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Knowledge, Attitudes, and Practices of Family Physicians and Nurses Regarding Unintentional Injuries among Children under 15 Years in Cairo, Egypt

Shereen Elboray^{a,*}, Mohamed Yehia Elawdy^a, Sahar Dewedar^a, Nahla Abo Elezz^a, Maged El-Setouhy^a, Gordon S. Smith^b, and Jon Mark Hirshon^{b,c}

^aCommunity, Environmental and Occupational Medicine Department, Ain Shams University, Cairo Egypt

^bCharles “McC.” Mathias, Jr., National Study Center for Trauma and Emergency Medical Systems; Shock, Trauma, and Anesthesiology (Research Centre (STAR); University of Maryland School of Medicine, Baltimore, Maryland, USA

^cDepartment of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland, USA

Abstract

Unintentional injuries are a leading cause of death among children, especially in developing countries. Lack of reliable data regarding primary health care professionals’ role in childhood unintentional injury prevention hinders development of effective prevention strategies. A survey of 99 family physicians and nurses from 10 family health centres sought to develop insight into their knowledge, attitudes and practices regarding unintentional injury prevention for children <15 in Cairo, Egypt. Approximately 60% were familiar with the terms *unintentional injuries* and *injury prevention*. Falls and road traffic crashes were identified as primary causes of childhood injuries by 54.5%. While > 90% agreed injury prevention counselling (IPC) could be effective, only 50.5% provided IPC. Lack of time and educational materials were the leading barriers to provision of IPC (91.9%, 85.9%, respectively), while thinking counseling is not part of their clinical duties was the least perceived barrier (9.1%). There is a large disconnect between providers’ knowledge, attitudes and practices regarding IPC, more training and provision of counseling tools are essential for improving IPC by Egyptian medical providers.

Keywords

Primary care; injury prevention; counseling; children; low- and middle-income countries

Introduction

Injuries are a major cause of morbidity and mortality globally, both in high- income countries (HICs) and in low- and middle- income countries (LMICs) (Polinder et al., 2007).

*Corresponding author. shereennabil@med.asu.edu.eg.

In LMICs, two-thirds of injuries and 95% of deaths resulting from injuries occur among children (Fatmi et al., 2007; Peden et al., 2008). Although a number of reports have shown that childhood injuries declined by 50% in HICs between 1970 and 1995, the number of childhood injuries in LMICs increased (Hyder et al., 2009; WHO, 2010). Clearly, the injury burden is unequal between LMICs and HICs. There is also inequity in the quantity and quality of relevant injury research and the capacity to conduct such research (Peden et al., 2008).

Almost 90% of the injuries sustained by people under 18 years of age are unintentional (Sminkey, 2008). Most injuries sustained by children younger than 12 years occur in the home (Höllwarth, 2013), and about 90% of these unintentional fatal injuries in and around the home could have been prevented (Rimsza, Schackner, Bowen, & Marshall, 2002). Injury prevention strategies are critically important to prevent the death and disability caused by injuries in children. The rates of other fatal acute and chronic illnesses are generally low in children, unmasking injuries as a clearly preventable major cause of death (Rivara, Grossman, & Cummings, 1997).

Family physicians and nurses can play a key role in educating parents and caregivers about the risk for unintentional injuries. They can recommend specific measures that minimize those risks, including environmental modification and the use of safety equipment (Gardner, 2007). A number of studies have evaluated the awareness, attitudes and practices of physicians and nurses toward childhood injury prevention and treatment in order to improve educational behaviour (Carter & Jones, 1993; Carter, Morgan, & Lancashire, 1995; Kendrick, Marsh, & Williams, 1995; Leveque, Baudierand, & Janvrin, 1995; Barkin, & Gelberg, 1999a; Bazelmans, Moreau, Piette, Bantuelle, & Leveque, 2004). However most of these studies were conducted in HICs more than a decade ago.

