

Perception of Unintentional Childhood Injuries among Mothers in Rural South India

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Summary

Parental perception of safe and risk-free environment is critical in the prevention of unintentional childhood injury. In this cross-sectional study, hundred mothers from 13 clusters were interviewed to assess the perception of mothers regarding the risks and hazards leading to unintentional childhood injuries from March to April 2013. A tool developed by Glik *et al.* was used. Mothers' perception of likelihood of injury from hazards such as household door and drawers, small toys, plastic bags, and cribs was poor. Mothers had a poor perception of injury by entrapment in refrigerators, choking, and strangulation by a rope. Age, education, and literacy ($P < 0.05$) were found to be significant predictors of perception of risk and hazard. Very few mothers (9%) believed injuries can be completely prevented and illiteracy ($P < 0.05$) was associated with poor perception on prevention. Health education should focus on improving maternal perception which may bring positive impact on prevention.

Key words: Perception, prevention, risk and hazards, unintentional childhood injuries

Unintentional childhood injury is an emerging public health problem globally. In India, the mortality rate related to injuries among under-5 children is 302/100,000 live births, contributing to 5.9% of the total deaths in the same age group.^[1] Within the injury prevention community, it is accepted that up to 90% of childhood injuries are both predictable and preventable.^[2] A recent Safe Kids Canada survey revealed that most parents are not aware that the leading health risk in children is unintentional injury.^[3]

Strategies targeting a child's characteristics (temperament, activity level, and cognitive abilities) have been shown to have a positive impact in reducing injury-risk behavior but have failed to achieve lasting results.^[4] Studies suggest that "adequate" adult supervision can play a protective role in injury prevention but is often overlooked. The behavior of children and parents has been identified as key determinants for childhood injury.^[2] Many factors including parenting experiences, beliefs, parenting style, knowledge, and perception contribute to supervision practices.^[4] Proximity or being at a short distance from the child during play activities has been shown to reduce injury risk.^[5,6]

Parental perceptions determine whether certain situations are viewed as risky or risk-free and are critical in the prevention of

unintentional injury of a young child. A survey on the obstacles to achieving child safety showed that a lack of awareness about the causes of accidents was the second most frequently given response after difficulty in providing continuous supervision.^[7] The relationship between parental supervision and the likelihood of child injury has been studied; however, there is a little evidence on the association between parental beliefs regarding supervision and their supervisory behavior collectively.^[8] Hence, this study was conducted to assess the perception of mothers regarding the risks and hazards leading to unintentional childhood injuries.

This cross-sectional study was conducted by the Department of Community Health, Christian Medical College, Vellore, from March to August 2013, in Kaniyambadi block, Tamil Nadu, which has a population of 110,646 people. A European study revealed that 75% of mothers had a good perception on unintentional childhood injuries.^[7] Assuming 50% of

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Indian mothers have good perception and 20% of relative precision, sample size was calculated as 100 by the formula $4pq/d^2$. Multistage cluster sampling technique was used to recruit desired samples. Thirteen villages with highest mortality (>3 deaths) due to unintentional injuries in the past 5 years (January 2008 to December 2012) were chosen. The number of mothers with children between 1 and 5 years were listed and the cumulative population was calculated. The relative proportion of mothers in each village was calculated. This relative proportion was applied to total sample size (100) to obtain required sample from each village. Mothers from each village were recruited by simple random sampling method using computer-generated random numbers.

Perception of risk (PR) and perception of hazard (PH) were measured with an instrument developed by Glik *et al.*^[9] The tool modified according to the South Indian rural setting was translated into Tamil and back translated and was pilot tested in the villages and administered by an interviewer. The tool contains four Likert scaled questions measuring the following perceptions:

- Likelihood of injury occurring to a child (17 items), for example, "What do you think the chances are that a typical child from 1 to 5 will be injured in the following ways at least once (falls, burns, choking, etc.)?"
- Degree of seriousness of the injury (17 items), for example, "How serious do you think the following type of injury is to a typical child from 1 to 5 (falls, burns, choking, etc.)?"
- Likelihood of a hazard (19 items), for example: "What do you think the chances are a child from 1 to 5 will be injured due to the following hazards or things (automobiles, furniture, stairs etc.)?"
- Dangerousness of the hazard (19 items), for example, "How dangerous do you believe the following types of hazards are (automobiles, furniture, stairs, etc.)?"

