

Home-related injuries among children: knowledge, attitudes and practice about first aid among rural mothers

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الإصابات المنزلية للأطفال: المعارف والمواقف والممارسات حول الإسعافات الأولية بين الأمهات الريفيات رشا شاكر الدسوقي

الخلاصة: تثير إصابات الأطفال الناجمة عن الحوادث المنزلية قلقاً صحياً مجتمعياً متزايداً. وتهدف هذه الدراسة المستعرضة في محافظة القليوبية في مصر إلى قياس معدل وقوع وأنواع الإصابات المنزلية التي تصيب الأطفال حتى عمر 12 سنة في المناطق الريفية لتقييم معارف ومواقف وممارسات أمهاتهم في ما يخص الإسعافات الأولية والعوامل المرتبطة بها. وقد تم استكمال استبيان عن طريق المقابلات مع 1450 أمّاً ريفية. وقد بلغ معدل وقوع الإصابات المنزلية خلال الأسابيع الأربعة السابقة 38.3% (57.5% من الفتيان). وكانت الجروح القطعية، والسقوط والكسور، والحروق، والتسمم وابتلاع الأجسام الغريبة هي الأنماط الشائعة للإصابات المنزلية. وبلغ وسطي الإجابات الصحيحة للأمهات 11 سؤالاً من 29 سؤالاً (معامل الانحراف 5.3). وكانت المنبتات للمستوى الأفضل من المعارف والمواقف والممارسات لدى الأمهات بين الأمهات الأصغر سناً، والأعلى تعليماً، والأفضل اجتماعياً واقتصادياً، والعاملات في أعمال مدفوعة الأجر، ومن لديهن مصدر للمعارف حول الإسعافات الأولية وحضرن مقررراً تدريبياً عن الإسعافات الأولية.

ABSTRACT Injuries to children arising from home accidents are an increasing community health concern. The aim of this cross-sectional study in Qalubeya governorate, Egypt was to measure the incidence and types of home injuries affecting rural children aged up to 12 years and to assess their mothers' knowledge, attitudes and practices (KAP) about first aid and its associated factors. An interview questionnaire was completed by 1450 rural mothers. The incidence of home injuries in the previous 4 weeks was 38.3% (57.5% were boys). Cut wounds, falls and fractures, burns, poisoning and foreign body aspiration were the common forms of home injuries. Mothers answered an average of 11.0 (SD 5.3) out of 29 KAP questions correctly. Younger age of mother, higher level of education, higher socioeconomic status, being in paid employment, source of knowledge about first aid and having attended a training course on first aid were significant predictors of better KAP among mothers.

Traumatismes dus aux accidents domestiques chez les enfants : connaissances, attitudes et pratiques en matière de premiers secours chez les mères en milieu rural

RÉSUMÉ Les traumatismes dus à des accidents domestiques chez les enfants deviennent une préoccupation sanitaire croissante au sein des communautés. L'objectif de la présente étude transversale menée dans le gouvernorat de Qalubiya (Égypte) était de mesurer l'incidence et le type des traumatismes dus aux accidents domestiques chez les enfants jusqu'à 12 ans en milieu rural et d'évaluer les connaissances, les attitudes et les pratiques relatives aux premiers secours de leurs mères et les facteurs associés. Un questionnaire a été rempli lors d'un entretien par 1450 mères vivant en milieu rural. L'incidence des traumatismes dus aux accidents domestiques dans les quatre semaines précédant l'étude était de 38,3 % (57,5 % concernaient des garçons). Les coupures, les chutes et les fractures, les brûlures, les intoxications et l'ingestion d'un corps étranger étaient les formes de traumatisme les plus courantes lors d'un accident domestique. Les mères ont donné en moyenne 11,0 bonnes réponses (E.T. 5,3) sur 29 questions portant sur leurs connaissances, leurs attitudes et leurs pratiques. Un âge plus jeune, un niveau d'études plus élevé, un statut socioéconomique plus aisé, le fait d'occuper un emploi salarié, une connaissance des premiers secours et le fait d'avoir participé à une formation sur les premiers secours étaient des facteurs prédictifs importants de meilleures connaissances, attitudes et pratiques chez les mères.

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Introduction

Injuries to children arising from home accidents are increasingly seen as a community health problem. According to the National Safe Kids Campaign in the United States 40% of deaths and 50% of non-fatal unintentional injuries occur in and around the home [1]. In Egypt too it has become a concern [2]. For example, in 1998 the overall rate of injuries in the indoor home environment was 72.5% among children below age 5 years [3]. The incidence of home accidents among children under 6 years in Assuit governorate in the year 2003 as perceived by their mothers was 50.3% [4].

