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Parental non-compliance to childhood safety practices: A cross-sectional study

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***Background & objectives*: To assess the pattern of non-compliance to childhood safety practices among parents of children between one and five yr of age and to determine the reasons behind the same.**

***Methods*: A descriptive, cross-sectional study was conducted on 120 children between one and five yr of age through a questionnaire-based interview of the primary carer. Poor compliance was defined as compliance to <85 per cent of the recommended practices.**

***Results*: Of the total 48 injuries, 32 were serious (66.6%). Falls and burns/scalds were the two common types of injuries. Nearly three-fourths (72.5%) of families showed overall poor compliance. Poorest compliance was observed towards four safety practices namely, helmet wearing, restricting number of pillion riders to two on a two-wheeler, seatbelt wearing in a car and avoiding food items with a high risk of choking in children <3 yr. Parental perception of 'unnecessary' and 'lack of knowledge' were the main reasons behind non-compliance.**

***Interpretation & conclusions:* Low compliance among families occurred with respect to safety on motor vehicles and avoidance of choking hazards. Change of parental perception and improved awareness is necessary for the prevention of unintentional childhood injuries.**

Key words Accident prevention – caregivers - childhood safety - choking hazard - safety on motor vehicle - unintentional injuries - wounds and injuries

A multicentric study conducted in 2021 reported the prevalence of unintentional injuries among children from six months to 18 yr to be 4.7 per cent [95% confidence interval (CI): 4.4-4.9][1]. Around 6.4 per cent of all deaths in children aged 1-4 yr are reportedly due to accidental causes, which makes it the sixth most common cause of death in this age group[2,3]. The current state of parental compliance to childhood safety practices has not been studied in India. As adequate parental education has been shown to reduce the incidence of childhood injuries by 50 per cent[4-6], this study was conducted to assess parental compliance to childhood safety practices and determine the reasons behind non-compliance, as this information would help in better implementation of childhood safety practices, for the effective prevention of unintentional childhood injuries.

Material & Methods

This cross-sectional study was conducted between April 2022 and July 2022 in the departments of Paediatrics and Paediatric Surgery, Jawaharlal Institute of Post-graduate Medical Education & Research (JIPMER) Puducherry, India after obtaining the Institute Ethics Committee clearance. The study participants were primary carers of 120 children between one and five yr. of age visiting the OPD. After obtaining written informed consent from the carers, a questionnaire was administered to capture the types of injuries that the child had sustained over the past six months, the sociodemographic details of the family and to assess compliance to childhood safety practices for the prevention of the seven types of unintentional childhood injuries – road traffic accidents, poisoning, burns, choking, drowning, stabs/cuts and falls. Following the practice, 'always' was taken as 'compliant' and following it 'sometimes' or 'never' was considered 'non-compliant'. Injuries that resulted in a hospital visit were counted as serious. Out of the 18 questions, families were asked only those that were relevant to them, for example, families not using a car were not assessed for seatbelt use. Families were labelled as having 'overall poor compliance' when they were compliant to <85 per cent of the questions applicable to them.

Sample size: We realized that non-compliance would not be uniform across all practices with the assumption that a few practices, like seatbelt use in the car would have a high non-compliance of up to 90 per cent with the precision of five per cent and alpha error of five per cent the estimated sample size was 139. Likewise, for certain practices, most families might comply with the recommended safety guideline, making non-compliance less likely, around 20 per cent with five per cent precision and five per cent alpha error; the sample size estimated was 246. However, due to the time limitation for the study, only 120 respondents could be included as a sample within the decided study period.

Statistical analysis: Reasons for non-compliance were organized into common themes. Univariate analysis was conducted to find an association between overall non-compliance and risk factors. Chi-square and students' t-test were performed for categorical and continuous variables, respectively, at 0.05 level of significance using Stata IC 14.2 (Stata Corp LLC, college Station, TX, USA).

Results

Baseline characteristics and injuries in the past six months: The mean age of the children was 32.5±14 months, 67(55.8%) were males. The total number of children who had sustained serious injuries of any type was 31(25.8%). Of the total 48 injuries, 32 were serious (66.6%). The order of occurrence of serious injuries was burns/scalds [12(37.5%)], falls [13(40.6%)], poisoning [3(9.4%)], choking [1(3%)] and stabs/cuts [3(9.4%)], respectively. There were no road traffic accidents or drownings. There were no deaths or disabilities resulting from any of the injuries.

Most of the burn injuries (99.9%) had occurred because of contact with a hot object like hot utensils. Of the 99 two-wheeler users, most families [89(89.9%)] made the child sit in front of the driver. Only two (8.4%) out of 24 children who were >4 yr age wore helmets; none were harnessed to the driver. Kerosene and phenyl were the commonest agents for accidental poisoning. Of the three cases of serious poisoning, accidental ingestion had occurred because the liquid was stored in a cold drink bottle.

The two predominant reasons for non-compliance were parental perception of the practice being 'unnecessary' and lack of knowledge about it. Less than 50 per cent of the parents were compliant in the following four domains: helmet use on a two-wheeler, restricting to two people on a two-wheeler, seatbelt use in the car and avoidance of food with a high risk of choking like pomegranate seeds/groundnuts in children <3 yr. For the remaining questions, >50 per cent of the families were compliant (Table). Overall, poor compliance was seen in 72.5 per cent of the families. On univariate analysis, none of the risk factors had a significant association with overall poor compliance: age (32.5±14 yr *vs.* 34.8±13.4 yr, P 0.13), female gender [79.25 *vs.* 20.75%, risk ratio (RR) 1.1, 95% CI: 0.9-1.4], birth order higher than two (74.36 *vs.* 25.64%, RR 1.03, 95%, CI: 0.8-1.3), primary carer educated up to elementary school or lower (78.58 *vs.* 21.42%, RR 1.09, 95% CI: 0.8-1.4) and primary carer employed (RR 1.24, 95%, CI: 0.96-1.61).

