Unintentional Injuries in Children Up to Six Years of Age and Related Parental Knowledge, Attitudes, and Behaviors in Italy

Gabriella Santagati, MD, Luigi Vezzosi, MD, and Italo F. Angelillo, DDS, MPH

Objectives To describe risk factors associated with unintentional injuries among children aged <6 years and to examine parents' level of knowledge, attitudes, and behaviors about pediatric injuries and related preventive measures.

Study design A cross-sectional survey was conducted between May and July 2015 on a random sample of 794 parents of 3- to 6-year-old children through a self-administered anonymous questionnaire.

Results A total of 409 parents participated. Two-thirds of the children had experienced at least 1 unintentional injury in the previous 12 months. More than one-half of these children were boys. The leading cause was falls; the injuries occurred mainly at home, and only 9.2% were brought for attention to an emergency department. Parents who did not believe that it is possible to prevent unintentional injuries were more likely to have had a child injured. Approximately 70% of respondents were aware of security measures to prevent pediatric injuries, and this knowledge was more prevalent in older parents and in those with at least a college level of education compared with those with a middle school education. The perceived utility of education about preventive measures of pediatric injuries had a mean value of 8.9 on a Likert scale of 1-10 (1, not useful, to 10, very useful) and was significantly higher in mothers.

Conclusions This study highlights a clear need for public health educational programs for parents regarding prevention of unintentional injuries in children as a valuable tool to increase safety and injury prevention and to reduce risks, because the majority of such injuries occur at home. *(J Pediatr 2016;■■:■■-■■).*

U nintentional injuries among all age groups of children and adolescents is a well-recognized global public health problem with a sustained high rate of disability, death, and health care expenses.[1] There is substantial evidence that young children are the most vulnerable age group and that injuries occur mostly at home, in school, on roads, and in recreational and sports areas.[2,3] The most common unintentional injuries are falls, pedestrian and bicycling accidents, drowning, poisoning, fire-related burns, and suffocation. The vast majority of these injuries are preventable.[4] Parents and other caregivers have a primary role in supervising and keeping the children at lower risk for injury. Parents' knowledge and practices are essential for behavior-forming of children and an appropriate use of interventions to prevent unintentional injuries.

Previous epidemiologic studies conducted in different countries have focused on assessing the frequency of unintentional injuries and associated risk factors in healthy populations of children.[5-21] Few studies have examined the knowledge level and behaviors of parents regarding child injury prevention,[8,21-28] and there is no current literature of this kind in Italy. Understanding the frequency of and risk factors for children's unintentional injuries and the related level of knowledge, attitudes, and behaviors of their parents can lead to optimized implementation of prevention strategies.

The primary objective of the present investigation was to describe the characteristics of unintentional injuries and to analyze the associated risk factors in a sample of Italian children aged <6 years. A secondary objective was to describe parents' level of knowledge, attitudes, and behaviors regarding unintentional injuries in their children.

Methods

Between May and June 2015, a cross-sectional survey was conducted in the city of Naples, Italy. Five kindergartens and primary public schools were selected at random, and in each kindergarten and school, 8 classes were selected at random. A random sample of 794 parents of 3- to 6-year-old children was available to participate. The sample size was determined using a formula for estimating a single population proportion with the assumption of a 95% CI, a 5% margin of error, and a prevalence of 50% of subjects with an adequate knowledge level about pediatric injuries. To compensate for a nonresponse rate of 50%, the invited sample size was found to be 768 subjects.

Permission was secured from each institution through a formal letter with a description and objectives of the study. Before study commencement, a package was sent, addressed at random to either the mother or the father, containing a letter explaining the objectives of the study and the role of the participants, a 2-page anonymous and confidential self-administered questionnaire, an informed consent form, and a self-addressed envelope for returning the questionnaire to the research team. The letter also indicated that parents received the questionnaire because

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their child was selected at random in the kindergarten/ school and included instructions to return the completed questionnaire to the kindergarten/school within 7 days of receipt. The parents were informed that their participation was voluntary, that all information gathered would be anonymous, and that confidentiality of information would be maintained by omitting any personal identifying information from the questionnaire. A parent from each family completed the questionnaire at home. If the questionnaire was not returned within the prescribed time period, the research team made a reminder phone call to the head teacher. No incentives were offered for completion of the survey. Respondents were never contacted directly by the research team. Ethical approval of the study protocol and of the survey instrument was obtained from the Ethical Committee of the Second University of Naples. All participants were asked to provide written informed consent before collection of data, and all had a right to decline to complete the questionnaire without any threat or disadvantage.