First aid is the provision of initial care for an illness or injury, usually by a non-expert but trained person, until medical treatment can be accessed. Provision of immediate first aid to patients who require emergency care can make a big difference to the outcome [5], as the first action taken for management of injuries and common illness decides the future course of disease and complication rates [6]. In certain self-limiting illnesses or minor injuries, appropriate first aid measures may be sufficient to avoid a medical consultation [7]. Parents' knowledge and practice about first aid is especially important in injury care for children, as many adverse consequences of injuries can be averted if parents know what actions to take [8]. Despite this, there are few published studies on parental knowledge and attitudes concerning childhood injuries [9].

The objectives of this study in Egypt were to: measure the incidence and types of home injuries and medical emergencies affecting rural children aged up to 12 years; to assess the knowledge, attitudes and practice (KAP) of rural mothers regarding first aid measures to be taken for injured children; and to identify some of the factors associated with mothers' level of KAP.

Methods

This cross-sectional study was carried out in Tanan, a purposely selected village in Qalubeya governorate, Egypt. The fieldwork was conducted over a period of 7 months from October 2010 to the end of April 2011.

Sample

Cluster random sample was used to choose the participants, in which the village was divided into 5 squares (based on boundaries determined during polio campaigns), from which 3 squares were chosen by simple random sampling using a lottery technique. All mothers in the chosen squares who had children up to 12 years old were the target population. The number of mothers who agreed to participate was 1450.

Data collection

A written informed consent (in Arabic language) was obtained from mothers before participation. It included personal data about the participants and details about the study (title, objectives, methods, expected benefits and risks and confidentiality of data). An interview questionnaire sheet was used to collect data from the mothers. The questionnaire included items about the sociodemographic characteristics of the studied mothers, items to measure the incidence and types of home injuries and medical emergencies suffered by their children in the previous 4 weeks and questions to assess the KAP of mothers towards first aid measures to be taken during these situations. The latter comprised 29 questions, with each correct and complete answer scored 1, so that the total score for KAP was 29. The mean number of KAP questions answered correctly was calculated. Socioeconomic status was determined from the mother's educational level and occupation and her husband's educational level [10].

The applicability, content and face validity of the questionnaire was tested with a pilot study carried out on September 2010 on 50 randomly selected mothers. The required modifications were done. The results of the pilot study were not included in the final analysis.

Statistical analysis

The collected data were tabulated and analysed using SPSS, version 17 software. Qualitative data were expressed as frequencies and percentages, while quantitative variables were presented as mean, standard deviation (SD), mode and range. Chi-squared test, *z*-test and analysis of variance (*F*-test) were used as tests of significance. Stepwise multiple regression analysis was used to detect the significant predictors of KAP score of the mothers. $P < 0.05$ was considered significant.

Results

Sociodemographic characteristics of the studied mothers

Of 1450 studied mothers, 47.0% were aged 25–< 35 years with mean age of 30.8 (SD 7.9) years (range 19–54 years); 33.7% of them had secondary education, 35.2% had completed university education while 5.2% had postgraduate education. Occupational status showed that the majority (73.5%) of the studied mothers did not work for cash, while 10.2% worked as health care personnel. More than half of them (53.3%) lived in extended families, 48.5% had only 1 child ≤ 12 years old and 43.9% were of middle socioeconomic status (Table 1).

Home-related injuries

A total of 555 of the women reported that a child had suffered an injury at home in the previous 4 weeks, a rate of home-related injuries of 38.3%. The mean age of injured children was 7.0 (SD 4.1) years, range 1–12

Table 1 Distribution of the mothers by selected sociodemographic characteristics

Characteristic	No. of mothers	% (n = 1450)
Mother's age (years)		
< 25	318	21.9
25–	682	47.0
35–	324	22.3
≥ 45	126	8.7
Educational level		
Postgraduate	84	5.8
University	511	35.2
Secondary education	489	33.7
Basic education	192	13.2
Read and write	65	4.5
Illiterate	109	7.5
Occupation		
Health care worker	149	10.3
Other job	235	16.2
Housewife	1066	73.5
Socioeconomic status^a		
High	444	30.6
Middle	637	43.9
Low	369	25.4
Type of family		
Nuclear family	677	46.7
Extended family	773	53.3
No. of children ≤ 12 years		
1	703	48.5
2	385	26.6
3	362	25.0

^aModified from Fahmy & Elsherbini [10].

