



ORIGINAL ARTICLE

Factors associated with unintentional injury among the paediatric age population in the hospitals of Amhara National Regional State, Ethiopia

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ABSTRACT

Background: Childhood unintentional injuries cause nearly 875,000 deaths each year. The aim of this study was to assess the prevalence and factors associated with unintentional injury of children presenting to the hospitals of Amhara Regional State, Ethiopia.

Methods: In a hospital-based, cross-sectional study undertaken in one month, from April 1 to 30th 2016, 893 children less than 18 years of age were included. Data were collected using an interviewer-administered questionnaire. Training was given to all data collectors and supervisors. Data was entered into EPI info version 7 and then exported to SPSS version 20, for further analysis.

Results: Unintentional injury caused 62% (554) of all injuries in attending children. Several factors affected the likelihood of injuries, namely the age of the child, age of the parents or guardians, sex of the child, and whether the child lived with the parents. Modifiable factors were the child's behaviour, awareness of danger, the child's level of educational, if the child's parent had received adequate injury counselling, and whether a child was left in the care of another child. The source of light in the house, and house floor material were also significant factors at $p < 0.05$.

Conclusion: The prevalence of unintentional injury was high. Many of the factors associated with injuries are modifiable and safety issues for children need urgent attention.

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African relevance

- In this study, unintentional injury caused 62% of all injuries in attending children.
- Several factors affected the likelihood of injuries, namely the age of the child and age of the parents.
- Modifiable factors were the child's behaviour, awareness of danger, and the child's level of education.

Background

Unintentional childhood injuries include road traffic injuries, burns, drowning, poisonings and falls. They are a growing problem in all parts of the world. Each year, around 875,000 children are killed on our planet [1]. In the United States, the fatality rate from

unintentional injury in children aged 14 years and under has declined by 45% since 1987. Despite this decline, it remains the leading cause of death among American children. In 2005, 5162 children <14 years of age died from unintentional injuries, and in the same year, there were 6,253,661 emergency room visits for unintentional injuries in this age group [2].

Of all the unintentional injury-related deaths that occur globally, more than 95% occur in low- and middle-income countries with physical, psychological, and economic consequences for those communities [1]. Despite recent estimates showing that the rate of unintentional injuries for children in sub-Saharan Africa reached 53.1 per 100,000 population (the highest in the world), the problem has received little attention because of the overwhelming problems of malnutrition and infectious diseases [3]. In sub-Saharan settings unintentional injuries rank third behind diarrhoea and malaria as causes of childhood death; with the most common form of unintentional injury caused by falls, followed by road traffic injuries, assaults, burns and poisoning [4].

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Trauma in the paediatric population represents a major burden of disease in South Africa where it is now referred to as 'the neglected childhood killer disease'. Also injuries are often mismanaged and preventive strategies are scarce [5]. In Addis Ababa, Ethiopia, hospital-based data established that unintentional injury made up 77% of paediatric attendees [6]. In many countries, political and organizational structures with the required resources have not been allocated to injury prevention and management. Therefore evidence is required to raise public awareness of the problem [7]. With this in mind, this study was undertaken to identify the prevalence and factors associated with unintentional injury in the paediatric population attending the hospitals of Amhara regional state, Ethiopia.

Methods

An institution-based, prospective cross-sectional study was conducted in the hospitals of Amhara National Regional State, Ethiopia from April 1 to April 30, 2016. All injured children less than 18 years of age attending the emergency centres of Amhara National Regional State Hospitals were prospectively identified and the sample patients who attended because of injury were interviewed. Injured cases that needed immediate transfer to other hospitals as well as children that had previously attended with the same injury were excluded.

A single population proportion formula was used to determine the sample size and the following assumptions made: confidence level 95% and absolute precision or margin of error to be 3% and prevalence 70.5% [8]. Considering a 10% non-response rate a sample size of at least 963 children were settled on. Systematic, random sampling techniques were used to select participants to interview. Data were collected using an interviewer-administered questionnaire which was prepared by reviewing previous research done on the same topic. To maintain data quality, training was given to data collectors and supervisors. In addition, the questionnaire was pre-tested on 94 injured cases in Debark Hospital (Debark, Ethiopia) to identify potential problems. Data collection was supervised by the study team to check for completeness and consistency.

