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Prevalence, Patterns of Injuries and Associated Risk Factors Among Primary School pupils in Port Said City

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ABSTRACT:

Background: Child health promotion is a crucial challenge in the current decade especially in developing countries like Egypt, and this study is considered as one step from thousands of steps needed to achieve this aim .

Objective: To measure the prevalence of injuries, determine the patterns of injuries, and assess the associated risk factors of injuries among primary school children in Port-Said City .

Methods: In this descriptive, cross-sectional study, a non- proportionate stratified random sampling was used in this project . We collected data on 25th of March 2019 from 2128 primary school pupils from 11 schools . The pupils' age ranged from 7 to 13 years in all six grades in port-Said, Egypt. SPSS statistics was used to analyze and interpret the data collected .

Results: After doing analysis, it was found out that only 708 pupils (33.27%) didn't suffer from injury before, while 1420 pupils (66.73%) suffered from injury with boys (54.51%) having a higher rate than girls (45.49 %). The most common injury for both males and females is falling while the least percentage was dog bite . Most injuries occurred at home (38.88%) surprisingly, while injuries in schools come in the 3rd place by 14.15% .

Conclusion : Egypt and the other countries have to pay attention to achieve the aim of child health promotion .

Introduction

Every day around the world the lives of over 2000 families are torn apart by the loss of a child due to an unintentional injury. Once children reach the age of five years, unintentional injuries are the threat to their survival or abilities (Peden, M. M, 2008). Traffic collisions, drowning, poisoning, falls, burns and violence kill over five million people worldwide annually (Borse, N. N., Gilchrist, J., Dellinger, A. M., et al., CDC, 2008). There is evidence of a strong association between children aged 7-24 months and injuries. There is evidence of weak to moderate association of injuries with being male, hyperactive child, mother's age of <20 years at time of child's birth, socioeconomic status. There is mixed evidence regarding the association of urban or rural location, parental education and household income with injuries. There was no statistical evidence of injuries being associated with autism, or medical problems. (Dinah Seligosohn, 2014).

Injury is a physical trauma causing harm to the body caused by external force. Injuries are classified based on intentionality to intentional and unintentional injuries, but we will discuss only the unintentional injuries ("Wounds and Injuries | Fracture | Bruises", 2019). A burn is an injury to the skin or other organic tissue because of heat, radiation, electricity, friction or chemicals (Elbehary, H, 2017).

Burns are classified as first, second and third-degree depending on how deeply they penetrate the skin (Stanford Health Care). Females especially children have slightly higher rates of death from burns (WHO, 2018). To prevent burns, store items designed to get hot, such as irons out

of reach, and cover unused electrical outlets with safety caps, and don't let children play with or near fireworks ("Pacifier do's and don'ts", 2017).

Drowning is respiratory impairment resulting from submersion in a liquid medium (McCall, J. D., & BT, S., 2019). The common causes of drowning can be inability to swim, lack of gates with locks, lack of four-sided barrier fencing around pools, failure to wear life jackets, and lack of close supervision (The Common Causes of Drowning, 2015). There are four types of drowning: wet, dry, secondary drowning and immersion syndrome (Rao, D.). Males especially children are at risk of drowning (WHO, 2018). When you see someone drowning, take the person out of the water and check for breathing. If the patient is unconscious and not breathing, check pulse. If there is no pulse, start (CPR) until the person starts breathing or emergency help arrives ("Drowning Treatment: First Aid Information for Drowning", 2017)

A fall is an event, which results in a person coming to rest inadvertently on the ground or other lower level (WHO, 2018). The causes of fall can include balance problems, muscle weakness, poor vision, low blood pressure, wet floors, or darkness. Both genders especially children and older people are at risk of falls. (National Health Service (NHS) ,2018) At home, children can be protected from falling by removing all tripping hazards such as toys from the floor and stairs, and having nightlight on at all the rooms. ("Preventing Burns, Cuts, Lacerations, Abrasions - Home Safety", 2018)

A wound happens where the skin is cut, punctured, or where blunt force trauma causes a contusion. (WHASA, 2019) Wounds can be classified as acute or chronic wounds, open or closed wounds and clean or contaminated wounds. (Velnar, Bailey, & Smrkolj, 2009). If you have got wound, you want to apply direct pressure to any trauma wound, examine wounds for gross contamination, devitalized tissue and foreign bodies, take away constricting jewelry from wounded part, and cleanse the wound with soap and sterile water or obtainable solutions. (Gilbert, 2004).

