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Assessment of knowledge and practices of mothers towards the most prevelant unintentional injuries among children of 4-6 years of age in Udaipur city, Rajasthan

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Abstract
The aim of this study was to assess the knowledge and safety practices of mothers regarding the most prevalent unintentional injuries among children i.e. road traffic injuries and falls among children. A descriptive research design was used and 180 mothers having children aged 4 to 6 years were selected by using Stratified purposive sampling technique. The data was collected using self designed questionnaire on twenty-three causative factors and thirty-two safety practices of these two injuries from three nongovernmental schools selected in Udaipur city (Rajasthan). The findings of the study revealed that despite the verity that Road traffic accident is the most common cause of injury in pediatric trauma surprisingly, the overall mean knowledge score of the mothers about this injury was just above the poor knowledge score (60) i.e. 64.27. In short, it was figured out that out of the five causes of Road injuries the mean knowledge score of mothers was poor for three causes which were Bicycling (60), Related to car (58) and During walking or crossing the road (56.5) and average knowledge for two causes i.e. Two wheeler riding and School bus/Van/Auto. For Falls, Slips & Trips injury the overall mean knowledge score of the mothers was 64.25 of maximum 180 score. Findings revealed that the major chunk of the respondents were having poor knowledge about the causes of Falls, Slips & Trips due to Window/balconies/Places with height, Small wheeled equipments and Play ground as the mean knowledge scores for these were 18.5, 26 and 47.5 of maximum 180 score respectively. Mean scores revealed that mothers possessed average knowledge about Stairs & Furniture/Huge equipments. Resultantly, the consequences of these results can be devastating.
Simultaneously, the overall safety practices score analysis of mothers for Road traffic injuries conclude that in all the safety practices the score range in medium adoption category (Mean Score = 94 to 118.6) apart from one practice i.e. safety equipment for which the score was low. This confirms that mothers are taking few preventive measures but, since road injuries are life threatening, all the mothers need to identify and follow specific prevention strategies to reduce the debilitating road injuries. Considering the overall safety practices scores in the Falls, Slips and Trips prevention, it can be concluded that significant proportion of mothers will be unable to prevent the injuries caused due to Furniture/Huge equipment, Windows/Balcony, At floor and In the playground because in maximum practices the scores ranged in low and medium adoption category (29.5 to 98).
So, drawing attention towards prevention from these distressing injuries is vital.

Keywords: Knowledge, practice, road traffic injuries and falls, slips and trips

Introduction
Globally, deaths from injury have increased by 10.7%, from 1990 to 2013 (Naghavi, *et al*., 2015) [14]. When a child departs due to unintentional injury, it is particularly tear-jerking, because almost every single fatality could have been prevented as injuries are currently considered as predictable and preventable (Georgia Child Fatality Review, 2015) [25]. But important gaps exist in the empirical data for cause of death estimates for a country like India where there is no national data available for the past decade (Naghavi, *et al.*, 2015) [14]. Road traffic injuries are the second most frequent cause of death in 5-14 year age group in India (Dandona, *et al.*, 2011) [3] and to date India has not established any widespread programme for the prevention of falls (Jagnoor, *et al.*, 2011) [8]. Consequently the most hopeful one to battle the injury problem is starting from the bottom and that could be achieved by

addressing the mother's knowledge base (Nath & Naik, 2007) [15] but the literature about mothers' knowledge regarding unintentional injuries from different part of world like Qalubeya governorate (Eldosoky, 2012) [5], Baghdad (Lafta, *et al*., 2014) [13], Tehran (Hatamabadi, *et al*., 2014) [6], China (Wang, *et al*., 2012) [22], Nepal (Shrestha, *et al*., 2014) [18]; and Tripura (Debnath, *et al.,* 2014) [4], Kanyakumari (Suguna, 2015) [20], Chennai (Hema and Dilli Babu, 2015) [7] etc from India expose to the fact that the mothers knowledge level still range around average category with a slight inclination towards poorer category. Along with this, parents do not hold a strong belief in the preventability of injuries, though they believe that they can somehow keep their child safe (Shrestha, *et al*., 2014) [18]. An instructive programme delivered by via mass media through a teacher or a trained personnel or a health worker or community leader in classes, courses, and special sessions can be a powerful medium to empower mother, on the various aspect of domestic accidents specially the cause and safety promotion. Arulogun, *et al*. (2013) [1], Olutayo, (2013) [16] and Suguna, (2015) [20] in their studies have also highly recommended the same.