Risk for injury is defined as the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. Hazard is defined as any source of potential damage, harm, or adverse health effects on something or someone under certain conditions. The perceived risk of injury scale and hazard scale had an alpha coefficient of 0.86 and 0.89, respectively. Each item in likelihood of injury scale ($n = 17$) was multiplied with its counterpart in seriousness of injury ($n = 17$) and added up together to a raw scale which gives PR score. The PH scale was developed by multiplying each item in the likelihood of hazard scale ($n = 19$) with its counterpart on the dangerousness of hazard scale ($n = 19$) and added up together with a raw scale which gives PH score. Data were entered in Epi Info™ Version 7.0 developed by Center for Disease Control and analyzed in Statistical Package for Social Sciences (SPSS) version 17.0. manufactured by SPSS Inc. Square root transformation of the raw scores was done to obtain normality. Predictors such as age, socioeconomic status (SES), and occupation were dichotomized and their association with PR and PH was tested using independent *t*-test.

Similarly, "Chi-square test" was used to test the association between demographic characters and perception on prevention. This study was approved by the Ethics Committee of the Institutional Review Board.

Majority (76%) of mothers were below 30 years of age. More than one-third (39%) had education beyond high school. Three quarters of them were literate and most of them (80%) belonged to the low SES category. More than half (57%) of them belonged to a nuclear family.

Mothers' perception on likelihood of injury due to specific hazards such as household doors and drawers (37% least likely [LL], 9% most likely [ML]), small toys (72% LL, 3% ML), plastic bags (77% LL, 1% ML), and cribs (40% LL, 3% ML) was poor. They also had a poor perception of injury by entrapment in cupboards or refrigerators (44% LL, 9% ML), choking (24% LL, 9% ML), and strangulation by a rope or cord (49% LL, 15% ML). Injury due to choking (29% least serious [LS], 7% most serious [MS]), bruises (23% LS, 5% MS), and puncture wounds (44% LS, 8% MS) was perceived as less serious events. Household doors and drawers (38% least dangerous [LD], 5% most dangerous [MD]), small toys (73% LD, 0% MD) and plastic bags (65% LD, 4% MD) were perceived as less dangerous hazards.

Sample population had a mean PR score of 12.1 (standard deviation [SD] - 3.6) and mean PH score of 12.5 (SD - 3.2), the range was 4.8–20.3 and 4.6–19.9, respectively. Mothers below 30 years of age had higher PR (12.5+/ 3.7) and PH (12.8+/3.4) compared to those above 30 years of age (10.8+/2.7 and 11.4+/2.5, respectively). This difference was statistically significant ($P < 0.05$). Mothers who had < 8 years of education had lower PR (10.1+/3.6) than those who had education for more than 8 years (12.6+/3.4) and this difference was statistically significant with $P < 0.05$ [Table 1]. Similar difference was also observed with PH (10.02+/2.8 vs. 13.01+/3.1; $P < 0.05$).

The mean PR score among the literate was 12.6+/3.5 and among the illiterate was 10.6+/3.4, the difference being statistically significant ($P < 0.05$). Similarly, literate women (13.01+/3.1) had higher PH than illiterate women (10.6+/3.1) with a significant statistical difference ($P < 0.05$) [Table 1]. Mothers with 1 or 2 children had a higher PH score (12.7+/3.2) than those with 3 or more children (11.2+/3.2). This difference was also statistically significant. Variables such as SES, type of family, and occupation were found to be significant predictors for low PR and PH.

Fifteen mothers believed that childhood unintentional injuries are inevitable due to fate. Only 9% of them believed that it is completely preventable. Illiteracy was associated with poor perception on prevention ($P < 0.05$) [Table 2].