Poisoning is a condition in which human is exposed to a substance that causes severe organ damage or death. (WHO, 2014) Young children are at the risk of the ingestion of poisons.

(WHO, 2018). It is all dependent on parents following the right precautions such as: buy products which are child safe, mark any bottle that could possibly contain any poison with a specific mark and keep any medications or chemicals away from children. ("Preventing 5 Common Home Injuries", 2005)

Road traffic injury is unintended collision of one motor vehicle with another, a stationary object, or person, resulting in injuries, death or loss of property. ("Road Traffic Accidents | National Health Portal of India", 2016). It is caused from bad visibility, unsafe road design and other reasons related to drivers (distracted driving, speeding, drunk driving, reckless driving, running red lights, running stop signs or teenage drivers), children (lack of attention, lack of vision or falling while crossing the road) or

environment (rain, fog, snow, potholes, damaged roads, eroded road merging of rural roads with high way). ("Causes of Road Accidents | Transport Department, Government of Jharkhand", n.d)

A dog bite can cause damage to the tissues under the skin, including bones, muscles, etc. (Morgan & Palmer, 2007). Rabies is an infectious viral disease which is transmitted to humans from dogs. (WHO, 2019). There are six levels of dog bites. ("Ian Dunbar's Bite Assessment Scale", 2011). kids should be taught not to reach any unfamiliar dog, don't lose control or make noises and not to play aggressively with a dog. (CDC, 2019). Poor and rural environment is a risk factor for dog bites. The incidence increases during holidays due to the higher rate of outdoor activity. (Dinah Seligosohn, 2014.)

Methodology

In this descriptive, cross-sectional study, a non-proportionate stratified random sampling was used in this project. We collected data from 2128 primary school pupils from 11 schools. The pupils' age ranged from 7 to 13 years in all six grades in port-Said, Egypt.

Official

Approval

of head of each school was ensured after explanation of the research objectives and its relevance. An informed consent was obtained from the participants who had the right to refuse participation without stating any reason.

Data were collected in one day using a structured interview questionnaire after explaining the aim of the study. All the present pupils at the time of the study were included. Those reluctant to participate, and incomplete questionnaires were excluded from the study. Part 1 included sociodemographic questions. (Table 1) Part 2 contained questions on prevalence and patterns of injuries. (Table 2) Part 3 contained questions on the associated risk factors. (Table 3)

Data were coded and analyzed by using SPSS Software, version 20 (SPSS® Inc.) T-test where all statistical analyses were performed. Statistical significance is determined at 95% level of confidence (i.e. differences were considered significant if $P < 0.05$)

Results

Socio-demographic data of the studied participants

This study included 2128 pupils aged 6-13 years in 11 primary schools in Port-Said, Egypt (mean = 10.02, SD = 1.554). Over half of the pupils are males (54.51%, n = 1160), with females accounting for the remaining (45.49%, n = 968), giving a male to female ratio of 1.19:1 (Table 1)

*This is value refers to mean .

**This is value refers to Standard deviation.

***The number of dead both parents are high because one of the schools we conducted is near to orphanage .

Prevalence and patterns of injuries

Socio-demographic characteristics	Frequency	Percent (%)	Socio-demographic characteristics
Gender	Male	1160	54.51
	Female	968	45.49
Age		(mean = 10.02) *	(SD = 1.554) **
Grade		(mean = 4.17) *	(SD = 1.434) **
Number of individuals in the house	Less than 4 individuals	210	9.87
	Between 4 to 6 individuals	1689	79.37
	More than 6 individuals	229	10.76
House rooms	Less than 3 rooms	1204	56.58
	3 rooms	654	30.73
	More than 3 rooms	270	12.69
Dead parents	No one	1992	93.61
	Father	44	2.07
	Mother	13	0.61
	Both	79***	3.71
Who takes care of the child at home	Father	70	3.29
	Mother	959	45.07
	Both	983	46.19
	Siblings	102	4.79
	Baby sitter	8	0.38
	Other	6	0.28
Transport	Public transportation	458	21.52
	On foot	569	26.74
	Personal driver	347	16.31
	Parents	697	32.75
	Other	57	2.68
Outdoor Activity	No	633	29.75
	Football	682	32.05
	Swimming	390	18.33
	Karate	152	7.14
	Other	271	12.73

