

# A study to find the safety practices of mothers for prevention of unintentional injuries among 4-6 year children

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## ABSTRACT

Specific directed efforts are required to study the problem and develop suitable communication strategies to retract the unintentional injuries in children as globally, injuries have turn out to be the universal and foremost cause of death among the children (WHO, 2012) and simultaneously it is a neglected epidemic in India (Jagnoor, *et al.*, 2012). Accordingly, 180 mothers of Udaipur (Rajasthan) were selected through a stratified purposive sampling technique using a self designed questionnaire to elicit response regarding the safety practices of mothers regarding the three prevalent unintentional injuries *i.e.* Burns, Scalds and Electrocution, Poisoning and Drowning among children of 4-6 year age. From the study results, it can be divulged that despite the reality that Burns, Scalds and Electrocution and Poisoning were alarming, less than half (40.6% and 44.2%) of the mothers did not realized the importance of following the safety measures relevant to these two injuries but mothers did added efforts to prevent Drowning as 61.9% were following the safe practices regarding this injury. These set of findings facilitated in formulating innovative and targeted communication strategies so that, a few key steps can be taken forward by the mothers in the battle to trim down injuries from the blooming lives each day.

## INTRODUCTION

The burden of child injuries is not clearly known and scientific efforts in injury prevention and control are yet to begin in India (Zaidi *et al.*, 2013 and Saharil *et al.*, 2014) and correspondingly the research in the field of injury prevention will definitely help reduce health disparities (Georgia Child Fatality Review, 2015). Consequently, the most promising one to combat the dilemma is starting from the foundation and that could be accomplished by strengthening mothers' orientation,

as they are an imperative care provider and is powerfully accountable to nurture child's curiosity and perk up their safety from the inimitable challenges of unintentional injuries (Subbiah, 2006 and Nath and Naik, 2007). But, there also it was astounding to be acquainted with mothers' awareness regarding the injury dilemma and the preventability remains inappropriately lower and also the mothers don't habitually assume regarding injury hazards in the course of their everyday interactions with their child. Most parents cannot identify specific prevention strategy (Van Beleen *et al.*, 2010). The

findings also indicated that parents do not hold a strong belief in the preventability of injuries, though they believe that they can somehow keep their child safe (Vincenten *et al.*, 2005 and Shrestha *et al.*, 2014). Looking to this, various prevention strategies need to be adopted by mothers to prevent the little bubbling lives from the fatalities of unintentional injuries. But simply “being careful” is not an adequate protection from injury. 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), Olutayo (2013) and Suguna (2015) in their studies have also highly recommended the same. The Georgia Child Fatality Review (2015) have make known that to alleviate the risk of injury among mass the application of multimedia can be a good step forward to bring not only awareness but also to promote safer interventions as ample prospects subsist for modern technology and information systems to improve injury outcomes.

As a result, to develop a concise injury fortification instructional multimedia package, the study aimed to explore from the mothers the safety practices followed for prevention of the prevalent unintentional injuries. Urgent attention is needed to reduce child injuries and address risk factors according to local context (Kataoka *et al.*, 2015).

### Objective:

To study the safety practices adopted by mothers for prevention of unintentional injuries among children of 4-6 years of age.

## MATERIAL AND METHODS

The study was conducted purposively in Udaipur city (Rajasthan). A stratified purposive sampling technique was used. A total of 180 mothers constituted the sample from three non government schools as revealed in Table A.

Self designed questionnaire was used to elicit the response related to 38 closed ended questions regarding safety practices adopted by the mothers regarding the three prevalent injuries. The respondents scored one point for each safety practice answered correctly and zero for wrong and “don’t follow” answers. The highest score

**Table A : Distribution of sample units**

Sr. No.	Age of children	Mothers of school-1	Mothers of school-2	Mothers of school-3	Total
1.	4-5 year	30	30	30	90
2.	5-6 year	30	30	30	90

was ‘180’ and the least score was ‘0’. The level of adoption scores of mothers was classified as low for 1-60, medium for 61-120 and high for 121-180 score.