As a result to develop a concise injury fortification instructional multimedia package, the study aimed to explore from the mothers the knowledge of the fundamental epidemiology of two injuries i.e. Road Traffic and Falls Injuries and safety practices followed for prevention of these injuries. Urgent attention is needed to reduce child injuries and address risk factors according to local context (Kataoka, *et al*., 2015) [10].

Objectives

1. To study the knowledge of mothers' regarding the causes of Road Traffic Injuries and Falls, Slips and Trips among children of 4-6 years of age.
2. To study the safety practices adopted by mothers for prevention of Road Traffic Injuries and Falls, Slips and Trips among children of 4-6 years of age.

Research Methodology

The study was conducted purposively in Udaipur city (Rajasthan) and three non-government schools were selected fulfilling the criteria of objectives. A stratified purposive sampling technique was used. The study population was divided into two strata i.e. 90 mothers having children of 4-5 years of age and another 90 mothers having children of 5-6 years of age. So, a total of 180 mothers constituted the sample. Self-designed questionnaire was used to elicit the response related to the causative factors and safety practices of the two prevalent injuries i.e. Road Traffic Injuries and Falls, Slips and Trips. Specifically, 180 respondents were asked to comment on twenty-three causative factors and thirty-two safety practices of both the injuries. On the basis of the scores attained the level of knowledge scores of the mothers was classified as poor for 1-60, average for 61-120 and good for 121-180; and the level of safety practice adoption scores was classified as low for 1-60, medium for 61-120 and high for 121-180 score.

Research Findings and Discussion

The first part of the research bring forth the Mothers' knowledge regarding the causes of Road Traffic Injuries and Falls, Slips and Trips and the second part pertaining to the safety practices adopted by mothers towards prevention of these two injuries.

A. Mothers' Knowledge regarding the Causes of Unintentional Injuries

I. Mothers' Knowledge regarding the Causes of Road Traffic Injuries

Road traffic injuries can occur while bicycling, in the car, at the time of two wheeler ride, during walking or crossing the road and because of school bus. The comprehensive analysis of mothers' knowledge regarding the road traffic injury is presented in Fig.-1.

The response relevant to the causes of Bicycle injury revealed that greater part of mothers (90.6%) were of the wrong opinion that it was safe to ride a bicycle on non-traffic/ empty roads, only 57.2% answered acceptably that wearing helmet while cycling was necessary. Overall the mean knowledge score concerning Bicycling was 60 which range in poor knowledge level of the mothers.

To shun Car related injuries 74.4% respondents agreed that the Child should sit at the front seat of car after putting on the seat belt however the fact is, the child should always sit at the rear seat and on a car seat restraint. World Health Organization (2015) [24] states that booster seats are estimated to reduce risk of injuries by 59% of children aged 4-7 years. Just 55% respondents reported correctly that the Children should sit only at left hand side of the back seat of car and just 16.1% were familiar by the concept that the Speed of a car should not exceed 30 km/hr in front of school/home whereas remaining were mistaken of 40 km/hr. The mean poor knowledge score (58) of the mothers related to car can compound the car related injuries among children.

Response related to Two wheeler injury indicated that 68.3% respondents reported wrongly as It was safe for a child to stand in the front portion of a two wheeler and 54.4% had a wrong notion that Riding on a two wheeler was safe for children. The mean knowledge score of mothers for causes of two wheeler injury was average (69.5 of maximum 180) so it can be concluded that respondents lack the knowledge of the menace of a two wheeler ride with children. School-going children were more vulnerable by the two-wheelers (Sharma, *et al.,* 2011) [17].

For pedestrian injury, according to 60.6 % mothers it was safe for children to play on empty roads which asserts that majority of mothers lack the factual knowledge regarding playing in the backyard or playground away from the street or road or parking lots. Again, whether the Children should cross an empty road immediately was a wrong response given by 76.7 % of mothers. While a study conducted by Soole and Lennon, (2010) [19] states that majority of parents (75%) of 5 to 9 year old indicated that children should be at least eight year old before being allowed to cross the road on their own. Here the mean score for both statements was 56.5, which was awfully poor.

