



## Parent's Knowledge and Attitude Regarding Falls Prevention and Management in Children Under 5 Years of Age in Major Tertiary Hospital, Saudi Arabia

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### Abstract

**Background:** Falls injuries remain the major cause of hospitalization and disability among children and are the fifth leading cause of death among infants.

**Objective:** To assess the knowledge, attitude and barriers of parents regarding falls prevention and management in children under 5 years of age.

**Material and Methods:** A cross-sectional descriptive study was done in Prince Sultan Military Medical City (PSMMC) outpatient clinics and primary health care centers, Riyadh, Saudi Arabia among a convenience sample of parents of children aged 5 years or less. Data were collected through a validated self-administrated questionnaire contained 4 main parts: Socio demographic characteristics of parents, detailed description of the children's falls, knowledge about child falls prevention and management (14 statements) and attitude of parents towards child falls prevention and management (5 statements).

**Results:** The study included 360 out of 384 targeted parents with a response rate of 93.75%. Almost two-thirds (65%) of the respondents were mothers and 47.5% aged between 25 and 34 years. The total parental knowledge score was abnormally distributed as shown by significant Shapiro-Wilk test,  $p < 0,001$ . Its median value was 12 out of a possible maximum of 14 and its IQR was 12-14. Mothers were more knowledgeable about child falls prevention and management than fathers,  $p = 0.012$ . Parents aged between 25 and 34 years has the highest knowledge score,  $p < 0.001$ . Parents with Bachelor degree expressed the highest score,  $p = 0.011$ . Unemployed were more knowledgeable than employed parents,  $p = 0.004$ . Parents live in extended families had the highest score,  $p < 0.001$ . There was a statistically significant positive correlation between number of family members and total knowledge score ( $r$  "Spearman's coefficient of correlation" = 0.106,  $p = 0.045$ ). Parents who had history of receiving any training courses in first aid were more knowledgeable,  $p = 0.001$ . Overall, total parental attitude score towards fall prevention and management was abnormally distributed as shown by significant Shapiro-Wilk test,  $p < 0,001$ . Its median value was 9 out of a possible maximum of 10 and its IQR was 8-10. The highest attitude score towards child fall prevention and management was observed among parents with lowest educational level,  $p = 0.030$ . Students expressed higher score of attitude score,  $p = 0.002$ . Divorced parents expressed higher attitude score than widowed parents,  $p < 0.001$ . There was a statistically significant positive correlation between number of rooms and total attitude score ( $r = 0.148$ ,  $p = 0.005$ ). Parents who had history of receiving any training courses in first aid were more likely to have better attitude compared to their counterparts,  $p < 0.001$ .

**Conclusion:** Parental knowledge of and attitude towards child fall prevention and management were good in general. However, lack of their training in first aid represented the main barrier affecting their knowledge and attitude.

**Keywords:** Falls; Children; Knowledge; Attitude; Barriers

## Introduction

### Background

Falls injuries remain the leading cause of death and a major cause of hospitalization and disability among children and are the fifth leading cause of death among infants. Most injury related deaths occur in low and middle-income countries where knowledge is limited regarding injury prevention.

During the previous few decades, injuries have been perceived as a significant reason for deaths and disability in the world and as a factor answerable for morbidity among pediatrics.

The traditional view of injuries as accidents has historically neglected this area of public health. In the latest estimates suggest that injures is a leading cause of death and disability worldwide. They affect all population groups, despite age, gender, income or geographical location. In 1998, approximately six million people worldwide burden. Reducing the of injuries burden is the biggest public health challenge for near future is injuries prevention [1].

Also, falls considered the commonest reason for injury-related hospitalization in kids less than 5 years of age. Most expectant direction encompassing falls is around tumbles from windows or steps; nonetheless, tumbles from furniture likewise are significant reasons for grimness with a total of one hundred seventy-one patients were admitted to the hospital due to falling from stairs and three hundred eighteen due to falling from furniture, the commonest furniture for children was beds around 33.0%, cranial fractures falling from stairs was around 40 % and hammers fractures falling from furniture was around 31% were significantly more common During falling from furniture increased, but falling from stairs decreased [2].

According to Center for Disease Control and Prevention (CDC) Unintentional falls were the main cause of nonfatal injury among one to four years old children from 2000 to 2015 in the United States, led to one million emergency visits and it costs more than two billion dollars as well as over twenty two thousand hospitalizations with costs of over seven hundred million dollars [3].

### Aim of the study

Our aim from this study is to assess the knowledge, practice regarding falls prevention and management in children under 5 years of age to reduce the incidence of patient falls and minimize harm from falls.