## OBSERVATIONS AND ANALYSIS

Basically “being careful” is not an ample protection from injury. Various prevention strategies need to be adopted by the mothers to prevent the tiny bubbling lives from the victims of unintentional injuries. This segment of the research discussed the practices of mothers that can or cannot predispose their 4-6 year child to diverse unintentional injuries. Each injury risk for Burns, Scalds and Electrocutation, Poisoning and Drowning was treated separately so that, determinants of injury-specific safety practices could be obtained. The whole analysis has been divided and explained in three categories from I to III.

### Safety practices adopted by mothers for prevention of burns, scalds and electrocutation :

Preventive practices reported by respondents for Burns, Scalds and Electrocutation is presented in Table 1.

For prevention from Electric current and equipments of 180 mothers, only 62.2% (N=112) Protected the unused plugs/sockets with tapes and socket guards. Touching of electrical outlets by children was reported by (93.7%) mothers (Arulogun *et al.*, 2013). An obvious ignorance regarding the threat of chargers was disclosed in the study as half 50.6% (N=89) of the respondents didn’t removed the charger from the plug after every use. Along with this using two pin plugs by 75.6% (N=136) respondents also signifies the unawareness regarding the importance of using three pin to prevent electrocutation. Statistics on electrocutions from power points shows that over 70% of accidents are in the age group of 0 to 5 years (Laursen and Moller, 2009). It was make known that 77.2% (N=139) mothers did not Leave the automatic equipment on and unattended and nearly 38.3% (N=69) of the respondents uncovered to the reality that due to lack of appropriate sockets the permanent use of extended cord was made in the home. The overall mean score for Electric current and equipments 99.4 reveal the medium

adoption level of mothers which expose to the fact that nearly half of the mothers will be unable to deal after any kind of mishap due Electric current and equipments, transferring the cheerfulness of children into painful anguish.

When practices of mothers in the Kitchen were reviewed half of them *i.e.* 51.7% (N=93) reported that At times the child goes in the kitchen unattended when the cooking was in process. A study revealed that burn due to flame was found to be 40% and cooking fire was the major source (58%) of flame (Chowdhury *et al.*, 2009). The practice of Every time keeping the handle of cooking utensils in middle or back of the stove was not adopted by 76.7% (N=138) mothers. Daisy *et al.* (2001) in a case-control noted a highly significant association between burns and cooking equipment in the kitchen within reach of children. Another mistaken practice of 68.9% (N=124) mothers in the kitchen was Allowing the child to play now and then in kitchen while cooking because of the busy schedule. The overall near to low

(60) safety practices of the mothers in the kitchen (61.6) in the current study may cause devastating trauma among the children as the most serious accidents happen in the kitchen (Hadd, 1994).

For Hot liquids and solid prevention practices, to prevent burns and scalds it was found that only 7.2% mothers (N=13) Checked the temperature of bathing water by keeping the hand for 5 seconds in water. May be the remaining were unaware that they should check the temperature for at least 10 seconds. A survey study unveil that only 8 per cent of adults felt that the bathroom was a high risk area for burn and scald incidents (Peck *et al.*, 2010). For the second practice, it was found that only 49.4% (N=89) mothers each time Served the microwave cooked food after thorough stirring and testing for hotness may be the rest half not aware of the severity of uneven hotness of microwave cooked food. Most burns were caused in the home by incidents involving hot water and food (Scheven *et al.*, 2012). 15% of mothers (N=27) at times Asked their child to carry