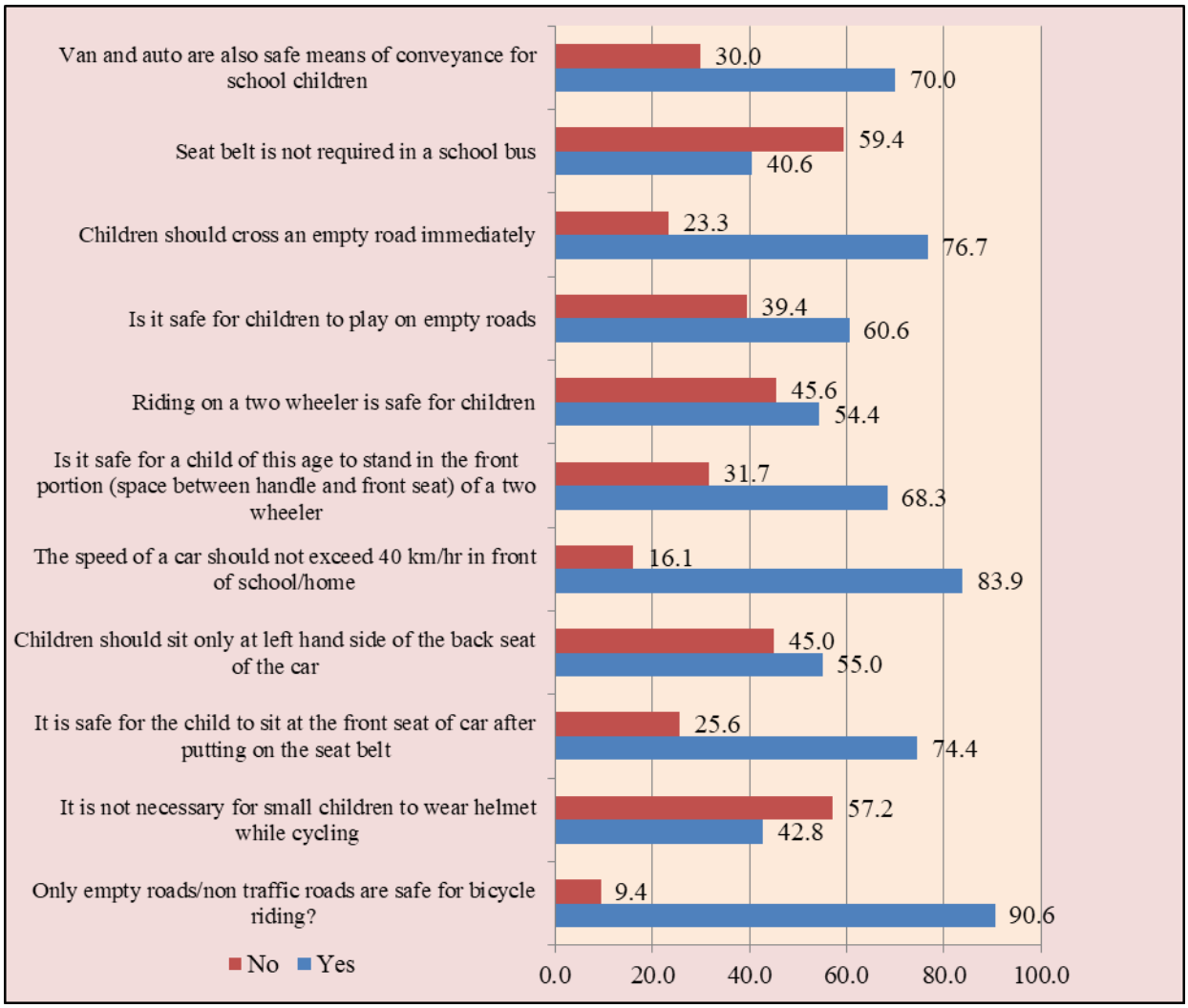

Fig 1: Mothers' Knowledge regarding the Causes of Road Traffic Injuries

Substantial respondents (59.4%) agreed that the Seat belt was required in a school bus while 70% respondents supported wrongly for Van and auto as safe means of conveyance for school children. Here the overall score for school bus/van/auto was 80.5 of 180 maximum score which reveals average knowledge of mothers.