By asking the pupils if they had suffered from injury or not, we found that 708 pupils (33.27%) didn't suffer from injury before, while 1420 pupils (66.73%) suffered from injury (Fig. 1). The

analysis covered 2128 pupils which included 708 pupils (33.7%) who didn't suffer from injuries before, 943 pupils (44.36%) suffered from one injury, 287 pupils (13.39%) of two injuries, 115 pupils (5.4%) of three injuries, 57 (2.68%) pupils of four injuries and 18 pupils (0.89%) of five injuries (Fig. 2). Over half of the injured pupils were boys (54.6%, n = 1164), with girls accounting for the remaining (45.4%, n = 964) of injuries, giving a male to female ratio of 1.2:1. The major causes of injuries were falls (28.4%), wounds (21%) and accidents (17%), while the least causes were poisoning (4.9%) and dog bites (2.2%) (Fig. 3.)

Figure (1) Did the children suffer from injury ?

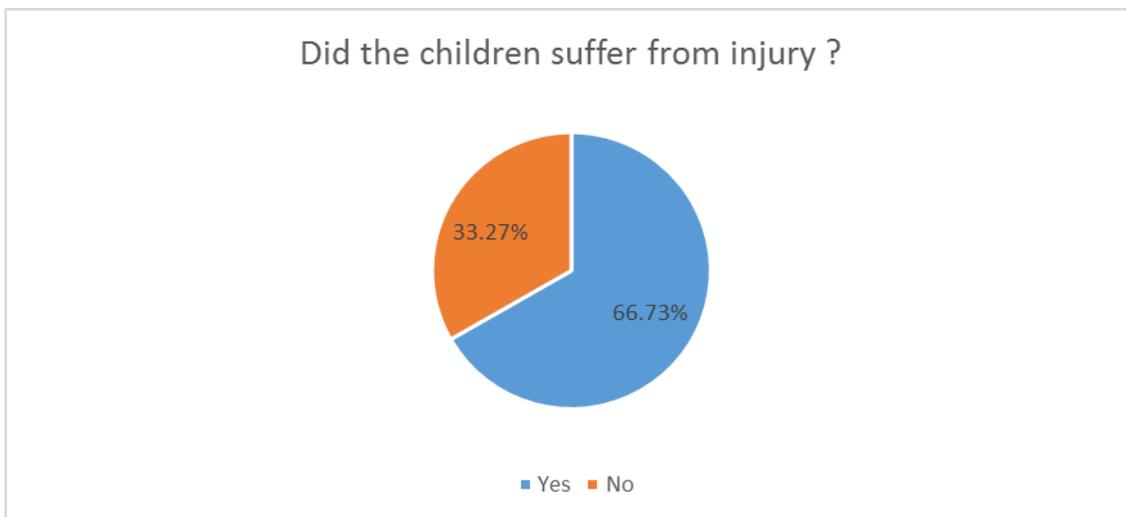


Figure (2) Number of injuries which one child suffered from.