The self-administered structured questionnaire was developed and pilot-tested in a convenience sample of 40 parents for feedback on its overall acceptability in terms of length, clarity, and question formats. The internal consistency reliability was estimated using the Cronbach α. The questionnaire consisted of 25 questions grouped into 4 topics of interest covering: (1) demographic and socioeconomic information of the respondent parent, including sex, age, highest attained educational qualification, marital status, occupational level, number of children, and characteristics of the selected child, such as sex, age, and birth order; (2) knowledge of the leading causes of pediatric unintentional injuries, home environment at greater risk, security measures for preventing pediatric unintentional injuries, and related most common channels of information; (3) attitudes toward pediatric unintentional injuries, by measuring the perception of risk, the possibility of preventing injuries, and the importance of being informed about their preventive measures; and (4) frequency of unintentional injuries. Study participants were queried about whether their child had experienced an unintentional injury in the 12 months preceding the interview date. An unintentional injury was defined as an event that was not deliberately caused, for which the child received medical care from a doctor at a hospital or a private office or first aid from someone or was not treated but caused the child to miss one-half day or more of regular activities. If the child had been injured, participants were asked about the last 3 episodes of injury, the external cause of injury, body parts injured, setting where the injury occurred, activity at the time of injury, and medical treatment after the injury. The final questionnaire is provided in the Appendix (available at www.jpeds.com).

Statistical Analyses

The statistical analysis was conducted in 2 stages using the model-building strategy suggested by Hosmer et al.[29] First, the Student t test was used for independent samples to assess differences between means, and the χ^2 test was used to assess differences between categories to determine their association with the outcomes of interest. Second, variables found to be associated at the $P \leq .25$ level were introduced into multivariate logistic and linear regression models to investigate independent characteristics associated with the dichotomous and continuous outcomes of interest. Three models were constructed: knowledge about the availability of security regulations for preventing unintentional pediatric injuries (model 1), perception of utility of being informed about preventive measures of unintentional pediatric injuries (model 2), and profile of parent whose child had experienced at least 1 unintentional injury in the previous 12 months (model 3).

For the purpose of analysis, outcome variables originally consisting of multiple categories were dichotomized into 2 levels. In model 1, parents were classified as those aware of the availability of security measures for preventing pediatric unintentional injuries and all others; in model 3, they were grouped according to whether the child had experienced at least 1 unintentional injury in the previous 12 months vs all others. A stepwise backward elimination process was used, and the final models included only variables providing a significant explanation of outcomes, in which the criterion for entering into the model was a $P > .20$ and that for exiting the model was a $P < .40$. The following independent variables were included in all models: age, sex, education level, and number of children of the respondent and age, sex, and birth order of the selected child. The knowledge of prevention measures and physicians as a source of information also were included in models 2 and 3. The variable perception of the utility of education about preventive measures was included in models 1 and 3. The variable number of child injuries occurring in the previous 12 months was included in model 2. The variable knowledge of the most frequent cause of accidents in children aged <15 years, knowledge of the domestic environment as increasing the risk of injury, and perception that it is possible to prevent pediatric unintentional injuries were included in model 3. In the logistic regression models, ORs and their 95% CIs were calculated. Standardized regression coefficients (β) and SEs were presented in the linear regression model. All statistical tests were 2-tailed and differences were considered to be statistically significant at a P value $\leq .05$. All analyses were conducted using Stata 10.1 statistical software (StataCorp, College Station, Texas).[30]

Results

Of the 794 parents who were asked to complete the questionnaire, 409 accepted, for an overall response rate of 51.5%. Selected characteristics of the study participants are presented in Table I. Two-thirds of the respondents were mothers, the mean age was 38.3 years, the vast majority were married, and the most common educational level was a college degree or higher. The mean age of the selected children was 4.9 years, more than one-half were male, and roughly one-half were first born.

Internal consistency reliability assessed using the Cronbach α was respectively 0.6 for the attitudes subscale and 0.7 for the knowledge subscale. The majority (70.2%) of respondents were aware of security measures to prevent pediatric