Overall for road traffic injury, it can be figured out that out of the five causes of Road injuries the mean knowledge score was poor for three causes which were Bicycling, Related to car and During walking or crossing the road i.e. Pedestrian safety and average knowledge for two causes i.e. Two wheeler riding and School bus/Van/Auto. The consequences of these results can be devastating.

II. Mothers' Knowledge regarding the Causes of Falls, Slips & Trips

The responses assessed relevant to Mothers' knowledge regarding causes of Falls, Slips & Trips are presented in Fig. - 2. Considerable respondents (90.6%) opined correctly that Lack of two way light arrangement in stairs can cause falls while two sided safety gate is necessary in stairs for children was reported incorrectly by 96.7% mothers, which disclosed the fact that the concept of stair safety gate was still not known. Kumar, *et al*. (2013) [12] concluded that stair gates should be present in the houses. Mean score (84.5 of 180) revealed that mothers possessed average knowledge about Stairs. Mothers response towards the causes of falls due to Window/Balconies/Places with heights make known that 91.1% were wavering to the statement that Windows should have strong grills which can be opened and 88.3% of them were indecisive regarding The height of the railing on the terrace. Overall Mothers' Knowledge regarding Window/balconies/Places with height was 18.5 of 180 maximum score which is awfully poor. Unawareness regarding the safety features of railings and windows can compound the incidences of falls as heights causes a lot of traumatic injuries (Babu, *et al*., 2016) [2].

To evade falls during Skating/Using micro scooters etc, 95.6% reported erroneously that A child should do skating only on an empty road and 75.6% had a misconception that Child should only wear a helmet while skating. The low mean knowledge scores of both the statements (26 of 180), projected that the respondents don't have liberal knowledge concerning the safe path and protective gears for small wheeled equipments.

Furniture/Huge Equipments also pose injury among children. When response to this was elicited 73.3% were faltering to the use of Toughened glass furniture for children as well as 52.8% were uncertain to the utility of heavy base for Furniture/huge equipments. This uncovered to the fact that respondents were not acquainted nicely to the safety standards of furniture/huge equipments as the mean knowledge score was only 66.5 of 180 score.

When asked about the causes responsible for Falls, Slips & Trips on floor, it was cheering to find that 83.9% respondents believed that Light rugs/carpets can cause falls

in children and 74.4% understood the importance of Shoes with Velcro/elastic laces to prevent children from falling. The overall mean knowledge score (142.5) for this, ranged in good knowledge score category of 120-180.