Data were entered and cleaned using EPI-INFO and analysed using IBM SPSS Statistics version 20. Frequency distributions and percentages were calculated to describe socio-demographic characteristics. Simple and multiple logistic regression analyses were used to explore associations between unintentional injury and dependent variables of the study. Odds ratios and 95% confidence intervals were used as measures of association. In an effort to identify characteristics independently associated with unintentional injury, an exploratory multivariable logistic model was fitted with the characteristics that were individually associated with unintentional injury at 0.2 significance level. Predictors with $p < 0.05$ in the model were accepted as statistically significant.

Ethical clearance was obtained from the Institutional Review Board of the University of Gondar, prior to the commencement of the data collection and participants of the study were informed about the purpose of the study and written consent was obtained before conducting the data collection.

Result

Socio-demographic characteristics of respondents: A total of 963 cases were invited to take part in this study of whom 893 (92.7%) were willing to do so. Of these, 60.5% ($n = 540$) were male, the majority 51.4% ($n = 459$) were in school, 77.8% ($n = 695$) were above the age of 5 years and 44.5% ($n = 400$) were accompanied to the hospital by their mothers. More than 44% ($n = 395$) of

children lived with their mother while 17.5% ($n = 157$) of them were living with guardians. Most of the parents or guardians were married ($n = 708$, 79% and 716, 80% respectively) and 61% ($n = 543$) of the children's families were in a middle-income bracket; 48.6% ($n = 434$) of the parents/guardian were literate. In addition, 62% ($n = 412$) of mothers and 46% ($n = 551$) of fathers of children were housewives and farmers respectively. This data is described in detail in Table 1.

Prevalence of unintentional injury: The prevalence of unintentional injury among all the injured children attending the emergency department was found to be 62% ($n = 554$). Burns and traffic injuries were the commonest injury types while poisoning and drowning, or near drowning, were rare.

Falls caused 247 (28%) of the injuries. The majority (61.3%, $n = 547$) of these children had fallen on level ground (Fig. 1).

The number of road traffic injuries was 173 (19.5%). Reviewing the activity of the children at the time of the road traffic injuries revealed that 53% ($n = 92$) of the injuries occurred while going to or from school, over 30% ($n = 54$) of the children were injured while playing with their peers and the remaining 16% ($n = 28$) were

Table 1

Socio-demographic characteristics of children with unintentional injuries and their carers presenting to Amhara National, Regional State Referral Hospitals Ethiopia, April 1 to 30th, 2016 ($n = 893$).

Variables		Frequency (%)
Age of parents/guardians in years	18–24 years	47(5)
	25–34 years	255(29)
	35–49 years	451(50.5)
	50–64 years	140(16)
Sex of children	Male	540(60.5)
	Female	353(39.5)
Age of children	<=5 years	198(22)
	>5 years	695(78)
Marital status of the mother	Married	708(79)
	Widowed	76(8.5)
	Single	57(6)
	Separated	29(3)
	Divorced	23(3)
Marital status of the father	Married	716(80)
	Single	60(7)
	Widow	49(5.5)
	Separated	43(5)
	Divorced	25(3)
Educational status of the parents/guardians	No education	434(49)
	Primary education	194(22)
	Second education	163(18)
	College education	102(11)
Child educational statuses	In school	459(51)
	Preschool	434(49)
Occupation of the mother	Employ	135(15)
	Petty trader	174(19.5)
	House wife	551(62)
	Day laborer	33(4)
Occupation of the father	Farmer	412(46)
	Employ	262(29)
	Petty trader	93(10)
	Day laborer	126(14)
Living with	Father	340(38)
	Mother	397(44.5)
	Guardian	156(17.5)
Income description of the parents/guardians	Middle	543(61)
	Low	292(34)
	Wealthy	58(6.5)

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