Table 2 Distribution of the children suffering injury in the previous 4 weeks by age, sex and type

Variable	No. of children suffering injury	% (n = 555)
Child's age (years)		
< 3	147	26.5
3–	63	11.4
6–	64	11.5
9–12	281	50.6
Child's sex		
Male	319	57.5
Female	236	42.5 ^a
Type of injury		
Cut wound	172	31.0
Fall/fracture	127	22.9
Burn	193	34.8
Poisoning	21	3.8
Foreign body aspiration	42	7.6

^aZ = 5.5, P < 0.001.

years. More than half (50.6%) of the injured children were aged 9–12 years and 26.5% aged < 3 years. Over half of them were males (57.5%). Burns represented the highest percentage of home injuries (34.8%), followed by cut wounds (31.0%), falls and fractures (22.9%), foreign body aspiration (7.6%) then poisoning (3.8%) (Table 2).

Table 3 shows that the most common forms of injury among children below 3 years old were cut wounds and burns (42.9% for each), while two-thirds (66.7%) of injured children aged 3–< 6 years suffered foreign body aspiration. Falls and fractures occurred more common among children aged 6–12 years old. These differences were statistically significant (P < 0.001).

Regarding sex differences, boys experienced falls and fractures and foreign body aspiration at higher rates (32.9% and 13.2% respectively) than did girls (9.3% and 0.0% respectively) while girls acquired cut wounds, burns and poisoning at higher rates (46.2%, 35.6% and 8.9% respectively) than did boys (19.7%, 34.2% and 0.0% respectively). These differences were highly significant (P < 0.001), except for burns, which was not statistically significant (P > 0.05).

KAP about first aid

This study revealed that 26.6% of the studied mothers had not heard of the term of “first aid” (Table 4). Of those who had a previous knowledge about first aid, 56.1% reported that television (TV) and/or radio were the source of their knowledge, 13.8% of them gained their knowledge from attending training courses, 12.0% from doctors or nurses, 12.0% from reading textbooks, 4.1% from the educational curriculum and 2% from friends and relatives. All studied mothers agreed that mothers of school-age children should know about first aid and that they were all willing to undergo such training.

Table 3 Age and sex distribution of the injured children according to type of injury

Variable	Total (n = 555)		Cut wound (n = 172)		Fall/fracture (n = 127)		Burn (n = 193)		Poisoning (n = 21)		Foreign body aspiration (n = 42)		Statistics χ^2 -test P-value
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Child's age (years)													
< 3	147	42.9	63	42.9	0	0.0	63	42.9	21	14.3	0	0.0	493.9 < 0.001
3–	63	0.0	0	0.0	0	0.0	21	33.3	0	0.0	42	66.7	
6–	64	32.8	21	32.8	22	34.4	21	32.8	0	0.0	0	0.0	
9–12	281	31.3	88	31.3	105	37.4	88	31.3	0	0.0	0	0.0	
Child's sex													
Male	319	19.7	63	19.7	105	32.9	109	34.2	0	0.0	42	13.2	
Female	236	46.2	109	46.2	22	9.3	84	35.6	21	8.9	0	0.0	
Statistics													
Z-test		-6.66				6.54		-0.35		-5.40		5.80	
P-value		< 0.001				< 0.001		0.36		< 0.001		< 0.001	

The mean number of KAP questions answered correctly by the studied mothers was 11.0 (SD 5.3) out of 29, range 4–24.

Factors affecting KAP about first aid

Mothers aged < 25 years had the highest mean KAP score [12.3 (SD 5.1)] and those aged \geq 45 years the lowest [9.3 (SD 2.9)]. Postgraduate educated mothers had the highest mean scores [20.5 (SD 2.3)]. Working mothers scored higher than housewives; those working as health-related personnel scored highest [19.9 (SD 0.2)] and those working in other jobs scored 11.9 (SD 3.9) whereas housewives had a mean score of only 9.5 (SD 4.4). Mothers of high socioeconomic status scored better [14.6 (SD 5.0)] than those of middle and low socioeconomic status [10.9 (SD 4.6) and 6.8 (SD 2.8) respectively]. Those who had previous knowledge about first aid had a higher score [12.6 (SD 5.1)] than those who did not [6.5 (SD 2.3)]. Mothers who had attended training course(s) on first aid had the highest score [19.8 (SD 2.9)], followed by those whose source of knowledge was the educational curriculum [19.4 (SD 1.6)] then textbooks [17.2 (SD 3.1)]. All these differences were highly significant ($P < 0.001$) (Table 5).