Recent injury surveillance data from Egypt indicate that injuries account for nearly 20% of total deaths and that, of these injury deaths, approximately 18.3% occur in children. Nearly 20% of injured persons require hospital admission and 25% of admitted patients return home with varying levels of disabilities (WHO, 2009). The global childhood unintentional injury surveillance (GCUIS), which included Egypt as one of the countries under surveillance, shows that the major causes of childhood injuries were falls (56%), followed by road traffic injuries (22%) and burns (13%) (Hyder et al., 2009). Recent studies in Egypt focused on injuries sustained on school grounds to identify the pattern and burden of injuries, to identify opportunities for injury prevention and safety promotion, or to assess school workers' knowledge and perception of school injuries (Kamel, Atta, Youssef, & Teleb, 1999; El-Sayed, Hassan, Gad, & Abdel-Rhman, 2003; El-Sayed, Gad, Saied, Gamal, 2007).

Few or no data are available in Egypt about the knowledge, attitudes and practices of primary health care professionals toward prevention and treatment of childhood unintentional injuries. Because these health care providers can play a critical role in the prevention of injury among children, it is important to understand their current behaviours so that focused interventions can be developed. This study aims to develop insight about physicians and nurses working in family health centres (FHC) regarding their role in the prevention of unintentional injuries among children and to provide baseline data about the

current situation so that appropriate injury prevention programs can be designed and implemented in Egypt.

Methods

Study design, setting, and participants

We conducted a cross-sectional interview survey of primary care physicians (both with and without Family Medicine specialization) and nurses who provide care to children up to 15 years of age in 10 FHCs in Cairo. According to the Egyptian Ministry of Health and Population (MOHP), Cairo has 45 FHCs, in which 326 physicians and nurses treat children up to the age of 15 as older children are treated in adult clinics. The sample size necessary to achieve a confidence interval and a power of 95% and 80% respectively for our survey was calculated as 90 professionals based on the expected prevalence of injury prevention practices of 46% from a previous study (Bazelmans et al., 2004). After considering the potential for a 10% non-respondent rate, we set a target of 99 in total survey group (50 physicians and 49 nurses). Each FHC employs seven to twelve health care professionals; so 10 centres were selected as a convenience sample to meet our sample size goal.

Survey development and implementation

One trained health care professional administered the questionnaire, in Arabic, to all participants between October and December 2012. Primary health care physicians and nurses voluntarily chose whether to participate or not in this survey. The questionnaire was validated through pretesting on 10 physicians and nurses, who were later included in the study. The questions, based on those used in similar studies (Carter et al., 1995; Kendrick et al., 1995; Leveque et al., 1995), related to sociodemographic variables (e.g., age, sex, having children, years of clinical work); awareness of the types and epidemiology of childhood unintentional injuries in Egypt; attitudes toward injury prevention and counseling; involvement in preventing injuries; barriers to injury prevention counselling (IPC); and the physicians' involvement in the treatment of injuries.

The treatment section was completed only by physicians, as nurses in Egypt do not directly treat injuries. Participants remained anonymous to ensure confidentiality of data. The study was approved by the Egyptian MOHP and the institutional review boards at Ain Shams University, Egypt and the University of Maryland, Baltimore.

Data management and analysis

Data were coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 16.0. Descriptive analysis were conducted to determine the prevalence of positive attitudes toward injury prevention, provision of IPC to parents, and perceived barriers to this practice. Pearson's chi-squared test, Fisher's exact test and independent student's t-test were used to evaluate the relation between injury prevention practice and other variables such as age, years of clinical work, and being involved in injury treatment.

Results

Ninety-nine of the 105 health care professionals who were approached by our interviewer agreed to participate in the study, yielding a response rate of 94.3%. Their sociodemographic and professional characteristics are shown in Table 1. The majority of our sample was female, with a mean age of about 38 years. The average number of years of clinical experience was 12 for physicians and 16 for nurses. Forty percent of physicians had postgraduate degrees or certificates compare with 20% of the nurses.

Knowledge of childhood unintentional injuries

Approximately 60% of the health care professionals had heard the terms *unintentional injuries* and *injury prevention* (Table 2). Twenty-five percent of the study participants recognized that children of all age groups are at risk for injuries, and 58.6% of them recognized that injuries are more common in boys than girls. Only 36.4% correctly identified road traffic crashed (RTCs), including both pedestrian and bike accidents, as the principle cause of childhood deaths from unintentional injuries in Egypt.