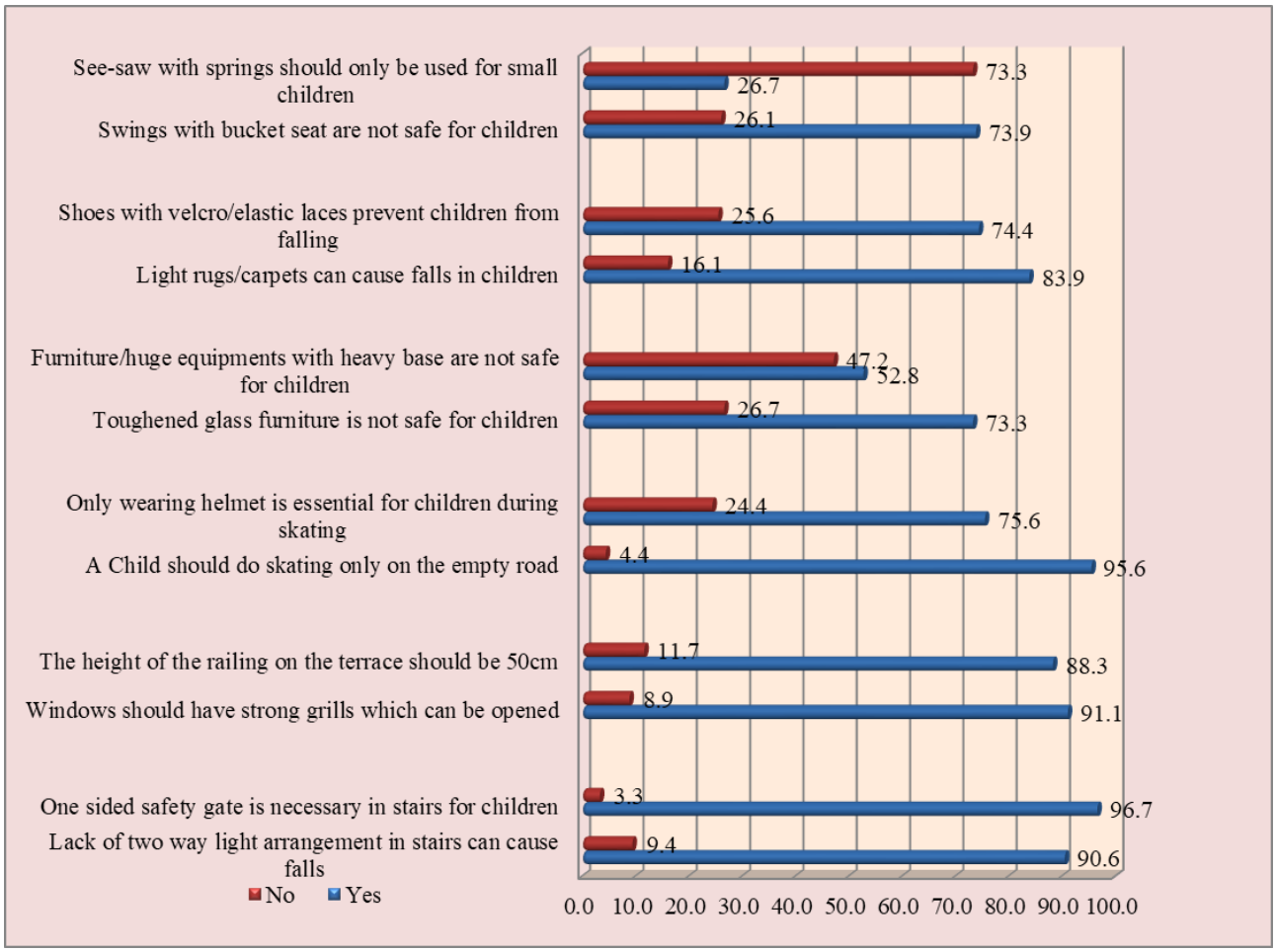

Fig 2: Mothers' Knowledge regarding the Causes of Falls, Slips & Trips

Regarding Playground equipment injury as depicted in Fig.-2, 73.8% mothers were not supportive for Swings with bucket seat for children and only 26.7% affirmed that See-saw with springs should only be used for small children. The low scores (47.5 of 180) illustrate poor knowledge regarding the certainty that children of this age group should use only bucket seat swings and see saw with springs. Comprehensively, there is a burning need to accentuate the causes of these injuries to prevent fall, slips & trips.

B. Safety Practices Adopted by Mothers for Prevention of Unintentional Injuries among Children.

I. Safety Practices Adopted by Mothers for Prevention of Road Traffic Injuries

Respondents were asked to disclose various safety measures adopted to prevent their children from fatal road injuries and the results received are presented in Fig. 3 Bicycling is an all the age form of recreation with positive health consequences but it was shocking to know that 30.6% mothers, Sometimes permitted their child to ride cycle all alone on a nearby empty road. It was good to find that, 75% mothers Regularly checked the functional brakes, air in tyre of child's bicycle but only 65% were able to Stop their child from showing stunts with the bicycle and riding with uncontrollable speed all the time. Not implementing all the preventive measures related to bicycling (102.3 of 180 score) could be a cause of immense harm to the child.

Mothers when asked to report on their use of practices that addressed injury risk for car, uncovered that 32.7% mothers Sometimes fail to put child lock in car and 45.6% of them now and then Leave the child alone in car and get down to buy things. A similar study discovered the same problem, that parents often make the decision to leave their child in the car to run a quick errand (Killian, *et al*., 2010) [11]. 22.8% respondents were not alert of the Child getting out from the wrong side of the stopped car, 70.6% fulfilled their Child's wish to sit on the front seat of the car which was again a wrong practice followed and 84.5% of the mothers didn't Allowed child to play all alone in a closed car which was admirable. An average adoption practices allied to car (110 of 180 score) can be frightening.

Two-wheeler ride practices disclosed that 33.3% mothers Sometimes to cover short distances ride with 3 or 4 riders on one vehicle which reveals that riders do take risks. It was found that 46.1% mothers Carried the children, their bags, vegetable and the like on the same vehicle. The above two practices were disagreeable but it was admirable that 77.2% respondents didn't Used mobile while riding a two wheeler. The overall adoption score was found in medium category (118.6) which illustrates that the mothers were not following all the safety practices.