**Table 1 : Safety practices adopted by mothers for prevention of burns, scalds and electrocution**

Sr. No.	To prevent child from burns, scalds and electrocution	Yes		No		Score	Mean score
		N	%	N	%		
<b>Prevention from electric current and equipments</b>							
1.	Have you protected the unused plugs/sockets with socket guards / tapes?	112	62.2	68	37.8	112	99.4
2.	Is the charger removed from plug after every use?	91	50.6	89	49.4	91	
3.	Use two pin plugs?	136	75.6	44	24.4	44	
4.	Leave the automatic equipment on and unattended?	41	22.8	139	77.2	139	
5.	Permanently make use of extended cords?	69	38.3	111	61.7	111	
<b>In kitchen</b>							
1.	Does the child go in the kitchen unattended sometimes when cooking is in process?	93	51.7	87	48.3	87	61.6
2.	Do you always keep the handle of cooking utensils in middle or back of the stove?	42	23.3	138	76.7	42	
3.	Sometimes allow the child to play in kitchen while cooking?	124	68.9	56	31.1	56	
<b>For hot liquids and solid prevention</b>							
1.	Do You always check the temperature of child's bathing water by keeping your hand in water for at least 5 second?	167	92.8	13	7.2	13	85
2.	Do you serve the microwave cooked hot food after thoroughly stirring and testing for hotness?	89	49.4	91	50.6	89	
3.	Do you ask your child to carry hot tea/milk to the table?	27	15	153	85	153	
<b>For fire prevention</b>							
1.	Have you trained the child to stop, drop and roll in case of fire on clothes?	37	20.6	143	79.4	37	32.5
2.	Do you have fire extinguisher in home and will you be able to use it?	38	21.1	142	78.9	38	
3.	Have you practiced with your family to escape in case of fire?	23	12.8	157	87.2	23	
4.	Are you aware about the use of different type of fire extinguishers?	32	17.8	148	82.2	32	
<b>In case of Fire/electrocution, do you have the emergency contact number of the following</b>							
	Fire brigade /Fire station, Udaipur	106	58.9	74	41.1	106	86.75
	Local electricity office, Udaipur	54	30.0	126	70.0	54	
	Hospital /Doctor (on call)	79	43.9	101	56.1	79	
	Ambulance	108	60	72	40	108	

N is the no. of respondents

hot tea/milk to the table which was an inexcusable practice. Burn from hot water tap/tea were identified by 98.0% respondents (Arulogun *et al.*, 2013) and another study revealed that out of total 120 burn patients, burns due to scalds (hot liquids) accounted for 55.83% cases (Sharma *et al.*, 2011).

The practices of mothers in the current study For fire prevention was found to be dreadful. It was found that only 20.5% (N=37) mothers Trained the child to stop, drop and roll in case of fire on clothes and mere 21.1% (N=38) of the respondents possessed fire extinguisher in home and know its operation. The most important component to surviving a home fire was the fire escape plan with the family which unfortunately was practiced by very few mothers *i.e.* 12.8% (N=23). This result was parallel to the study in which 23% of homes in the U.S. had a fire escape plan and practiced it (Ballesteros and Kresnow, 2007). Also, 82.2% (N=148) mothers were not aware of the use of different type of fire extinguishers. The overall awfully low adoption scores for fire prevention practice (32.5) expose to the fact that mothers will be unable to deal after any kind of

mishap due to fire, transferring the cheerfulness of children into painful anguish.

In case of fire/electrocution only 106, 54, 79 and 108 respondents were having Emergency contact number of fire brigade/local fire station, local electricity office, hospital/ Doctor (on call) and ambulance, respectively.

Overall the mean scores for all the Burns, Scalds and Electrocution prevention range in medium adoption category which is nerve-racking in the existing study. Analysis of burn incidence during and after the interventions showed that the programme intervention have brought a reduction in the rate of burn injuries (El-Otiefy and Zakhary, 2010). Therefore, an effective strategy for prevention of burn injuries need to be highlighted as burns are one of the most devastating conditions encountered in medicine (Nakitto and Lett, 2010).

### Safety practices adopted by mothers for prevention of poisoning :

Various safety practices adopted by mothers to prevent children from Poisoning are listed in Table 2.