Falls and RTCs were identified as the most common causes of childhood unintentional injuries by both physicians and nurses (54.5%) while drowning and choking were less frequently identified (7.1%). Only 6% of the study participants had attended lectures or workshops about childhood injuries.

Attitudes toward injury prevention and counseling

Eighty-seven percent of both physicians and nurses thought that childhood injuries are a problem in Egypt and about 90% of them agreed that more than 60% of injuries could be prevented. More than 90% of physicians and nurses agreed that counseling is part of their professional duties. Ninety-eight percent of the nurses and 86% of the physicians thought that IPC could be effective in injury prevention ($p<0.05$). About 49% of physicians and nurses thought that the most effective "actions" for the prevention of childhood injuries was to use the news media. More than 40% stated that injuries are not priority for them.

Involvement in injury prevention

Fifty physicians and nurses (50.5%) reported that they provide IPC; of these 42% indicated that they had provided counseling fewer than five times during the preceding 2 months. Twenty percent of providers offer advice to parents after their child has been treated for an injury. More than 60% provide advice directly to older children and 88% provide first aid advice to the parents. None of the study participants used educational materials during IPC. There was no statistical significant difference between physicians and nurses regarding the characteristics of their IPC, except for its timing: 63% of physicians provided advice to the parents during routine consultation, and 60.9% of nurses provided advice during a visit for vaccination ($p=0.000$) (Table 3).

Unintentional poisoning is the most common cause of injury for which professionals provide advice to the parents (98%), followed by burns and fires (68%), falls (64%), choking (46%),

and RTCs (44%). Drowning was the injury mechanism with the least amount of IPC offered by physicians and nurses (28%).

Health care providers acknowledged a number of barriers to providing IPC. Lack of time was cited most commonly (by 91.9% of the study group), followed by lack of educational materials (85.9%), IPC deemed not appropriate by clinicians at time of visit (62.6%), patient's lack of interest (58.6%), insufficient information about injury prevention (51.5%), not seeing injuries as a priority (41.4%), lack of confidence that IPC can help (11.1%), and thinking that IPC was not part of professional duties (9.1%). There was no statistical significant difference between physicians and nurses in regard to perceived barriers except for injuries not being considered a priority ($p=0.000$) (Table 4).

Professionals who had attended first aid or basic life support (cardiopulmonary resuscitation) courses or those who had a family member or a friend who died from an injury were more likely to provide IPC ($p<0.05\%$). Only 21.2% of the survey group felt they provide enough counseling in their work to prevent childhood injuries.

Attitudes toward and involvement in injury treatment (physicians only)

Of the 50 physicians, 94% agreed that treating injured children is part of their professional duties; 29 of them (58%) reported that they do provide such injury care. Many reasons were mentioned by physicians for their inadequate provision of injury treatment for children, including: lack of appropriate materials and equipment, 90%; a low frequency of patients requiring treatment in the FHC, 66%; and lack of knowledge about how to treat injuries, 48%. Four percent of the physicians thought that treating injured patients was not part of their professional duties. Physicians who were involved in injury treatment were statistically more likely to provide IPC ($p<0.05$ by chi-square analysis). Older physicians and nurses and who had more clinical experience (more years of clinical work) were more involved in provision of IPC ($p<0.05$) (table 5). Physicians who provide injury treatment mentioned that cleaning and dressing wounds; suturing a laceration; prescribing medications for contusions/strains; treating first- and second-degree burns; treat minor head injury and providing tetanus vaccine are the available services for injury treatment in FHCs, however, minor fractures are not treated in these facilities.

Discussion

The health care professionals who participated in this study had positive opinions about the prevention of unintentional injuries among children, but their participation in IPC was actually low. Childhood injuries are known to cause high morbidity and mortality, yet unintentional injuries have not received adequate attention in the public health community and from global health leaders (Alonge & Hyder, 2014). Increased efforts are needed to highlight the problem among health care professionals, policy makers, and parents.