### Specific objectives

- To assess the knowledge of parents regarding falls prevention and management in children under 5 years of age
- To assess the attitude of the parent's regarding Identification of falls risks
- To identify the needs and barriers of the parent's knowledge regarding falls prevention and management in children under 5 years of age.

### Literature Review

Pediatric falls are the main source of emergency visits for pediatric younger than five years old review information base investigation utilized injury vault information from the lead pediatric injury in Georgia. Information was examined for all Pediatric younger than five years. The emergency department visits more one thousand patients this study shows pediatric unexpected falls are a critical injury for pediatric younger than five years old [4]. However, the efforts of Fall injury prevention has been enhanced when population at risk, typical mechanisms of injury, and patterns of injury depends on developmental age to provide targeted recommendations, with Better expected injury patterns understanding from mechanisms of the fall can guided to distinguish between child abuse and unintentional injuries [5].

Some evidence shows that the effectiveness of interventions on home-safety varied by social group, the provision of education about safety equipment improved some of fall-prevention practices [6].

Systematic review in pediatrics aged from one to five years find that male gender and low socioeconomic status were consistent with fall injuries risk factors. The evidence they provided that young children living in families with low socioeconomic status in older communities with lower socioeconomic status are at high risk of fall injuries [7].

Therefore, fall prevention is usually the goal of community-based programs to reduce injury in children. Measures that are particularly effective in this regard are the installation of window guards in tall buildings to keep playgrounds safe and to remove strollers. Monitoring and tracking, media campaigns and public education, and providing free, easy-to-install window guards for families with young children are key components of the New York Children's Can't Fly Program As a result of the program, the incidence of falls has dropped significantly, and the number of reported waterfalls has dropped by 50% [8].

In Randomized controlled trials evaluated the effectiveness of safety advice and safety equipment in reducing accidents in families with children less than 5 years of age and in the offices of 47 general practitioners in disadvantaged areas. A total of 3428 families with children below 5 years participants, certified safety advice and care for free and built-in stair doors, fire extinguishers, smokers, cabinet locks and window locks, at least one injury to a family child requiring medical care and attendance rates in primary and secondary care, as well as more than two injuries required hospitalization of years. Secondary outcome measures include possession of safety devices and safety mechanisms. The intervention significantly improved safety for two years, but did not reduce the number of injuries requiring medical treatment. The device was provided and assembled free of charge, the changes observed in safety practices may not be large enough to affect injury rates [9].

Home Safety Randomized Control Trial Postal Questionnaire was used to measure secondary outcomes in a randomized controlled trial. The answers to 26 questions can be reviewed through observation which will be reviewed through a home visit. The family was invited to attend a "home safety inspection." He was not informed that the visit was part of a validation study. During the visit, the researchers were blind to the question mark sixty-four questionnaires were corrected by visiting 64 households. Percentage ranges from 58% to 100%. Sensitivity was high on most safety methods (68% or more). The positive prediction value was higher for most safety methods (78% or higher for 15 out of 16 [10].

A safe-house model compared with an injury prevention program (TIPP) sheet to provide information about injury prevention. Parents of children younger than 6 years were randomly included in education for injury prevention using a model for safe house or age-appropriate TIPP sheets. A pre-test was performed prior to the intervention. Injury prevention information was recalled from 4 weeks to 6 weeks after the telephone prevention trial. To obtain a sample that is predominantly representative of the population structure of the community, we recruited families to the dermatology clinic of a teaching hospital. The study collected complete information for 371 families, of which 181 were in the Safe Home Model group and 190 in the TIPP group. The safe house model and TIPP sheet were effective in improving security knowledge. The use of current safe home model complements strategies to increases knowledge about injury prevention [11].

Between January and June 2003, involved parents of at least 1 child between the ages of 3 and 5 who participated in 1 of 2 Chicago

public school early childhood education places. Evaluate the reliability and validity of the TIPP-SS (Injury Prevention Project) safety survey of the American Academy of Pediatrics for measuring injury prevention practices. The safety survey of the trauma prevention project is reliable, but not valid. The Injury Prevention Project Safety Survey is a good measure of the concept of injury prevention knowledge and study [12].

## Methodology

### Study design

It was a cross-sectional descriptive study.

### Study area

The study was done in Prince Sultan Military Medical City (PSMMC) outpatient clinics and primary health care centers, Riyadh, Saudi Arabia.

### Target population

Parents attending the outpatient clinics and primary health care centers of PSMMC throughout the study period constituted the target population, provided that they have the inclusion criteria.

### Inclusion criteria

- Aged between 18 and 60 years
- Parents of children aged 5 years or less.
- Having history of children 0-5 years fall during the last 12 months.

### Exclusion criteria

Parents who were physically or psychologically distressed or not willing to participate in the study.