Table 2 : Safety practices adopted by mothers for prevention of poisoning							
Sr. No.	To prevent child from poisoning	Yes		No		Score	Mean score
		N	%	N	%		
	<b>Against medicine</b>						
1.	Do you sometimes use spoon instead of the measuring cup while giving medicines?	123	68.3	57	31.7	57	85
2.	Do you sometimes ask the child to take medicine by himself?	72	40.0	108	60.0	108	
3.	The leftover/extra medicines are usually found to be within the reach of children?	90	50.0	90	50.0	90	
	<b>Against Mosquito Repellent ,Toilet cleaner, Phenyl etc.</b>						
1.	Do you always keep the doors and windows open while using these products?	93	51.7	87	48.3	93	85.6
2.	While using them do you always cover the edible items?	123	68.3	57	31.7	123	
3.	Cosmetics and cleaning products are often left within the reach of children?	139	77.2	41	22.8	41	
	<b>Against Art/Craft material (marker, sketch pen, clay, instant glue etc.)</b>						
1.	Do you always check the non toxic label while purchasing all the art and craft material?	48	26.7	132	73.3	48	80.5
2.	Do you allow the child to eat and do art and craft work simultaneously?	67	37.2	113	62.8	113	
	<b>Against lead</b>						
1.	Do you purchase local colored toys for children from mela?	152	84.4	28	15.6	28	57
2.	Are you giving water from age old water pipelines to your child to drink?	94	52.2	86	47.8	86	
	<b>Against poisonous gases</b>						
1.	In summers sit in the closed car with AC on?	41	22.8	139	77.2	139	139
	<b>Against pets</b>						
1.	Entrust the child with food and bath duties?	59	32.8	121	67.2	121	108.5
2.	Aware of all the implication on health of child when in contact with house pets?	96	53.3	84	46.7	96	
	<b>Against unknown plants</b>						
1.	Do you label all the house hold plants?	18	10.0	162	90.0	18	25
2.	Have you acquired information from experts' regarding in and around house hold plants?	32	17.8	148	82.2	32	

N is the no. of respondents

When the response regarding Medicinal/therapeutic drug safety practices were elicited it was found that 68.3% (N=123) mothers used spoon for giving medicine to their child instead of measuring cup. Also 40% (N=72) Asked their child at times to take medicine themselves which was a dangerous practice. Measurement errors lead to (30%) of dosing errors in children ages 5 and under (Ferguson and Mickalide, 2013). Over again half of the sample *i.e.* 50% (N=90) reported that the left over / extra medicines were actually found to be within the reach of children. In a study, 65.5% of respondents agreed that they keep medications where children can swallow them whereas preventive practices by respondents included keeping drugs in safe place was reported by 55.5% (Arulogun *et al.*, 2013). All the three practices related to Medicine were found to be a sign of negligence and unawareness regarding the intimidating effects of medicines which reveals a need for suitable informational programme. Preventive measures like education of the public with regard to proper storage and use will reduce the occurrence of poisoning with drugs (Siva *et al.*, 2015).

When the practices for Mosquito repellent, toilet cleaner, phenyl etc were examined it was found that only 51.7% of the mothers (N=93) Always kept the doors and windows open while using these products and also 31.7% respondents (N=57) Sometimes didn't covered the edible items while using these products. Sizable mothers *i.e.* 77.2% (N=139) stated that the Cosmetics and cleaning products were often left within the reach of children. Parjapati *et al.* (2013) reported household chemicals as the second most common toxic agents. The mean score for the practices followed for Mosquito repellent, toilet cleaner, phenyl etc was only 85.6 which clearly reveals

for an immediate need for detailed guidelines for mothers regarding use, storage, disposal of these products. Gorea (2009) concluded that cosmetics including perfumes, nail polishes and cleaning agents like detergents and floor cleaners cause a particular problem to children. Accidental poisoning in children revealed parents, grandparents and others who are entrusted with child care should be educated regarding the safe storage and handling of common household poisonous substances (Justin and Shobha, 2014). Research is needed to develop effective prevention strategies to further reduce household cleaning product-related injuries (McKenzie *et al.*, 2010).

When the practices for Art/craft materials were checked out it was found that While purchasing the products the non toxicity label was not checked by 73.3% (N=132) of the mothers and 37.2% (N=67) respondents informed that they permitted the child to eat and do art and craft work simultaneously. Both the flawed practices confirm that mothers were badly informed to the reality of a lot of toxicity in the art and craft material which can affect the child. Accidental poisoning in children can usually occur with arts and craft supplies in home (Asghar *et al.*, 2010).