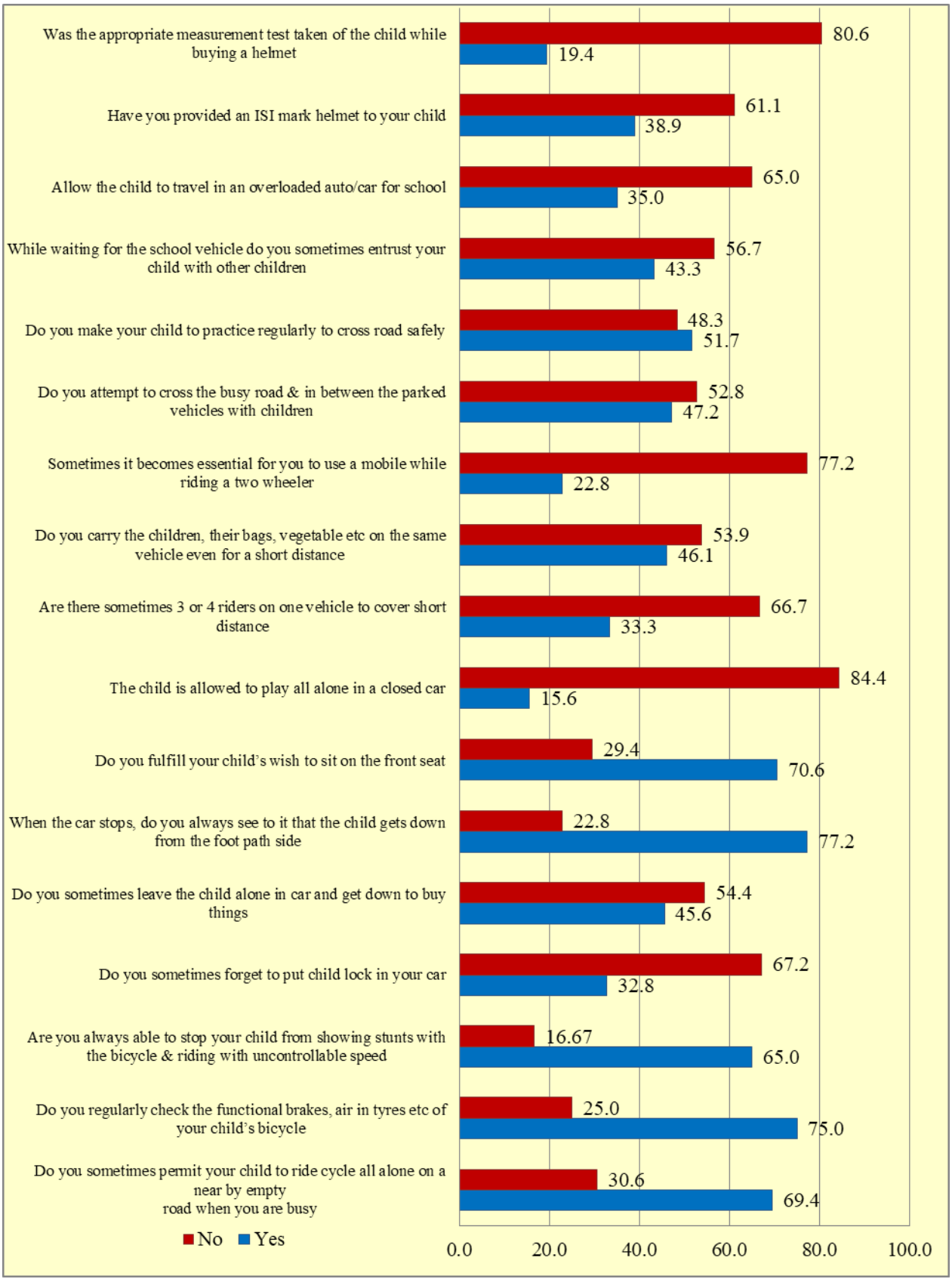

Fig 3: Safety Practices Adopted by Mothers for Prevention of Road Traffic Injuries

While talking of Pedestrian safety in current research, 47.2 % mothers Attempted to cross the busy road and in between the parked vehicles with their children which was an extremely perilous practice while only 51.7% of the respondents Regularly make efforts with their child to cross road safely. Lack of pedestrian discipline practices (94 of 180) can heighten the road injury as children cannot estimate the exact speed of traffic and they don't have perceptual motor skill to overcome the path of on-coming traffic when they cross the road.