Many studies have evaluated the role of family physicians and nurses in injury prevention and treatment (Carter & Jones, 1993; Carter et al., 1995; Kendrick et al., 1995; Leveque et al., 1995; Bazelmans et al., 2004). Most of these studies were conducted in developed countries, but they share a number of findings that are similar with our study in Cairo.

The health care professionals in this study had social and job characteristics similar to those of participants in previous surveys (Carter et al., 1995; Kendrick et al., 1995; Barkin, Fink, & Gelberg, 1999b). In general, most of the participants in these studies believe that injuries are preventable and have positive attitudes toward IPC, but only half in our survey reported that they provide injury prevention advice to patients and their parents. Professionals' practice rate of IPC is similar to Kendrick's study (Kendrick et al. 1995). In a study conducted in France, the rate was 58% (Leveque et al., 1995), while in the Pratt, Runyan, Cohen, & Margolis study, the rate was 41%.

The gap between health care professionals' attitudes and their actual practice suggests that they perceive barriers to IPC. In our survey, as well as in previously reported studies (Carter et al., 1995; Pratt et al., 1998; Cohen & Runyan, 1999; Bazelmans et al., 2004), participants cited insufficient time to provide IPC, a lack of appropriate educational materials about injuries, and the sense that a conversation about injury prevention was not appropriate at the time of the clinical visit as barriers to IPC. These barriers need to be overcome so that physicians and other health care providers can fulfil their critical role in efforts to prevent injuries (Ballesteros & Gielen, 2010). Provision of educational materials like brochures, videos and posters about injuries and how they can be prevented play a key role in raising parents' awareness about childhood injuries. The American Academy of Pediatrics Bright Futures materials (<http://brightfutures.aap.org/about.html>) are examples of tools that could be modified for use in countries such as Egypt. These tools, while for general paediatric prevention counseling, include materials such as previsit questionnaires, forms for documentation during the health care visit, and parental educational materials. This in turn will help with both facilitating conversation about injuries during clinical visits and changing parents' risky behaviors. It is rarely feasible to achieve injury reduction without some element of behavior change (Gielen & Sleet, 2003). Parents need to be engaged and supportive of the process of injury prevention. They need to keep medications and poisonous materials out of reach of their children, place appropriate safety barriers to prevent falls down steps or out windows, and they should ensure that their children are playing in safe place and away from roads. Children also need to wear their helmets during bicycling and use similar preventive measures during recreational and play activities. In addition, professionals' lack of confidence about the effectiveness of IPC is one of the barriers that affect their practice. Unless primary care professionals believe that IPC can be effective, they are unlikely to provide injury prevention interventions (Kendrick et al., 1995).

Two of every five participants in our study did not consider injuries and injury prevention as a priority among health care providers in FHCs in Cairo. This attitude might stem from a lack of recognition of the importance of injuries as a health problem. In addition, a large proportion of injured individuals in Cairo go directly to emergency departments, especially if they are near a hospital, so FHCs are not considered a primary resource for the assessment and stabilization of injured people. Making injury mortality and morbidity statistics available to primary care professionals might expand their knowledge and broaden their perception of the scope of the problem (Bazelmans et al., 2004).

At the individual practice level, it is unlikely that injury prevention program will generate an easily measurable reduction in injuries, because relatively small numbers of injured patients

are treated in FHCs. Documenting and aggregating practice data might solve this problem; alternatively, process measures could be used to provide feedback to a practice and its professional staff (Pommerenke & Dietrich, 1992). The creation and dissemination of an injury prevention training program would increase professionals' belief in the importance and efficacy of IPC. Of note, only 6.1% of the physicians and nurses who completed our survey had attended lectures or workshops about childhood injuries, and more than half of them mentioned that they do not have enough information about injuries. By comparison, previous studies (Carter & Jones, 1993; Leveque, et al., 1995) showed that more than 20% of the professionals had attended injury group discussions or lectures about child safety and accident prevention.. Additionally, all the surveyed professionals mentioned that no educational materials about childhood injuries are available in their practice. These findings indicate that injuries and injury prevention are neglected issues among health authorities in Cairo and in the public at large.