### Sample size

Based on the sample size equation:

$$n = \frac{Z_{1-\alpha}^2 \cdot p \cdot (1-p)}{D^2}$$

$D^2$

$Z_{1-\alpha}$  is the value from the standard normal distribution reflecting the confidence level that will be used ( $Z = 1.96$  for 95%).

$D$  is the desired margin of error (0.05).

$P$  is the proportion of falls among children in the age group 0-5 years ( $p = 0.50$ ) i.e. 50% was used to generate the largest sample size as there was no published figure.

Accordingly, the estimated sample size was 384 parents.

**Sample technique**

Convenience sample technique.

**Study tool and data collection technique: (Appendix 1)**

Data were collected through a self-administrated questionnaire, created by the researcher, adopted from previous similar studies [4,13] and face validated by three consultants in Family medicine, Community medicine and pediatrics.

It contains 4 main parts:

- Socio demographic characteristics of parents.
- Detailed description of the children`s falls.
- Knowledge about child falls prevention and management (14 statements) with yes, no and Don`t know options. Correct answers were given a score of 1 while incorrect and Don`t know answers were given a score of 0. Total score was computed and tested for normality using Shapiro-Wilk test and then used for comparisons.
- Attitude of parents towards child falls prevention and management (5 statements) with agree, disagree and neutral responses. The responses of the parents were scored in the way that the highest the score the more positive the attitude towards child falls prevention and management. The total score was computed and tested for normality using Shapiro-Wilk test and then used for comparisons.

**Data entry and analysis**

The data were coded and entered by SPSS software, version 26, then analyzed by using descriptive and analytic statistical methods. Descriptive statistics was applied using frequency and percentage for categorical variables and median, range and interquartile range for continuous variables. Test of normality for continuous variables was done using Shapiro-Wilk test. Since, the variables were abnormally distributed, non-parametric statistical tests were applied as Mann-Whitney test to compare two groups and Kruskal-Wallis test to compare more than two groups.. Statistical significance was considered at level of  $p < 0.05$ .

**Pilot study**

Pilot study was conducted on 15 parents before starting the study to test applicability, feasibility time taking to finish and process the study. As a feedback, the methodology was sound and the questionnaire was clear. Therefore, all data collected from

parents involved in pilot study were included in the final draft of the study.

**Ethical consideration**

The protocol of the study was submitted for ethical approval by Research Ethical Committee of Prince Sultan Military Medical City (The Institutional Review Board). Consent was obtained from every participant. All participant were informed of their right to participate and that their information would be kept confidential, anonymous and only used for the purpose of this study.

**Budget**

The study was self-funded.

**Results**

**Response rate**

The study included 360 out of 384 targeted parents with a response rate of 93.75%.

**Sociodemographic characteristics**

Almost two-thirds (65%) of the respondents were mothers and 47.5% aged between 25 and 34 years. More than half of them (55%) were bachelor holders and 57.5% were employed. Majority of the participants (85%) were married and living alone (87.5%). More than half of them (57.5%) live in rented houses. Number of family members ranged between 2 and 9 with a median of 4 while the number of rooms ranged between 2 and 10 with a median of 5 rooms.

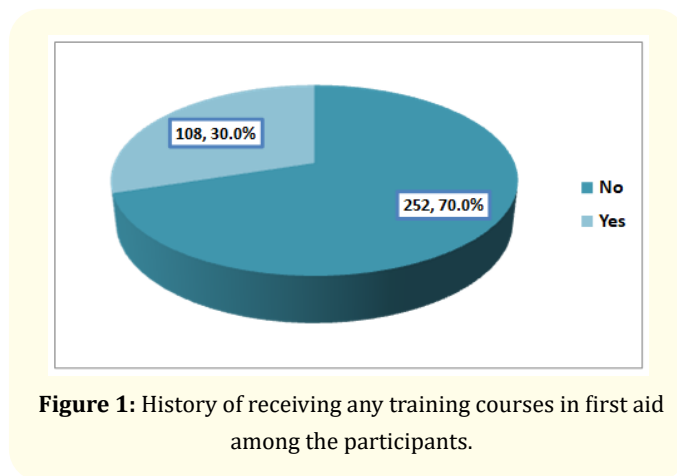
	Frequency	Percentage
Relation to children		
Father	126	35.0
Mother	234	65.0
Age in years		
18-24	36	10.0
25-34	171	47.5
35-44	117	32.5
44-54	36	10.0
Educational level		
Elementary/intermediate school	9	2.5
High school	81	22.5
Diploma	18	5.0
Bachelor	198	55.0
Master degree/PhD	54	15.0
Job status		
Student	27	7.5
Employed	207	57.5
Unemployed	126	35.0

Social status		
Married	306	85.0
Divorced	45	12.5
Widowed	9	2.5
Number of family members		
Range	2-9	
Median	4	
Family status		
Living alone	315	87.5
Extended family	36	10.0
Joint family	9	2.5
Living status		
Own house	153	42.5
Rent house	207	57.5
Number of rooms in the house		
Range	2-10	
Median	5	

**Table 1:** Sociodemographic characteristics of the parents (n = 360).

**Training courses in first aid**

History of receiving any training courses in first aid was mentioned by 30% of the participants as illustrated in figure 1.