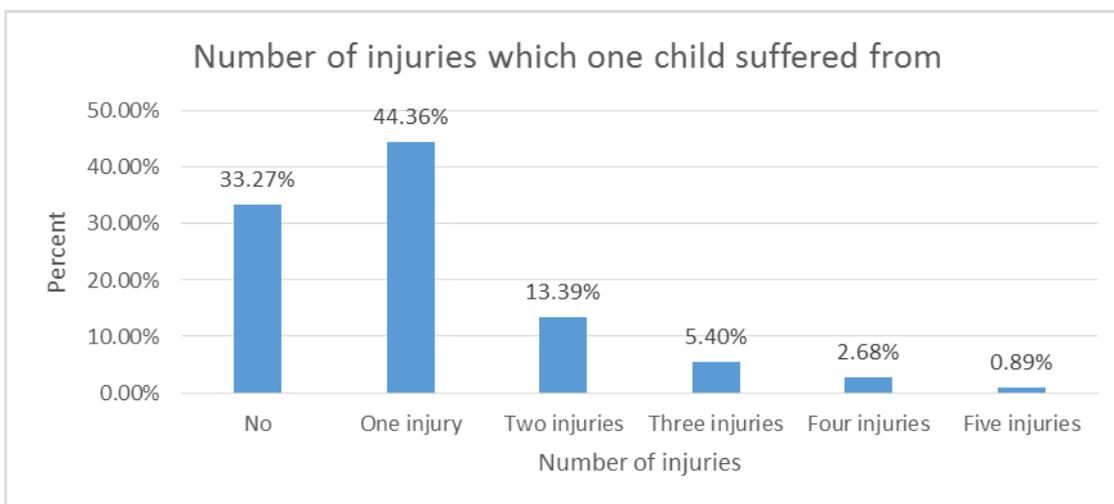
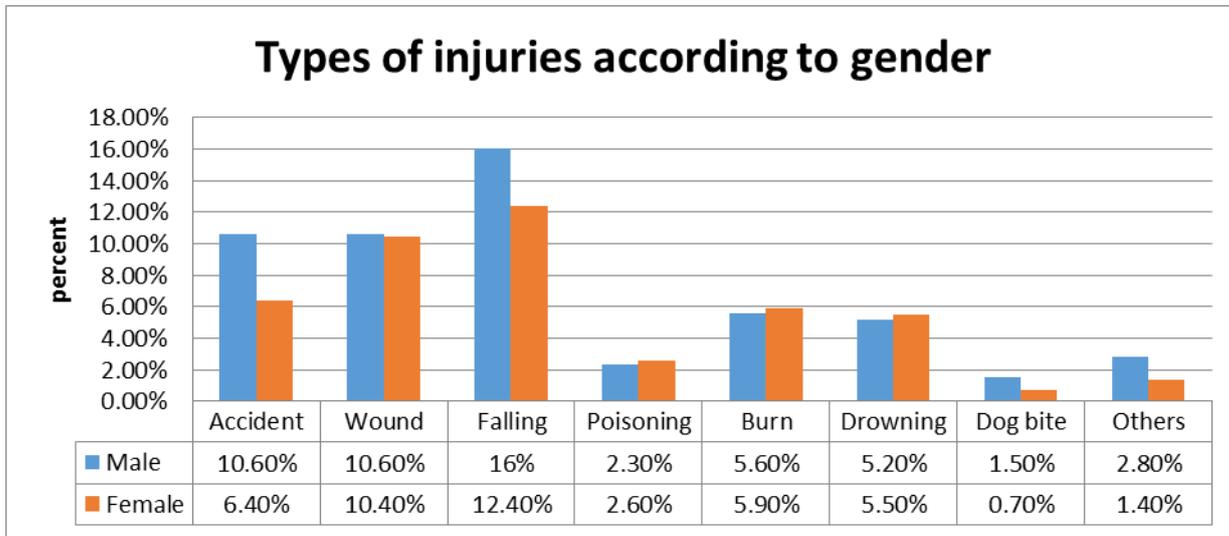


Figure (3) Types of injuries according to gender.



Risk factors of injuries

Most injuries occurred at home (38.88%), with 14.15% reported as occurring in a school setting (Fig. 4). Outdoor activity also has a role in risk factors as 306 pupils got injured during outdoor activity (Fig. 5).

In terms of school type, the prevalence of injuries was higher in governmental schools (69%) than the private schools (59.42%) (Fig.6.)

According to safety and security of the (11) schools, all of them have fire extinguishers, 5 of them have security cameras, 8 of them have escape ladders and first aid and 10 of them have emergency cases training (Table 2).

Figure (4) Place of the injury.