In our study population, 84% believed that injury can be prevented, 9% believed it can be completely prevented. This was in concordance with the European Child Safety Alliance study where majority of parents agreed that most

Table 1: Univariate analysis of factors associated with perception of risk

| Exposure variable | Categories | n | Mean perception of risk score \pm SD | Independent t-statistic | P |
|--------------------|-------------------|----|--|-------------------------|--------|
| Age (years) | <30 | 76 | 12.5 \pm 3.7 | -2.02 | 0.04* |
| | \geq 30 | 24 | 10.8 \pm 2.7 | | |
| Education (years) | <8 | 82 | 10.1 \pm 3.6 | -2.69 | 0.008* |
| | \geq 8 | 18 | 12.6 \pm 3.4 | | |
| Literacy | Illiterate | 24 | 10.6 \pm 3.4 | -2.49 | 0.014* |
| | Literate | 76 | 12.6 \pm 3.5 | | |
| Type of family | Nuclear | 57 | 12.01 \pm 3.7 | -0.49 | 0.62 |
| | Extended/joint | 43 | 12.37 \pm 3.4 | | |
| SES | Low SES | 80 | 12.08 \pm 3.5 | -0.45 | 0.65 |
| | High SES | 20 | 12.49 \pm 3.8 | | |
| Occupation | Housewives | 82 | 12.3 \pm 3.5 | 1.18 | 0.24 |
| | Working women | 18 | 11.2 \pm 3.8 | | |
| Number of children | \leq 2 children | 83 | 12.5 \pm 3.6 | -2.24 | 0.02* |
| | >2 children | 17 | 10.4 \pm 3.2 | | |

*Significant P value. SD: Standard deviation, SES: Socioeconomic status

Table 2: Factors associated with perception on injury prevention

| Variables | Categories | Injury preventable | | | Chi-square statistic | P |
|--------------------|-------------------|--------------------|------------|--------------|----------------------|-------|
| | | No, n (%) | Yes, n (%) | Total, n (%) | | |
| Age (years) | <30 | 64 (84.2) | 12 (15.8) | 76 (100) | 0.01 | 1.0 |
| | \geq 30 | 83.3 (15) | 16.7 (85) | 24 (100) | | |
| Education (years) | <8 | 5 (27.8) | 13 (72.2) | 18 (100) | 2.5 | 0.13 |
| | \geq 8 | 11 (13.4) | 71 (86.6) | 82 (100) | | |
| Literacy | Illiterate | 7 (29.2) | 17 (70.8) | 24 (100) | 4.07 | 0.04* |
| | Literate | 9 (11.8) | 67 (88.2) | 76 (100) | | |
| SES | Low SES | 13 (16.2) | 67 (83.8) | 80 (100) | 0.01 | 0.89 |
| | High SES | 3 (15) | 17 (85) | 20 (100) | | |
| Type of family | Nuclear | 9 (15.8) | 48 (84.2) | 57 (100) | 0.04 | 0.947 |
| | Joint/extended | 7 (16.3) | 36 (83.7) | 43 (100) | | |
| Occupation | Housewives | 11 (13.4) | 71 (86.6) | 82 (100) | 2.26 | 0.132 |
| | Working women | 5 (27.8) | 13 (72.2) | 18 (100) | | |
| Number of children | \leq 2 children | 13 (15.7) | 70 (84.3) | 83 (100) | 0.04 | 8.39 |
| | >2 children | 3 (17.6) | 14 (82.4) | 17 (100) | | |

*Significant P value. SES: Socioeconomic status

childhood injuries can be avoided (77%, including 32% who strongly agree).^[7]

In many Indian households, small objects, toys, rope, etc., are often used as toys to engage toddlers as mothers have a poor perception on likelihood of injuries caused by these objects. Age was a significant predictor for both PR and PH. Education and literacy were significantly associated with perception of injury and hazard. Having two or more children was also a significant predictor of PR. These findings have implications for programs that aim to increase mothers' perception to prevent injuries to toddlers at home. Mothers need to identify hazards and understand that their child, by virtue of his/her behavior, is likely to interact with this hazard, thereby creating risk of injury.^[10] This is also evident by a recent study from West Bengal, which revealed parental supervisory behavior and household level injury hazard score were the significant predictors of

unintentional injury.^[11] An appropriate sampling technique and adequate sample size are the strength of our research. A limitation we faced was the difficulty in explaining and administering the questionnaire, using the Likert scale, among rural women which may have resulted in minimal information bias.

Perception on likelihood and seriousness of certain hazards and injuries that can lead to life-threatening consequences is poor among rural Indian women. We conclude that there is a need for interventions to improve parental PR and PH which will eventually contribute to better supervision of young children. These strategies should adjunct other engineering and environmental preventive measures from policy makers.

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Conflicts of interest

There are no conflicts of interest.

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