**Figure 1:** History of receiving any training courses in first aid among the participants.

**Description of the last child fall**

Table 2 summarizes the details of the last child falls occurred in the previous year. Number of falls was three or more in 17.5% of children. Males were victims of more than half of falls (55%). In most cases (70%), the far of fall was less than 0.5 meter and mostly occurred at home (75%). Regarding hazards that led to falls, stairs ranked first (25%), followed by bike or scooter (20%) and chair or sofa (12.5%).

Seeking medical attention after the child fall was mentioned by only 27.5% of parents; mostly in general hospitals (22.5%). Full

recovery of the child after the fall was reported by vast majority of parents (97.5%).

Trying to limit children's activities was observed among 40% of parents. Receiving health education about falls and precautionary measures was mentioned by 27.5% of parents. The main source of information about falls and precautionary measures was social media (15%).

	Frequency	Percentage
Number of children fell		
One	207	57.5
Two	90	25.0
Three	45	12.5
Four or more	18	5.0
Gender of the child who fell		
Male	198	55.0
Female	162	45.0
Far of the fall (in meters)		
<0.5	252	70.0
0.5-1	90	25.0
1-2	9	2.5
>2	9	2.5
Location of the fall		
Home	270	75.0
Street or alley	27	7.5
Sports or entertainment facility	36	10.0
Educational facility or nursery	18	5.0
Others	9	2.5
Hazard that led to the fall		
Stairs	90	25.0
Bathroom	9	2.5
Ground	36	10.0
Bed	18	5.0
Chair or sofa	45	12.5
Tables	27	7.5
Pram	18	5.0
Vehicles	18	5.0
Bike or scooter	72	20.0
Carpet	18	5.0
Liquids	9	2.5
Seeking medical attention after the child fall		
No	261	72.5
Yes	99	27.5
Location of seeking medical help		
None	261	72.5
Primary healthcare center	9	2.5
General hospital	81	22.5
Tertiary care hospital	9	2.5

Full recovery of the child after the fall	9	2.5
No	351	97.5
Yes		
Trying to limit children's activities		
No	216	60.0
Yes	144	40.0
Receiving health education about falls and precautionary measures		
No	261	72.5
Yes	99	27.5
Source of information about falls and precautionary measures		
None	216	60.0
Relatives or friends	45	12.5
Healthcare providers	45	12.5
Social media	54	15.0

**Table 2:** Characteristics of the last fall that occurred in the last 12 months for children under 5 years old (n = 360).

**Knowledge regarding falls prevention and management**

As illustrated from table 3, all parents knew that it is important to ensure that the floor is completely dried out after cleaning, windows should have window guards in place and lighting should be sufficient on stairs. On the other hand, 72.5% of them could recognize that injuries from bunk beds are usually worse than injuries from standard beds and 55% knew that parents shouldn't use baby walker for their child.

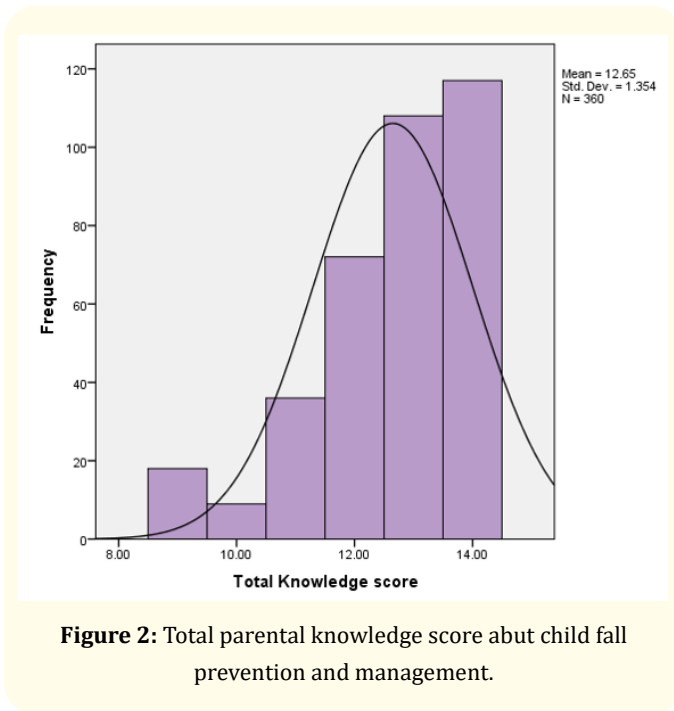
Overall, the total parental knowledge score regarding fall prevention and management was abnormally distributed as shown by significant Shapiro-Wilk test,  $p < 0.001$ . Its median value was 12 out of a possible maximum of 14 and its IQR was 12-14 (Figure 2).