Response related to School bus/Auto/Van discovered that 43.3% mothers Entrusted their child with other children while waiting for the school vehicle forgetting that there is no substitute supervision and 35% of them Permitted their

child to travel in an overloaded auto/van for school. The mean adoption practices relevant to school bus/auto/van were 109.5 of 180 which was woeful.

When the practice for Safety equipments was reviewed it was found that only 38.9% of mothers Provided an ISI mark helmet to their child as revealed in Fig.- 3 and just 19.4% of them Took appropriate measurement test before buying it. For cyclists of all ages, the appropriate use of a helmet decreases the risk of a head injury by 69% (WHO, 2013) [23]. The overall mean adoption score was found to be mournful for this practice as the score was found to be low i.e. 52.5 of 180.

II. Safety Practices Adopted by Mothers for Prevention of Falls, Slips & Trips

Falls is considered as a common mechanism of trauma in 0-9 years age groups or even overall (Jaipuria, *et al*., 2014) [9]. The safety measures practiced by mothers to prevent Falls, Slips and Trips among children of 4 - 6 year age are disclosed in Fig.- 4 given below. It was disturbing to find that only 46.1% respondents Had installed appropriate size and gripped hand railing on both the side of stairs in their house but it was satisfactory to find that 62.8% mothers were Always able to keep stairs clear of clutter to prevent falls/trips. The mean adoption score for stair safety was found to be medium (98 of 180 maximum score).