The 84.4% sample (N=152) admitted that they purchased local colored toys from mela as well as 52.2% (N=94) were giving drinking water from age old water pipelines to their child. The low adoption score for prevention of child against Lead (57) can have adverse consequences on their physical and mental health.

Response for Poisonous gases prevention divulged that 22.8% (N=41) mothers in summers allowed their child to sit in closed car with a functional AC which was

**Table 3 : Safety practices adopted by mothers for prevention of drowning**

Prevention from drowning		Yes		No		Score	Mean score
Sr. No.	To prevent drowning inside the home and outside (pond, under construction tanks etc.) is it possible for you to	N	%	N	%		
1.	Empty the water sources (big buckets, drum, washing machine etc.) and keep out of reach of child all the time?	120	66.7	60	33.3	120	106.5
2.	Immediately empty the inflation pools after use?	102	56.7	78	43.3	102	
3.	Ensure that the tanks inside the home and the tanks under construction are always covered?	154	85.6	26	14.4	154	
4.	Always use the appropriate size of life saving jacket for child during boating?	49	27.2	131	72.8	49	
<b>Swimming pool safety</b>							
1.	Keep constant watch on child during swimming?	128	65.6	52	34.4	128	118.6
2.	Obtain information of pool and swimming related safety signs?	53	29.4	127	70.6	53	
3.	Always ensure the swimming in presence of life guard/trainer?	175	97.2	5	2.8	175	

N is the no. of respondents

a completely lamentable practice.

Against pets, 67.2% respondents (N=121) did not Entrusted the child with food and bath duties whereas only 53.3% (N=96) respondents were aware of all the implication on health of child when in contact with house pets. The mean adoption score 108.5 for pet safety ends with a suggestion that still there is a need to be careful.

The safety practices for unknown plants were staggering. It was found that only 10% (N=18) respondents Label their house hold plants and merely 17.8% *i.e.* (N=32) had acquired information from experts' regarding in and around house hold plants. The reason behind may be the unawareness of mothers regarding the poisonous and allergic effect of the ornamental plants planted inside the home/lawn or the house premises. NCIPC in tips to prevent poisoning make known that some plants in the homes may be poisonous and care is needed when small children are playing near these plants. Therefore, labeling and getting information about plants in every area where children are present, including around the perimeter of the building and in the play yard is mandatory. That way, if a child does eat a plant, accurate information can be given to the doctor or poison control center.

As per the scores calculated in Table 2 it has been found that the mean scores for medicine, against mosquito repellent, toilet cleaner, phenyl etc; against art/craft material and for pet safety range in medium adoption category and the low preventive measures were taken against lead and unknown plants (57 and 25). Therefore, comprehensive poison prevention information regarding all the aspects highlighting lead and unknown plant safety is aspired.

### Safety practices adopted by mothers for prevention of drowning :

“Prevention is better than cure” is idyllically applicable to drowning in its true sense. Mohan and Varghese (2002) divulged the fact that drowning prevention strategies are important as the victims of drowning have a very slim chance of survival and the more devastating fact is that many survivors of nonfatal

drowning have permanent neurological disabilities (Wintemute, 1990). Therefore, Lee and Thompson, (2007) unveiled that better water safety anticipatory guidance is needed for care givers.

When the response regarding drowning prevention practices were elicited from the mothers in the study as revealed in Table 3, it was found that only 66.7% respondents (N=120) Emptied the water sources (big buckets, washing machine etc.) after each use and kept them out of the reach of child all the time knowing the verity that one inch of the water can be a culprit. The reason behind the remaining 33.3% of respondents not following the practice may be the ignorance of the fact that the products most frequently involved in drowning deaths in children under five included bathtubs, five-gallon buckets, spas, hot tubs, and toilets (Weiss and Committee on Injury, Violence, and Poison Prevention, 2010).

Mere 56.7% respondents Emptied the inflation pool after each use while (N=78) mothers did not adopted this practice. According to a study, an average of 12 children under age 10 died in inflatable pools each year from 2003-2005. Because of their flexible and low sides, it may be easier for a child to climb inside of an inflatable pool (Weiss, and Committee on Injury, Violence, and Poison Prevention, 2010).