Mothers were more knowledgeable about child falls prevention and management than fathers (mean rank was 190.19 vs. 162.50),  $p = 0.012$ . The highest knowledge score was observed among parents aged between 25 and 34 years (mean rank = 217.92) whereas the lowest score was observed among those aged 18-24 years (mean rank = 95),  $p < 0.001$ . The highest knowledge score was observed among parents with Bachelor degree (mean rank = 194.20) whereas the lowest score was observed among elementary/intermediate schools graduated (mean rank = 99.50),  $p = 0.011$ . Unemployed were more knowledgeable than employed parents (mean rank was 204.29 vs. 167.78),  $p = 0.004$ . The highest knowledge score was observed among parents live in extended families (mean rank = 204.13) whereas the lowest score was observed among those live in joint families (mean rank = 45.50),

$p < 0.001$ . There was a statistically significant positive correlation between number of family members and total knowledge score (r "Spearman's coefficient of correlation" = 0.106,  $p = 0.045$ ). Parents who had history of receiving any training courses in first aid were more knowledgeable about child falls prevention and management compared to their counterparts (mean rank was 191.75 vs. 154.35),  $p = 0.001$  (Table 4).

	Yes N (%)	No N (%)	Don't know N (%)
Parents shouldn't leave the young child to play alone	342 (95.0)	18 (5.0)	0 (0.0)
Parents shouldn't leave the young child to play at proximity of balcony or windows	342 (95.0)	9 (2.5)	9 (2.5)
It is important to ensure that the floor is completely dried out after cleaning	360 (100)	0 (0.0)	0 (0.0)
Parents shouldn't let children to climbing or playing on furniture or jumping on the bed	297 (82.5)	54 (15.0)	9 (2.5)
Parents shouldn't use baby walker for their child	198 (55.0)	81 (22.5)	81 (22.5)
Parents should use devices to prevent child from opening base-ment or garden or roof door	342 (95.0)	18 (5.0)	0 (0.0)
Stairs should have gates	351 (97.5)	9 (2.5)	0 (0.0)
Diaper changing table should have straps	306 (85.0)	9 (2.5)	45 (12.5)
Windows shouldn't open easily	342 (95.0)	9 (2.5)	9 (2.5)
Windows should have window guards in place	360 (100)	0 (0.0)	0 (0.0)
Rugs or carpets should firmly fixed to floor or stairs	342 (95.0)	0 (0.0)	18 (5.0)
Stairs should have bannisters and have safe bannister gaps	351 (97.5)	9 (2.5)	0 (0.0)
Lighting should be sufficient on stairs	360 (100)	0 (0.0)	0 (0.0)
Injuries from bunk beds are usually worse than injuries from standard beds	261 (72.5)	9 (2.5)	90 (25.0)

**Table 3:** Parents' knowledge about child fall prevention and management (n = 360).



Number of family members	r* = 0.106			0.045
Family status				
Living alone	13	12-14	181.66	
Extended family	13.5	10.75-14	204.13	
Joint family	11	11-11	45.50	<0.001°
Living status				
Own house	13	12-14	183.15	
Rent house	13	12-14	178.54	0.667**
Number of rooms in the house	r* = 0.041			0.436
History of receiving any training courses in first aid				
No	12.5	12-13	154.35	
Yes	13	12-14	191.75	0.001**

**Table 4:** Factors associated with parents' knowledge about child fall prevention and management (n = 360).

\*Spearman's correlation coefficient.

\*\*Mann-Whitney test.

°Kruskal-Wallis test.

	Knowledge score			p-value
	Median	IQR	Mean rank	
Relation to children				
Father	12.5	12-14	162.50	
Mother	13	12-14	190.19	0.012**
Age in years				
18-24	10.5	9.25-13.25	95.0	
25-34	13	13-14	217.92	
35-44	12	12-13	151.77	
44-54	13	11.5-13.75	181.63	<0.001°
Educational level				
Elementary	12	12-12	99.50	
intermediate school				
High school	12	11-14	161.50	
Diploma	12	10-14	162.50	
Bachelor	13	12-14	194.20	
Master degree/ PhD	13	12-13	178.25	0.011°
Job status				
Student	13	9-14	167.0	
Employed	13	12-14	167.78	
Unemployed	13	12-14	204.29	0.004°
Social status				
Married	13	12-14	176.53	
Divorced	13	13-14	205.70	
Widowed	13	13-13	189.50	0.184°

**Attitude regarding Identification of falls' risks**

As shown in Table 5, all of the parents agreed that they shouldn't let their children carry big things or many things while going down stairs, while majority of them agreed that falls injuries can be prevented by prevent tripping hazards on the floor such electric wires or cables trailing across floors (97.5%), falls injuries can be prevented by following safety conditions in the home (92.5%) and they should check for safety hazards in the homes of friends or relatives where children may play (90%). On the other hand, only 45% of them agreed that falls injuries remain the leading cause of death among children.