Stepwise multiple regression analysis showed that the mother's level of education, source of knowledge about first aid, younger age, attending training courses on first aid, higher socioeconomic level and occupation were significant predictors of KAP score among the studied mothers ($P < 0.001$). It also illustrated that these explanatory variables explained 76% of the observed variation in KAP score (Table 6).

Discussion

The results showed that the incidence of home-related injuries among children in a rural area of Egypt was 38.3%, which is not a trivial figure, representing the incidence over only 4 weeks' duration. This result agrees with Öztürk et al. who reported that 36.5% of children in their study in Turkey had had a home accident [11]. However, the current figure is lower than in a previous study in Egypt, in Assiut governorate, where the prevalence of home accidents was 50.3% [4]. Their higher rate may be due to the younger age group on which the latter study was conducted. On the other hand, our figure was higher than in a rural area in India

Table 4 Distribution of the studied sample of mothers according to their knowledge, attitudes and practice about first aid

Item	No. of mothers	% (n = 1450)
Heard about first aid		
Yes	1065	73.4
No	385	26.6
Source of knowledge (n =1065)		
Textbooks	128	12.0
Part of an educational curriculum	44	4.1
Friends and relatives	21	2.0
Doctors/nurses	128	12.0
Television/radio	597	56.1
Attended training course	147	13.8
Attitude		
Mothers of school-age children should know about first aid.	1450	100.0
Training is required to offer correct first aid	1342	92.6
Willing to undergo training on first aid.	1450	100.0

among 1613 children aged < 14 years in which the rate of injuries was 23.0%, with more than half of these occurring at home [12]. This lower figure might be explained by the demographic variations among the Egyptian and Indian populations. Moreover, the latter study investigated the rate of injuries over the previous year, which is a longer period to recall from memory and may have led to underreporting of incidents.

The current study revealed that more than half of injured children (50.6%) were aged 9–12 years. This may be because children in this age group in rural Egypt are often left alone at home or have less supervision from their mothers. In contrast, it has been argued that the younger the child, the higher the frequency of household injuries [13]. Regarding sex differences, it was found that significantly more of the injured children were boys (57.5%) than girls (42.5%). This is similar to the study in Turkey (53.4% and 46.6% respectively), although the difference was not statistically significant in that study [11]. Mahalakshmy et al. in India also found that prevalence of injury was significantly higher among male children

[14]. Differences in regional and sample characteristics may affect the statistical significance of the impact of gender in injuries [15].

The current study demonstrated that the common forms of home-related injuries among children were burns, cut wounds, falls, poisoning and foreign body aspiration. These results show similar trends to other community-based studies outside Egypt. In Brazil, burns, falls and poisoning were the most frequent types of household injuries [16]. Also, in the United States the leading causes of home injury deaths were falls, fire/ burns, poisonings, choking/suffocations and drowning [17]. Similar findings were reported by the UNICEF Innocent Research Centre in its report on injury incidence in 6 countries of Asia [18]. In Egypt, in Assiut governorate, cut wounds were the most common accidents among the studied children (37.4%), which is similar to the current findings in Qalubeya governorate (31.0%) [4].

Burns, cut wounds and poisoning in this study were more common among children < 3 years old (42.9%, 42.9% and 14.3% respectively). This agrees

with Paes and Gaspar, who said that burns are a type of injury that predominantly occur at home, and affect mainly children aged 1–4 years, because children in this age group have the lowest accident risk awareness [16]. Regarding gender differences in types of injury, more boys than girls suffered fall and fracture injuries in our study while girls were more likely to suffer cut injuries. Lasi et al. found that burn injuries were more common among girls than among boys [19] and Petersburgo et al. found that most falls in Mozambique were among boys (65%) [20]. The greater rate of cut injuries among girls than boys raises several questions about the cooking and related work these girls may be doing at this young age. Similarly, the higher rate of fall and fracture injuries among boys requires further exploration to determine the causes. One of the reasons might be the unavailability of safe play areas in the home environment in rural Egypt.

