiri et al.,⁽²²⁾.

Examining the factors influencing mothers' first-aid practices in the present study revealed that such practices were significantly higher among educated when parents were living together. The relation with the educational level is quite plausible. Moreover, a significant positive correlation was shown between mothers' scores of knowledge and first-aid practice. The multivariate analysis identified parents living together and mothers' knowledge score as the positive predictors of mothers' first-aid practice score. This indicates the importance of family stability.

Concerning the poisoning incident, the present study results indicated that the majority of the events occurred at home, and in the presence of the parents. This is expected since the great majority of the mothers in the sample were housewives, i.e. present at home all the time. However, mothers could be busy washing or cooking while the hazardous are left at reach of the child. Hence, the children at this age need constant supervision because they are able to move alone, and their curiosity is very high. In agreement with this, Polakoff⁽¹⁴⁾ carried a study in Russia which mentioned that the great majority of accidental poisoning involving children occurred at home.

Conclusion:

The findings of the current study can be concluded as following:

The current study revealed that less than two thirds of the mothers in the studied sample were having satisfactory knowledge and adequate preventive practice about poisoning in children. There were a statistically association significant relation between mothers adequate first aid practice and their highest level of education and also when parents were living together The common

problem faced by the mothers in this study was lack of knowledge about access to(P.C.C) poisoning control center .

Recommendations:

In the light of the current study results it is recommended to:

- Health education programs should be made available for mothers about accidental poisoning and appropriate first aid measures.
- Emphasis for parents and families should be made on early case finding and proper first aid measures in order to avoid or minimize complications.
- Health teaching about access to Poison Control Center for information about different poison agents and their proper management.

Table 1: Demographic characteristics of children in the study sample (n=251).

Demographic characteristics	Frequency	Percent
Child age	56	22.3
• <3	162	64.5
• 3-	33	13.1
• 5+6		
Range	2.0-5.0	
Mean ±SD	3.5±0.9	
Median	3.0	
Gender:	120	47.8
• Male	131	52.2
• Female		
Have siblings:	49	19.5
• No	202	80.5
• Yes		
Birth order:	140	55.8
• 1	111	44.2
• 2+6		
Go to nursery:		
• No	143	57.0
• Yes	108	43.0

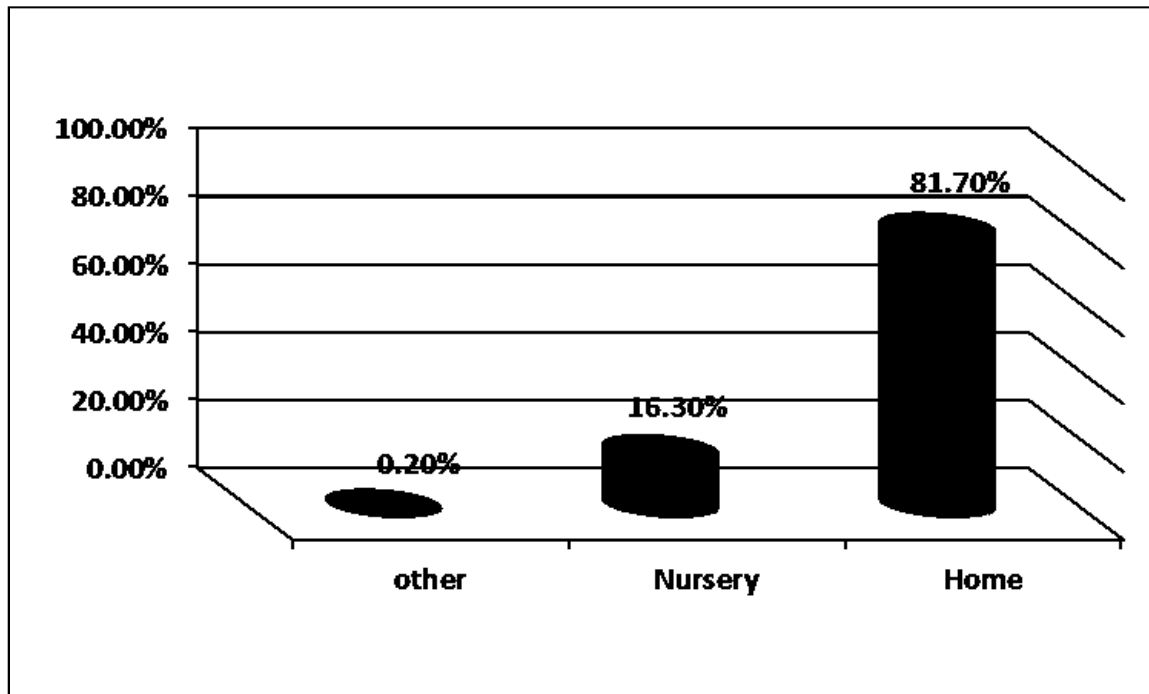


Figure 1: place of poisoning accident among children in the studied sample (n=251)

Table 2: Mothers' opinions about the cause of poisoning among children in the studied sample and their past history (n=251).