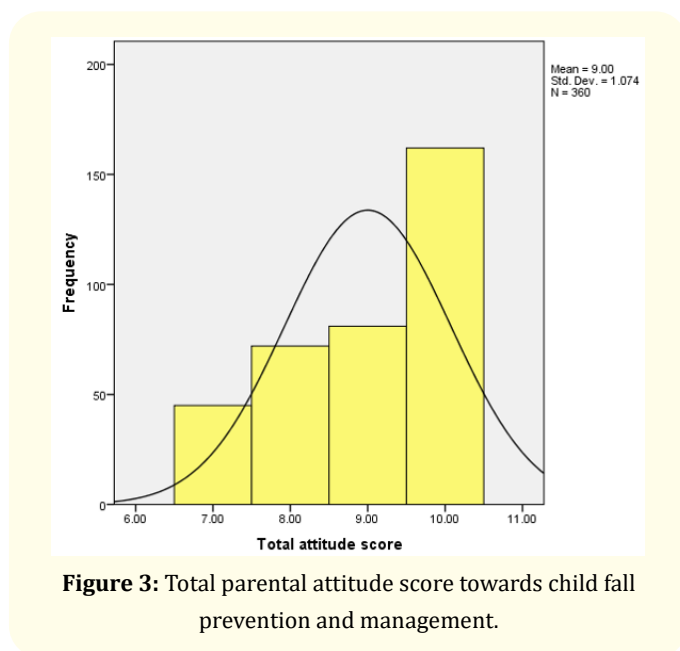
Overall, total parental attitude score towards fall prevention and management was abnormally distributed as shown by significant Shapiro-Wilk test, p < 0,001. Its median value was 9 out of a possible maximum of 10 and its IQR was 8-10 (Figure 3).

The highest attitude score towards child fall prevention and management was observed among parents with lowest educational level "elementary/intermediate schools" (mean rank = 297.50) whereas the lowest score was observed among Diploma graduated parents (mean rank = 158), p = 0.030. Students expressed higher score of attitude towards child fall prevention and management

than employed parents (mean rank was 239 vs. 169.93),  $p = 0.002$ . Divorced parents expressed higher attitude towards child fall prevention and management than widowed parents (191.30 vs. 23),  $p < 0.001$ . There was a statistically significant positive correlation between number of rooms and total attitude score ( $r = 0.148$ ,  $p = 0.005$ ). Parents who had history of receiving any training courses in first aid were more likely to have better attitude towards child fall prevention and management compared to their counterparts (mean rank was 216.66 vs. 93.13),  $p < 0.001$  (Table 6).

	Agree N (%)	Disagree N (%)	Neutral N (%)
Falls injuries can be prevented by following safety conditions in the home.	333 (92.5)	9 (2.5)	18 (5.0)
Falls injuries remain the leading cause of death among children	162 (45.0)	63 (17.5)	135 (37.5)
Falls injuries can be prevented by prevent tripping hazards on the floor such electric wires or cables trailing across floors	351 (97.5)	0 (0.0)	9 (2.5)
Parents shouldn't let their children carry big things or many things while going down stairs	360 (100)	0 (0.0)	0 (0.0)
Parents should check for safety hazards in the homes of friends or relatives where children may play	324 (90.0)	18 (5.0)	18 (5.0)

**Table 5:** Attitude of parents towards identification of falls` risk among children under 5 years of age (n = 360).



**Figure 3:** Total parental attitude score towards child fall prevention and management.

	Attitude score			p-value
	Median	IQR	Mean rank	
Relation to children				
Father	9.5	8-10	177.61	0.681**
Mother	9	8-10	182.06	
Age in years				
18-24	9	9-9.75	188.38	0.404°
25-34	9	8-10	174.82	
35-44	10	8-10	190.88	
44-54	9	7.25-10	165.88	
Educational level				
Elementary				0.030°
intermediate school	10	10-10	297.50	
High school	9	9-10	182.0	
Diploma	9	9-9	158.0	
Bachelor	9	8-10	180.09	
Master degree/PhD	9	8-10	170.75	
Job status				
Student	10	9-10	239.0	0.002°
Employed	9	8-10	169.93	
Unemployed	9	9-10	185.32	
Social status				
Married	9	8-10	183.54	<0.001
Divorced	9	9-10	191.30	
Widowed	7	7-7	23.0	
Number of family members	r* = 0.058			0.272
Family status				
Living alone	9	8-10	180.24	0.702°
Extended family	9	9-9.75	188.38	
Joint family	9	9-9	158.0	
Living status				
Own house	9	8-10	178.65	0.758**
Rent house	9	8-10	181.87	
Number of rooms in the house	r* = 0.148			0.005
History of receiving any training courses in first aid				
No	8	7.25-8.75	93.13	<0.001**
Yes	10	9-10	216.66	