In spite of the importance of a topic like first aid, 26.6% of the studied rural mothers had not heard the term, and of those who were familiar with it, 56.1% reported that TV and radio were the sources of their knowledge. In a study in India an even higher proportion rate of the studied women had not heard about first aid (65.7%). This may be due to the different demographic characteristics of the populations [21]. However, the latter study showed similar results regarding the source of knowledge, in which TV/radio accounted for 45.8% of the sources of knowledge. In both studies, moreover, all the studied mothers agreed that mothers of school-age children should know about first aid and they were all willing to undergo training on first aid.

The mean KAP score of mothers in this study was 11.0 (SD 5.3) out of 29, i.e. only 37.9% of the questions about KAP were answered correctly. These results are similar to those of Tomruk et al. in Turkey, who found that bystanders in emergency situations answered an

Table 5 Factors affecting mother's mean scores on knowledge, attitudes and practice (KAP) of first aid

Variable	KAP score Mean (SD)	F-test	P-value
Mother's age (years)			
< 25	12.3 (5.1)	75.2	< 0.001
25–	12.2 (5.1)		
35–	7.7 (4.8)		
≥ 45	9.3 (2.9)		
Educational level			
Postgraduate	20.5 (2.3)	398.9	< 0.001
University	14.1 (4.8)		
Secondary education	9.8 (2.4)		
Basic education	7.0 (2.7)		
Read and write	6.3 (2.1)		
Illiterate	4.0 (1.6)		
Occupation			
Health care worker	19.9 (2.7)	412.1	< 0.001
Other job	11.9 (3.9)		
Housewife	9.5 (4.4)		
Socioeconomic status			
High	14.6 (5.0)	320.03	< 0.001
Middle	10.9 (4.6)		
Low	6.8 (2.8)		
Heard about first aid			
Yes	12.6 (5.1)	511.2	< 0.001
No	6.5 (2.3)		
Source of knowledge			
Textbooks	17.2 (3.1)	275.5	< 0.001
Part of an educational curriculum	19.4 (1.6)		
Friends and relatives	5.0 (1.1)		
Doctors/ nurses	10.1 (4.3)		
Television/radio	9.1 (3.0)		
Attended training course			
Yes	19.8 (2.9)	677.9	< 0.001
No	10.0 (4.4)		

SD = standard deviation.

average of 44.8% of questions correctly ([22]. This low score contributes to the burden of the problem, as the first action taken for management of an injury decides its future course and complication rates [6].

Our study also investigated the possible factors affecting the KAP scores of mothers. This study found that mothers of younger age, university and postgraduate educated, in health-related occupations, of higher socioeconomic status and those who had attended training course(s) on first aid had the highest KAP scores, and these factors were significant predictors of the KAP score. Similar results were obtained by other researchers. Thein et al. reported that the higher the education of the mother, the more likely she was to possess the correct knowledge and practice on childhood injuries [9]. Tomruk et al. concluded that those who had graduated from a university, were health care personnel, had taken a first aid course or had a first aid certificate had better knowledge [22]. One explanation of our results is that almost all younger mothers in this sample had completed university education, and may therefore have more health awareness and more motivation to join training courses or read texts about baby and child care including first aid.

There were some limitations to the current study. The percentage of mothers with correct knowledge about first aid for each type of injury was not given because of the huge amount of data.

Table 6 Stepwise multiple regression analysis of factors affecting scores on knowledge, attitudes and practice about first aid of the studied mothers

Variable	Beta	95% CI of beta	P-value
Educational level	-2.77	-3.03 to 2.50	< 0.001
Source of knowledge about first aid	-1.37	-1.50 to 1.26	< 0.001
Attended training course on first aid	-6.40	-7.10 to 5.70	< 0.001
Mother's age	0.10	0.08 to 0.13	< 0.001
Socioeconomic status	0.84	0.53 to 1.15	< 0.001
Occupation	0.82	0.43 to 1.21	< 0.001

 $R^2 = 0.76$; $beta_0 = 30.6$.

Nominal and ordinal independent variables were coded before being entered in the model.

CI = confidence interval.

Instead, the total KAP score was calculated. Information on the prevalence of injuries was collected retrospectively, which might have been affected by recall bias; however, this limitation is inherent in this type of community survey.

Conclusions

Although home-related injuries are a common problem among rural

children aged up to the age of 12 years, mothers in Qalubeya governorate did not have enough knowledge regarding first aid practices in these situations. Factors found to affect KAP scores of the mothers were level of education, source of their knowledge about first aid, previous attendance at training course(s) on first aid, age, socioeconomic status and occupation. First aid training and general education about safe home environments should be

made available to as many mothers as possible.

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