Mothers' opinions	Frequency	Percent
Mother opinion about cause:		
• Lack of supervision	163	64.9
• Underestimation of child behavior	73	29.1
• Unsafe storage	68	27.1
• Lack of knowledge	23	9.2
• Non-compliance to instructions	6	2.4
Previous history of poisoning	1	0.4
Child on regular medications	4	1.6
Previous hospitalization for any other causes than poisoning	24	9.6

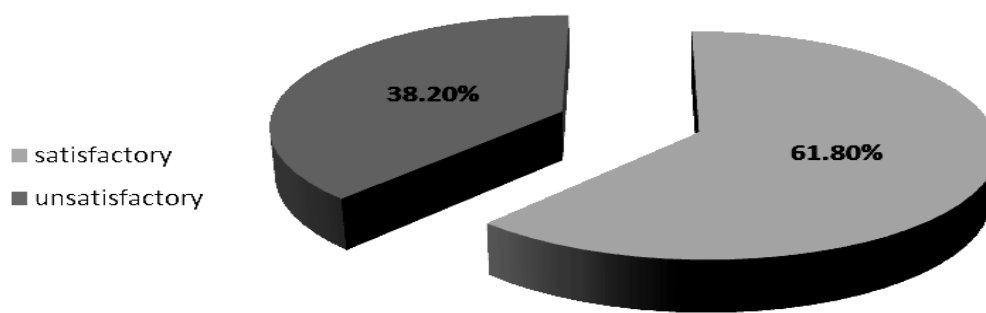


Figure 2: Mothers' total knowledge about poisoning in children (n=251)

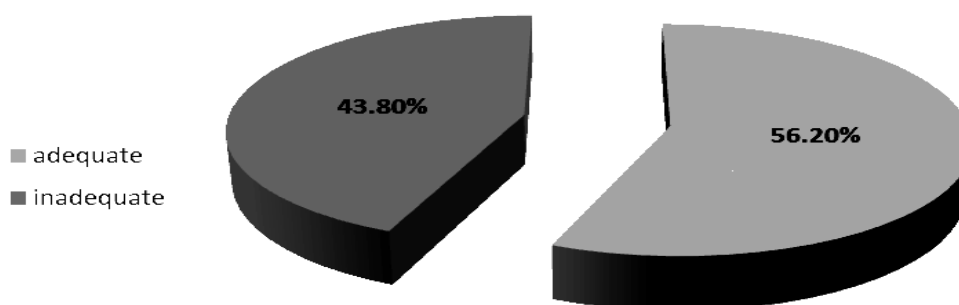


Figure 3: Mothers' total first-aid practices in cases of poisoning in children (n=251)

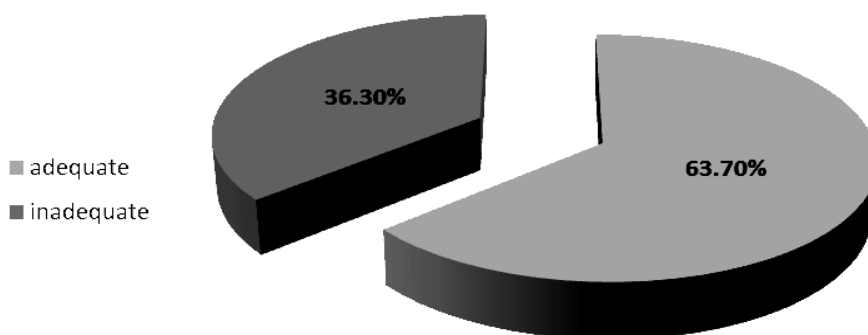


Figure 4: Mothers' total preventive practices for poisoning in children (n=251)

Table 3: Relations between mothers' knowledge and their family characteristics

mothers' knowledge family characteristics	Knowledge				X ² test	P-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Parents together:					8.14	0.004*
• No	21	43.8	27	56.3		
• Yes	134	66.0	69	34.0		
Family type:					8.09	0.004*
• Nuclear	16	94.1	1	5.9		
• Extended	139	59.4	95	40.6		
Income:					0.71	0.40
• Insufficient	29	67.4	14	32.6		
• Sufficient	126	60.6	82	39.4		
Residence:					0.21	0.64
• Urban	26	65.0	14	35.0		
• Rural	129	61.1	82	38.9		
Crowding index:					0.03	0.87
• <2	143	61.9	88	38.1		
• 2+	12	60.0	8	40.0		
Caregiver:					2.75	0.10
• Mother	142	60.4	93	39.6		
• Other	13	81.3	3	18.8		

(*) Statistically significant at p*-0.05

Table 4: Correlation matrix of mothers' knowledge, preventive practice, and first-aid practice scores

	Spearman's rank correlation coefficient		
	Knowledge	Preventive practice	First-aid practice
Mother age	-0.09	0.12	-0.04
Mother education	-0.08	0.08	0.01
Father age	-0.10	0.13*	-0.06
Father education	-0.06	0.07	0.06
Income	-0.01	0.04	0.03
Crowding index	0.05	0.00	0.02
Child age	0.08	-0.06	0.06
No. of siblings	0.06	-0.15*	0.05
Birth order	0.03	-0.11	0.08
No. of symptoms	0.03	0.06	-0.02
Hospital stay (days)	0.00	-0.08	0.02

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