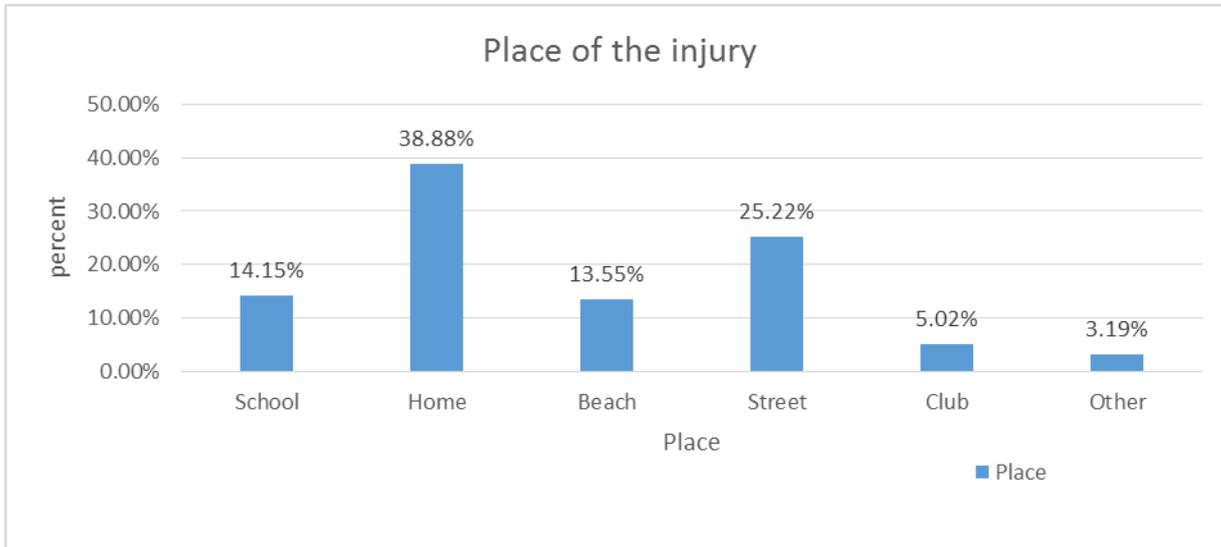


Figure (5) Outdoor activity's injury

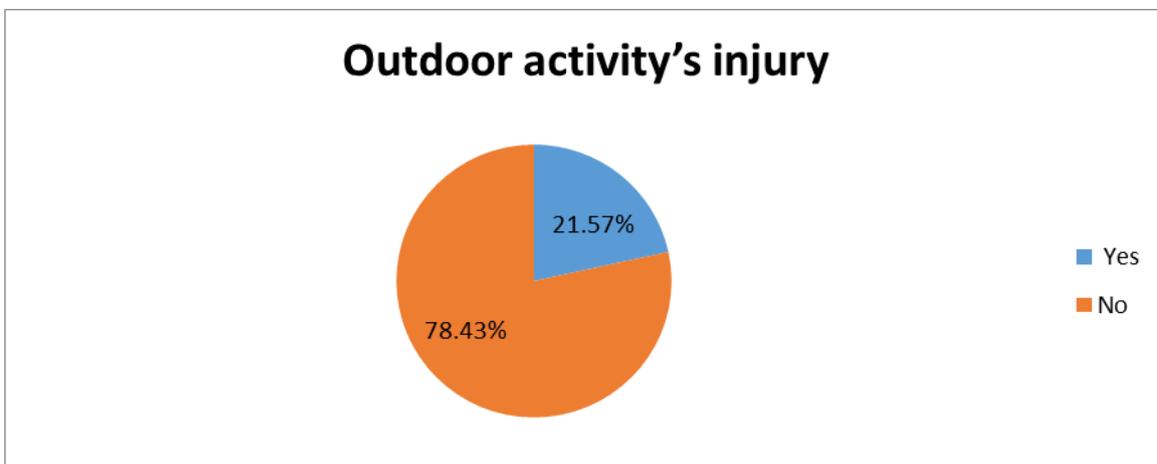


Figure (6) Prevalence of injuries according to school type

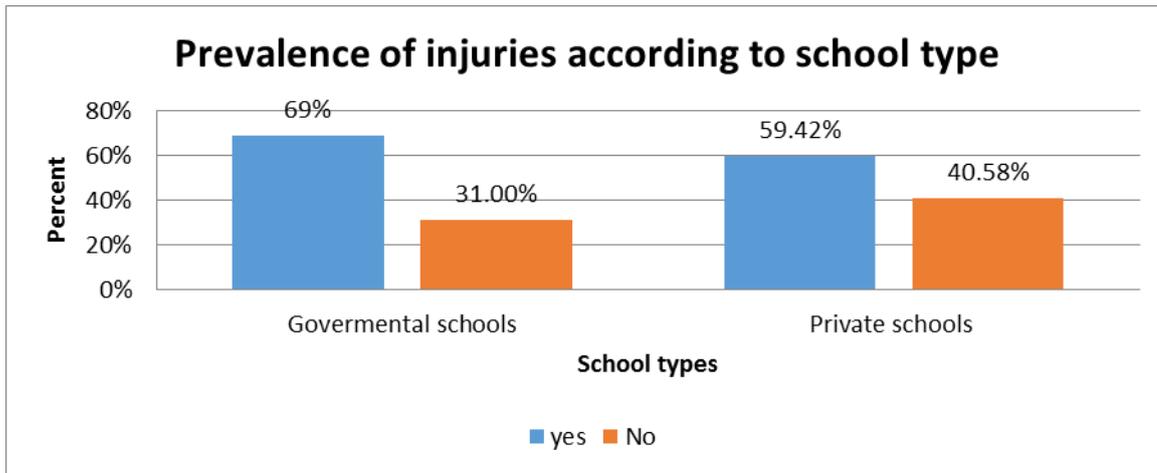


Table (2) Safety, security and traffic of 11 school in port said city

Safety and security Frequency Percent(%)