Attendance at a first aid or basic life support (CPR) courses was positively associated with the provision of IPC to parents. Hussain and Redmond (1994) concluded that 39% of the injury- induced deaths documented in their retrospective review of coroner's records in the West Midlands region of England could have been prevented during the pre-hospital phase of care and recommended expansion of training in first aid so that more help can be provided at the scene of injury before paramedics arrive. Furthermore, more than 80% of the physicians and nurses stated that they provide first aid advice to parents and older children, while in Leveque et al., 1995 study, no one provided first aid advice. This was of concern as the first response to some childhood injuries can greatly affect their outcomes. It is interesting to note in our study that health care providers who were older and had more clinical years of experience were more likely to provide counseling compared to younger, less experienced colleagues.

As in previous studies (Leveque et al., 1995; Kamal et al., 1999), dissemination of information via the news media was considered by our study group to be the most effective method of increasing parents 'awareness of the prevalence of childhood injury and its prevention. While legislation and environmental changes have roles in the reduction of childhood injuries (Dowswell et al., 1996), education functions as a primary, cross-cutting intervention that has both directly and indirectly influences all other facets of injury prevention strategies (CDC, 2012).

A number of limitations to this study should be noted. First, the sample was limited to Cairo, a major urban jurisdiction, so generalizability may be limited to similar large urban areas. Since the survey was conducted in a developing country, its comparability may also be limited to countries with similar sociodemographic and cultural characteristics. Data were collected through an interviewer- facilitated questionnaire, so the responses may be influenced by the fact that the information was self-reported, inaccurate recall of educational behaviour, as well as the potential for a social desirability bias of finding the "right" responses. Most of the surveyed physicians and nurses were female. Females are more responsible for the care of their children; female physicians express more empathy (Wasserman, et al. 1983); ask more questions; and give more information than male

physicians (Roter, Lipkin & Korsgaard, 1991). This may be a reason for their high response rate to the study and may over report their injury prevention practice.

Conclusion

Unintentional injuries should be prioritized as a major public health problem in both developed and developing countries. IPC is one important arm of an injury prevention strategy and primary health care professionals can play an effective role in the prevention of childhood injuries by providing IPC. In this study, despite nurse and physician awareness, we identify that there is a self-reported lack of IPC in family health centres in Cairo. Improving health care professionals' awareness about injury prevention through providing information about injuries and how they can be prevented, as well as the important role of prevention counseling could potentially improve behaviour. Additionally, training students and providers to conduct IPC, and eliminating real and perceived barriers to the delivery of information to parents through distribution of educational materials to all FHCs and prioritization of injury prevention in practice holds great potential for improving injury prevention activities and establishing injury prevention programs in Egypt.

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Table 1

General Characteristics Of Surveyed Physicians And Nurses, Selected Family Health Centres, Cairo, Egypt, October–December 2012.

Socio-demographic Characteristics	Physicians (N=50)	Nurses (N=49)
Age (in years)		
Mean±SD	38.1±11.1	39.0±10.6
Min–Max	24–58	21–59
Gender N (%)		
Women	43 (86.0)	49 (100)
Men	7 (14.0)	0 (0.0)
Have children N (%)	36 (72.0)	46 (93.9)
Years of clinical work		
Mean ±SD	12.1±10.7	16.7±9.7
Min–Max	1–32	1–38
Have postgraduate studies N (%)	20 (40.0)	10 (20.4)

Table 2

Physicians' And Nurses' Awareness Of Childhood Injuries, Selected Family Health Centres, Cairo, Egypt, October–December 2012.

Variable	Physicians (N=50)	Nurses (N=49)	Total (N=99)
	N(%)	N (%)	N (%)
Heard of unintentional injuries	32 (64.0)	29 (59.2)	61 (61.6)
Stated that children of all ages are at risk for injuries	11 (22.0)	14 (28.6)	25 (25.2)
Stated that injuries are more common in boys than girls	32 (64.0)	26 (53.1)	58 (58.6)
Heard of injury prevention	34 (68.0)	25 (51.0)	59 (59.6)
Correctly identified RTCs as the principal cause of childhood deaths from unintentional injuries in Egypt	21 (42.0)	15 (30.6)	36 (36.4)

Table 3

Characteristics Of Injury Prevention Counseling (IPC) Provided By Health Care Professionals, Selected Family Health Centres, Cairo, Egypt, October–December 2012.