**Table 6:** Factors associated with parents` attitude towards child fall prevention and management (n = 360).

\*Spearman`s correlation coefficient

\*\*Mann-Whitney test

°Kruskal-Wallis test.



## Discussion

Unintentional falls of young children aged below 5 years is considered one of the leading reasons of childhood injuries in most countries [14,15]. Therefore, assessment of parental awareness of their prevention and management is essential in protection of children from the adverse consequences of such injuries.

In the current study, the overall knowledge of parents regarding child falls prevention and management was acceptable as all of them recognized the importance of ensuring complete dryness of the floor after cleaning, having window guards in place for windows and having sufficient lighting on stairs. The effectiveness of these measures has been proved in reducing the incidence of falls significantly, and the number of reported waterfalls has dropped by 50% [8]. Also, the effectiveness of safety advice and safety equipments in reducing accidents in families with children less than 5 years of age has been documented in a randomized trial where they significantly improved safety for two years, but did not reduce the number of injuries requiring medical treatment [9]. However, only 55% of them knew that they shouldn't use baby walker for their child. The American Academy of pediatrics reported that most of injuries produced by bay walkers happened in presence of parents or caregivers who cannot respond quickly enough and it regarded baby walkers as a never safe tool, even in presence of parents or caregivers close to the baby. Furthermore, it reported that walkers will not help children learn to walk, but they can actually delay walking when a child starts to walk [16]. Personally, we have faced many cases of unintentional falls of young children and by investigation we have observed deficit knowledge of their parents/caregivers regarding the prevention and management strategies of such cases and in particular the intention of parents to use walkers and their believe in their role to help children to walk, despite dangerousness induced by their use.

Finding that higher educated parents were more knowledgeable regarding child falls` prevention and management compared to lower educated parents is consistent with findings of a systematic review who documented that families with low socioeconomic status were more associated with fall injuries risk factors [7]. Also other studies confirmed that low socio-economical status is a risk factor for child injury and this is explained by some structural and behavioral mechanisms [13,17].

In the current study, parents living in extended families and those having larger family size were more knowledgeable regarding child falls prevention and management. This is previously documented as although living in extended families and having larger family size

has many disadvantages, however, if has some advantages including better child care as grandparents transferred their experience to their generations and having many people living together could provide more care of children [18,19].

Mothers were more knowledgeable about child falls prevention and management than fathers in this study. This is quite expected as mothers spent more time with their kids compared to fathers [20].

Middle aged parents (25-34 years) were more knowledgeable about child falls prevention and management compared to younger parents; mostly due to their higher experience and probably higher education. Additionally, finding that unemployed parents were more knowledgeable than employed parents is not surprising as they usually spend more time with their children, particularly mothers [21,22].

In this study, all of the parents agreed that they shouldn't let their children carry big things or many things while going down stairs, ad majority of them agreed that falls injuries can be prevented by prevent tripping hazards on the floor such electric wires or cables trailing across floors. Furthermore, majority of them mentioned that falls injuries can be prevented by following safety conditions in the home and they should check for safety hazards in the homes of friends or relatives where children may play. Overall, parental attitude towards fall prevention and management was good. However, the attitude towards child falls` prevention and management needed more consideration among employed parents, and those with higher education.

The present study revealed that parents who had history of receiving any training courses in first aid were more knowledgeable and expressed more favourable attitude towards child falls prevention and management compared to their counterparts. American Academy of pediatrics recommended that parents and caregiver f young children should have training in first aid for children safety [23]. Some evidence showed the effectiveness of interventions on home-safety by the provision of education about safety equipments which improved some of fall-prevention practices [6].

Strengths of this study includes its unique nature in our community as up to our knowledge, this is the first one of its king to investigate the knowledge and attitude of parents with young children (<5 years) having history of falls in order to describe the mechanism and type of fall as well as their knowledge about risk factors and identify barriers of the parent's knowledge regarding

falls prevention and management. These could be of benefits to provide targeted recommendations [5]. However, our findings should be interpreted in the light of having some limitations. The study was carried in one healthcare facility; therefore, generalizability of findings over other facilities is questionable. The cross-sectional design, which proves only association and not causality between exposure and outcome is considered one of the limitations.