Safety and security	Frequency	Percent (%)
Fire extinguishers	11	100
Security Cameras	5	45.5
Escape ladder	8	72.7
Alarm	9	81.8
First aid	8	72.7
Emergency cases student training	10	90.9
Traffic	Frequency	Percent (%)
Speed limit sign	1	9.1
Signs School Zone	3	27.3
Speed bumps	6	54.5

Discussion

This study revealed specific patterns of unintentional childhood injuries based on age, gender, and location. It was found by reporting 2128 primary school pupils of both sexes that at almost all ages, boys had higher tendency for all types of injuries than girls except for poisoning, burns, and drowning, and 66.73% of pupils were exposed to injuries. In another study made in urban Delhi the prevalence of injuries was much lower (6.44%) That may be due to hyperactivity or increased rate of risk factors in our society (Nongkynrih, Parmeswaran, Kalinin, Gupta, & Goswami, 2017)

As regarded of age and sex distribution of non-intentional injuries, it was found that the current results are moderately different from another study conducted in Egypt in 2011. This might be explained by changes occurring during the 8 years between the two studies (Halawa, Barakat, Rizk, & Moawad, 2015) .

In the present study, it was found that the majority of injuries occur at home consistently with the previous survey on Egypt. However, the survey's percentage was 64% while this study was 38.88%. This difference could be due to home safety knowledge difference between now and then. Concerning schools' injuries, our study shows 14.15% while the survey shows 8.8% only (Halawa, Barakat, Rizk, & Moawad, 2015)

Regarding first aid services availability, it was found that they are available in 72.7% of the schools. While in another study done in India, 55.55% of the schools had first aid services. This might be due to the increased interest of Egyptians in prevention of injuries and promoting child health recently (Joseph, Narayanan, Bin Zakaria, Nair, Belayutham, Subramanian & Gopakumar, 2015) .

Regarding mothers' education level and occupation, it was found that 46.42% of mothers have graduated “high education level” and 7.71% of mothers have low education level. While in another study conducted in India, only 7.7% of mothers are graduated, 18.6% of them have primary education and 7.2% of them are illiterate. This might be due to differences in traditions, or socio-demographic status (Hemalatha & Prabhakar, 2018) .

Concerning the means of transportation from and to school, it was reported that the highest percentage goes to school by their parents by 32.75% while 16.31% are delivered by personal driver. However, the lowest percentage was about using other methods by 2.68%. Comparing these results with a study carried out in the United States in 2012, we found that nearly 55.25% of children aged 5-11 years travelled to and from school in motorized vehicles (i.e., passenger vehicles or school buses) That could be explained by the progress and welfare level in America (Beck & Nguyen, 2017) .

It was observed that none of the school playgrounds had a suitable surfacing material and conform to specifications while in another study carried out in the United States, about 93% of the school playgrounds had suitable surfacing material. The difference in percentages may be due to inadequate resources, or financial difficulties (Olsen & Kennedy, 2019) .

This study includes extensive data on a large number of cases available to study. In particular we had social and demographic information about children, families and households for the same time that we were collecting injuries data. However, the results should be viewed with the limitation that the data were collected by interviewing the children. They may either forget or lie, particularly if they feel a degree of tension or confusion, and the sample was from a limited geographical area.

Conclusion

Promotion of child health is a crucial challenge in the current decade especially in developing countries like Egypt, and this study is considered as one step from thousands of steps needed to achieve this aim. Based on the results of this study, we concluded that: The majority of participants (66.74%) were exposed to injuries with boys (54.51%) having a higher rate than girls (45.49 %). The highest percentage in both genders was falling; males (16%) and females (12.40%), while the least percentage was dog bite males (1.50%) and females (0.7%). The highest percentage of injuries takes place at home (38.88%) followed by the street (25.22%), then the school (14.15%), and the club (5.02%). As regarded of risk factors and safety, the ceiling, handrails, doors, floor tiles, and windows were in a good condition in most

schools, and six schools out of eleven were away from the traffic. Therefore, there is an urgent need to raise awareness of low education level and illiterate parents about the risks of unintentional injuries and ensure the availability of first aid services in all schools and houses around the city. Further studies should be conducted to collect more data in this field.

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