Variable	Physicians Who Provide IPC (N=27)	Nurses Who Provide IPC (N=23)	Total (N=50)	Sig.
	N (%)	N (%)	N (%)	
Frequency of counseling during the last 2 months				
<5 times	14 (51.9)	7 (30.4)	21 (42.0)	$\chi^2=2.38$ p=0.304
(6–10) times	7 (25.9)	8 (34.8)	15 (30.0)	
>10 times	6 (22.2)	8 (34.8)	14 (28.0)	
Time of provision of counseling:				
-After treatment of injured child	10 (37.0)	0 (0.0)	10 (20.0)	0.000 *
-During consultation	17 (63.0)	9 (39.1)	25 (50.0)	
-During vaccination	0 (0.0)	14 (60.9)	14 (28.0)	
Provide counsel to older children	20 (74.1)	12 (52.2)	32 (64.0)	$\chi^2=2.59$ p=0.108
Provide first aid advice	25 (92.6)	19 (82.6)	44 (88.0)	0.350 *
Use educational material during counseling	0 (0.0)	0 (0.0)	0 (0.0)	-----

χ^2 -chi-squared test

* Fisher's exact test

Table 4

Health Professionals' Perceptions Of Barriers To Injury Prevention Counseling, Selected Family Health Centres, Cairo, Egypt, October–December 2012.

Perceived Barriers	Physicians (N=50)	Nurses (N=49)	Total (N=99)	Sig.
	N (%)	N (%)	N (%)	
Reason for consultation does not permit such approach	34 (68.0)	28 (57.1)	62 (62.6)	$\chi^2=1.25$ p=0.264
Injuries are not priorities	10 (20.0)	31 (63.3)	41 (41.4)	$\chi^2=19.09$ p=0.000
Lack of interesting materials to provide counseling	43 (86.0)	42 (85.7)	85 (85.9)	$\chi^2=0.002$ p=0.967
Insufficient information about injury prevention	23 (46.0)	28 (57.1)	51 (51.5)	$\chi^2=1.23$ p=0.267
Lack of time	44 (88.0)	47 (95.9)	91 (91.9)	0.269 [*]
Patient's lack of interest	31 (62.0)	27 (55.1)	58 (58.6)	$\chi^2=0.485$ p=0.486
Lack of confidence that IPC can help the parents	5 (10.0)	6 (12.2)	11 (11.1)	$\chi^2=0.126$ p=0.722
Think counseling is not part of their clinical duties	6 (12.0)	3 (6.1)	9 (9.1)	0.487 [*]

χ^2 chi-squared test

^{*} Fisher's exact test

Table 5

Factors Associated With Provision Of Counseling About Childhood Injury Prevention, Selected Family Health Centres, Cairo, Egypt, October–December 2012.

Variable	Physicians and nurses who provide counseling (N=50)	Physicians and nurses who do not provide counseling (N=49)	Sig.
	N (%)	N (%)	
Having children	43 (86.0)	39 (79.6)	$\chi^2=0.715$ $p=0.398$
Age (in years) Mean $\pm$ SD	41.4 $\pm$ 10.0	35.5 $\pm$ 9.9	0.006**
Years of clinical work Mean $\pm$ SD	17.1 $\pm$ 11.0	11.5 $\pm$ 8.0	0.007**
Attendance of First Aid or CPR course	25 (50.0)	15 (30.6)	$\chi^2=3.86$ $p=0.04$
Attendance of workshop or conference about childhood injury prevention	5 (10.0)	1 (2.0)	0.204*
Have family member or friend who died from injury	35 (70.0)	21 (42.9)	$\chi^2=7.42$ $p=0.006$
Have post graduate studies	18 (36.0)	12 (24.5)	$\chi^2=1.55$ $p=0.213$

χ^2 Chi-Square Test.

* Fisher's Exact Test.

** Independent samples t- Test