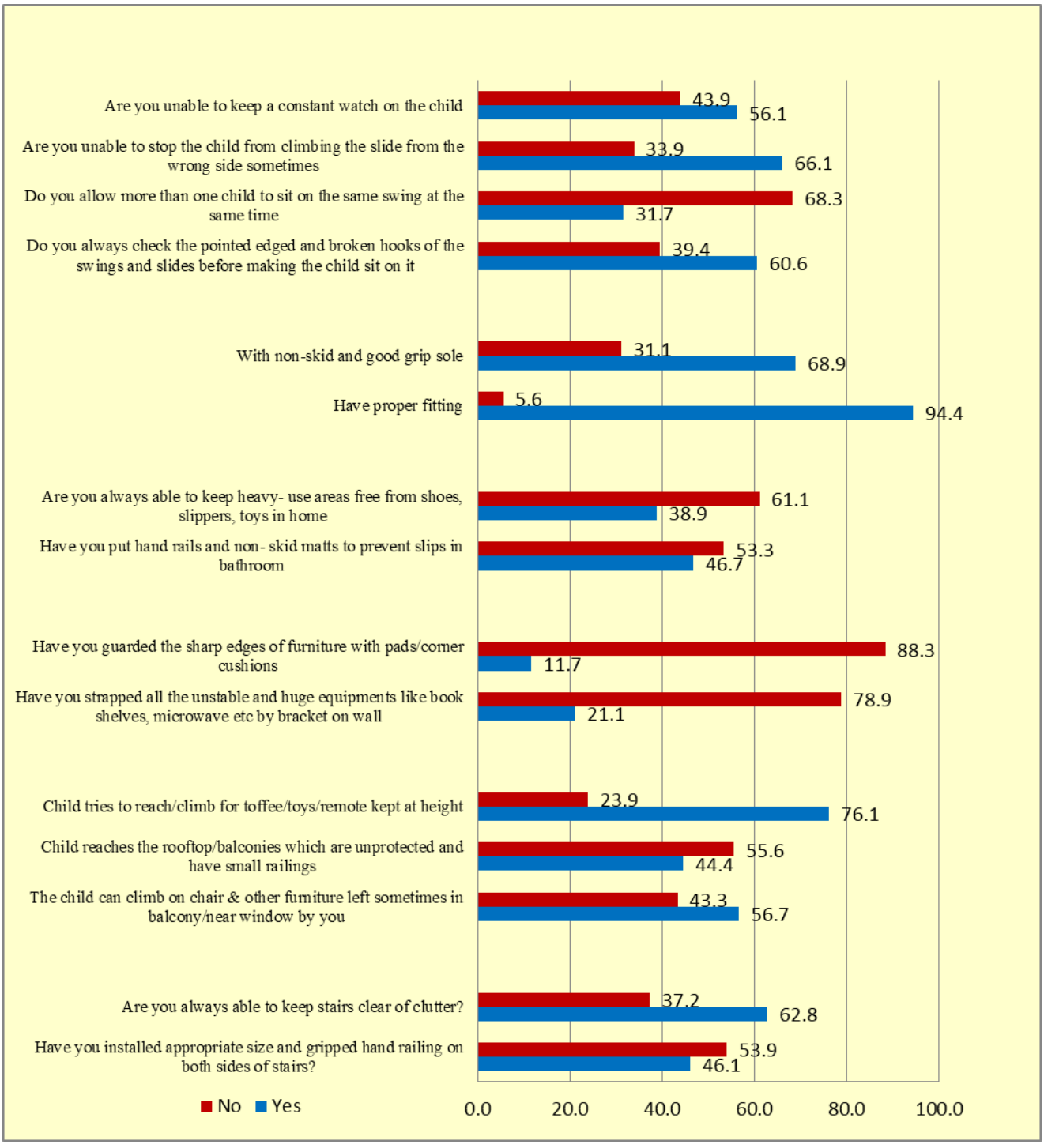

Fig 4: Safety Practices Adopted by Mothers for Prevention of Falls, Slips & Trips

About 56.7% respondents worried that their Child climb on the chair and other furniture left in balcony/near window, 44.4% bothered for their Child reaching the rooftop/balconies which were unprotected and having small railing. A study disclosed that pre-school children are also at a risk of falling by easy access to roofs (Kumar, *et al*., 2013) [12]. 76.1% respondents were concerned because their Child reach/climb for toffee/toys/remote kept at height. Georgia Child Fatality Review, (2015) [25] discloses that falls in children tend to be from balconies and windows and most frequently occur in home, and nearly three-quarters of falls from height in children are unintentional. 73.6 of 180 mean score for Window/balconies/Places with height may be a cause of immense harm to the child.

For Furniture/Huge equipment safety, 78.9% of mothers Did not strapped the unstable and huge equipments like book shelves, microwave etc by brackets on the wall and 88.3% respondents uncovered that The sharp edges of furniture was not guarded with pads/corner cushions. The reason behind mean low adoption score (29.5 of 180) may be that the concept of anchoring and padding was either not known or because of the high cost. Installation of hand rails and non-skid mats in bathroom was practiced by merely 46.7% of the mothers. A study exposed to the fact that among 98.4% preschool children, slippery floor in the house caused fall accidents (Arulogun, *et al*., 2013) [1]. Just 38.9% respondents were Always able to keep the heavy- use areas free from shoes, slippers, toys in home. The mean adoption score for Floor safety was merely 77 of 180. Generous sample (94.4%) gave priority to Good fitting footwear for children but Non-skid and good grip sole was taken into consideration by only 68.9% mothers. Overall the mean good adoption score 147 of 180 regarding footwear safety was found to be consoling.

When the Play ground safety was considered it was found that only 60.6% mothers Checked the pointed edges and broken hooks of the swings & slides regularly, 68.3% didn't Allowed more than one child to sit on the swing at the same time while 66.1% respondents were Unable to stop the child from climbing the slide from the wrong side and 56.1% were Not able to keep a constant watch on the child in the playground. Overall the mean medium adoption score 93 of 180 maximum score reveals that these practices can hinder the child for active, social fun and may become a breeding ground for injuries. Annually, emergency departments treat more than 200,000 children for playground-related injuries (Georgia Child Fatality Review, 2015) [25].

Comprehensively, drawing attention towards prevention from this distressing injury would be laudable.

Conclusion

The findings are distressing as mothers don't clutch good knowledge regarding the causative factors of these two injuries and simultaneously the safety practices are also not followed properly. Rapid and vibrant proceedings to prevent such injuries by implying a specialized training program via multimedia package intended to enhance the mothers' knowledge and safety practices regarding these injuries, is the need of the hour which will in turn help her in acquiring a better competence to prevent her child from injuries.

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