Discussion

In this hospital-based observational study, 25.8 per cent of children between one and five yr had sustained serious injuries. The rate reported so far ranges from 4.7% (95% CI: 4.4-4.9) to 39.1% (95% CI: 35.4-

Table. Frequency of parental non-compliance to childhood safety practices and reasons

Childhood safety practice	Non-compliant, n(%)	Reason for non- compliance, n(%)
Road traffic accidents		
Helmet wearing on a two-wheeler (n=24*)	22 (91.6)	Inconvenient, 2 (8.9) Did not know, 20 (90.9)
Restriction to two persons on two-wheeler (n=99†)	89 (90)	Unnecessary, 57 (64) Inconvenient, 32 (36)
Seatbelt use in a car (n=67‡)	47 (70)	Unnecessary, 9 (19.2) Uncomfortable, 38 (80.8)
Hand holding while road crossing (n=120)	9 (7.5)	Unnecessary, 9 (100)
Adult supervision when exploring the neighbourhood (n=120)	36 (30)	Unnecessary, 16 (44.5) Supervised by older minors, 20 (55.5)
Poisoning		
Safe storage of medicines (n=112§)	3 (2.66)	Unnecessary, 3 (100)
Checking expiry date of medicine (n=112§)	4 (3.6)	Throw medicines each time they buy, 4 (100)
Safe storage of kerosene/toilet cleaners/household poisons (n=106‖)	8 (7.5)	Unnecessary, 8 (100)
Burns		
Child-safe or covering of low-lying plug points (n=59¶)	19 (6.4)	Unnecessary, 8 (42.1) Did not know, 11 (57.9)
Carrying the child near the stove (n=120)	27 (22.5)	No help at home, 27 (100)
Stove placement above ground level (n=120)	7 (5.8)	No kitchen counter, 7 (100)
Choking		
Toys without swallowable parts (n=120)	7 (5.8)	Unnecessary, 1 (5.8) Did not know, 6 (85.7)
Avoiding food items like pomegranate seeds & groundnut in < 3-yr-old (n=65**)	39 (60)	Did not know, 39 (100)
Drowning		
Bathing without adult supervision (n=120)	9 (7.5)	Unnecessary, 3 (33.3) Did not know, 5 (55.6) No help at home, 1 (11.11)
No or fully covered large water containers (n=120)	9 (7.5)	Unnecessary, 4 (44.4) Did not know, 5 (55.6)
Cuts/stabs		
Safe storage of sharps (n=120)	9 (7.5)	Unnecessary, 7 (77.7) No safe cabinet, 2 (22.3)
Falls		
Unsupervised playing in the park/neighbourhood (n=120)	32 (26.7)	Unnecessary, 7 (21.8) Supervised by older minors, 25 (78.2)
Sufficiently tall railing in balcony/terrace/staircase (n=83††)	11 (13.3)	Unnecessary, 6(54.5) Unable to construct a railing, rented house, financial reasons, 5 (45.5)

*24 children >4 yr were taken on a two-wheeler; †99 families used a two-wheeler with a child; ‡67 families used a four-wheeler with a child; §8 families did not store medicines at home; ‖14 families did not store any of the three household poisons; ¶61 families have no low-lying plug points in their houses; **children >3 yr were excluded; ††37 families did not have a balcony/terrace/stairs

42.9%)[1,7]. Fall-related injuries have been reported to be the most common type of injury (prevalence of 2.7%, 95% CI: 2.5-2.9), followed by road traffic accidents (prevalence of 1%, 95% CI: 0.8-1.1) by the ICMR task force[1]. However, Sharma *et al*[7] found falls (94.7%) followed by burns/fire injuries (2.7%) to be the two leading types of injuries, which is similar to our finding. The current Motor Vehicles Act requires children >4 yr age to wear helmets while travelling on two-wheelers. We found only 8.4 per cent of children >4 yr age to be wearing a helmet. Kerosene and phenyl, the commonest agents responsible for accidental poisonings, were easily accessible to children in 96 per cent of the households[7]. Parental perceptions of 'unnecessary' and 'lack of knowledge' were the main reasons behind non-compliance. Parental awareness of the level of risk in any situation and attitude towards its preventability are the prerequisites to compliance with a safety guideline[8]. This has been demonstrated by Ma *et al*[9] in their study, which showed an association between knowledge and risky behaviour (β 0.19, 95% CI: 0.13-0.24) and an attitude of preventability and supervision behaviours (β 0.27, 95% CI: 0.14-0.4).

Age >2.5 yr, living in a house that needs repair, children with challenging behaviours, working mothers, overcrowding and illiterate mothers have been reported to be risk factors for unintentional injury[7,9,10].

Our study was limited by the small sample size, which was probably the reason for the lack of significance of association with any risk factor. The degree of parental supervision could not be captured which, however, is challenging to quantify.

To conclude, a majority of the families were compliant with <85 per cent of childhood safety practices, with less than half being compliant with safety measures on motor vehicle use and avoidance of choking hazards. Parental education in a safe home environment and close supervision of young children must be scaled up. Teaching safe behaviours to young children in *balwadis* and preschools might also help.

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