Sizeable sample *i.e.* 85.6% (N=154) adopted a praiseworthy practice of Ensuring the tanks inside the home and under construction were always covered. May be, the mothers were well-known that the depth of the water source increases the risk of drowning as well as reduced the possibility of rescue. The result was in consonance with the studies that the incidence of domestic injury was aggravated by the house condition such as the water container without covers (Kendrick *et al.*, 2005) and Young children who escaped the supervision of their caretakers drowned in unprotected water sources (Rahman *et al.*, 2007).

The majority of mothers 72.8% (N=131) stated that there was unavailability of the appropriate size of life saving jacket for their child during boating which was verified by a small personal survey done at two famous

**Table 4 : Overall safety practices for prevention of unintentional injuries**

Sr. No.	Unintentional injuries	Adoption score	Percentage of adoption
1.	Burns, scalds and electrocution	73.05(Medium)	40.6%
2.	Poisoning	79.53(Medium)	44.2%
3.	Drowning	111.57(Medium)	61.9%



lakes of Udaipur: Fatehsagar and Pichola which disclosed the fact that the life saving jackets were not available particularly for this age group (common size for all the children which was adjusted by the straps). According to United States Coast Guard in (2014), 77% of all fatal boating accident victims drowned and of those who drowned, 84% were not wearing life saving jacket.

When response regarding Pool safety practices were drawn out it was found, that nearly one-third of the respondents *i.e.* 34.4% (N=52) were unable to Keep a constant watch on their child during swimming. The result was in consonance with another study in which two third *i.e.* 65–70% claimed to have supervised their children while swimming in the swimming pools (Guevarra *et al.*, 2010). Young children should receive constant supervision by an adult while in and around water (WHO, 2015) and young children drowned when the supervisor or mother were distracted (Rahman *et al.*, 2007). May be the reason behind non vigilant observation by the mothers was the more reliability on life guard.

It was discovered that 70.6% of the respondents (N=127) didn't Obtained any additional information regarding Pool and swim safety signs. More than 96% of the parents have not participated in any activity on drowning prevention (Guevarra *et al.*, 2010). It was encouraging to find that almost all *i.e.* 97.2% (N=175) mothers Ensured swimming in the presence of life guard/trainer but mothers should know that around 19% of drowning death involving in children occurs in public pools with certified life guard present (Fenner, 2000 and Brenner and Committee on Injury, Violence, and Poison Prevention, 2003).

Overall the mean adoption score for drowning prevention (Practices at home and outside as well as swimming pool) range in medium adoption category (106.5 and 118.6). Therefore, education appears to be a promising strategy to prevent traumatic event of drowning especially for swimming pool.

In summary, it was discovered that, the overall mean adoption score was medium in all the three injuries ranging from 73.05 to 111.57 of 180 maximum score but a closer look in the study on the adoption of safety practices discovered noteworthy and at times serious gaps in the prevention of all the unintentional injuries. The findings of the current research mentioned in Table 4 make known that that despite the reality that Burns, Scalds and Electrocution and Poisoning are alarming,

less than half (40.6% and 44.2%) of the mothers did not realized the importance of following all the safety measures relevant to these two injuries. Mothers did added efforts to prevent drowning than the other injuries but disturbing was the fact that, merely 61.9% respondents were only following all the safe practices regarding this injury. For each type of injury, there was considerable variability in mothers' safety practices, and mothers did more to prevent some types of injuries than others (e.g., drowning versus falls) (Morrongiello and Kiriakou, 2004). Improving safety knowledge will forever go a long way in sinking overall trauma burden of the prevalent injuries.

### Conclusion:

The findings are distressing and needs rapid and vibrant proceedings to prevent such injuries by implying a specialized training programme via multimedia package intended to enhance the mothers' safety practices regarding unintentional injury, especially having children of 4-6 years of age group. It will in turn help her in acquiring a better competence to prevent her child from injuries.

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