## Conclusion

Parental knowledge regarding child fall prevention and management was good in almost all aspects with the exception that 55% they shouldn't use baby walker for their children. Mothers, parents aged between 25 and 34 years, Bachelor holders, unemployed, parents live in extended families with higher number of family members and those with history of receiving any training courses in first aid were more knowledgeable about child falls prevention and management compared to their counterparts.

Attitude of parents towards child falls prevention and management was favoring, except regarding the fact that that falls injuries remain the leading cause of death among children. Parents with lowest educational level, students, divorced parents, those with higher number of rooms and parents who had history of receiving any training courses in first aid were more likely to have better attitude towards child fall prevention and management compared to their counterparts.

## Recommendations

According to the results achieved in this study, the following are recommended

- Educating parents in first aid measures to deal with children properly in case of falls.
- Primary healthcare physicians should play an active role in increasing awareness of parents regarding the risk factors of child falls
- Encourage parents to consult medical advice after child falls to be sure of absence of any consequences,
- Further longitudinal larger study, including population-based sample of parents is needed to more clarify the issue.

## Bibliography

1. Krug EG., et al. "The global burden of injuries". *American Journal of Public Health* 90.4 (2000): 523-526.
2. Pomerantz WJ., et al. "Falls in children birth to 5years: different mechanisms lead to different injuries". *The Journal of Trauma and Acute Care Surgery* 73 (2012): S254-257.
3. Centers for Disease Control and Prevention. National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS): Leading Cause of Nonfatal Injury reports 2000-2015 (2017a).
4. Chaudhary S., et al. "Pediatric falls ages 0-4: understanding demographics, mechanisms, and injury severities". *Injury Epidemiology* 5.1 (2018): 7.
5. Thompson A., et al. "Assessment of injury potential in pediatric bed fallexperiments using an anthropomorphic test device". *Accident Analysis and Prevention* 50 (2013): 16-24.
6. Kendrick D., et al. "Preventing childhood falls at home: meta-analysis and meta-regression". *American Journal of Preventive Medicine* 35.4 (2008): 370-379.
7. Khambalia A., et al. "Risk factors forunintentional injuries due to falls in children aged 0-6 years: a systematic review. *Injury Prevention* 12.6 (2006): 378-81.
8. Spiegel CN and Lindaman FC. "Children can't fly: a program to prevent childhood morbidity and mortality from window falls". *American Journal of Public Health* 67.12 (1977): 1143-1147.
9. Watson M., et al. "Providing child safety equipment to prevent injuries: randomised controlled trial". *BMJ* 330.7484 (2005): 178.
10. Watson M., et al. "Validation of a home safety questionnaire used in arandomised controlled trial". *Injury Prevention* 9.2 (2003): 180-183.
11. Powell EC., et al. "A randomized trial of a home safety education intervention using a safe home model". *Journal of Trauma* 69 (2010): S233-236.
12. Mason M., et al. "Reliability and validity of the injury prevention project home safety survey". *Archives of Pediatrics and Adolescent Medicine* 161.8 (2013): 759-765.
13. Benford P., et al. "Risk and protective factors for falls on one level in young children: multicentre case-control study". *Injury Prevention* (2015): 1-8.
14. Peden M., et al. "World report on child injury prevention". Geneva: WHO, (2008).
15. Centers for Disease Control and Prevention. "National Estimates of the 10 Leading Causes of Nonfatal Injuries Treated in Hospital Emergency Departments, United States" (2013).
16. American Academy of Pediatrics; Pediatric Patient Education. Baby Walkers: What You Need to Know. (2021).

17. Laflamme L., *et al.* "20 years of research on socioeconomic inequality and children's unintentional injuries understanding the cause-specific evidence at hand". *International Journal of Pediatrics* 2010 (2010): 1-23.
18. Langosch D. "Grandparents parenting again: Challenges, strengths, and implications for practice". *Psychoanalytic Inquiry* 32.2 (2012): 163-170.
19. Bundy-Fazioli., *et al.* "Grandparents caregivers' perceptions of emotional distress and well-being". *Journal of Family Social Work* 16.5 (2013): 447-462.
20. Gordon MD., *et al.* "Parents' Perception of fall risk and incidence of falls in the pediatric ambulatory environment". *Journal of Pediatric Nursing* 61 (2021): 424-432.
21. Brooks-Gunn J., *et al.* "First-year maternal employment and child development in the first 7 years". *Monographs of the Society for Research in Child Development* 75.2 (2010): 7-9.
22. Lucas-Thompson R., *et al.* "Maternal work early in the lives of children and its distal associations with achievement and behavior problems: A meta-analysis". *Psychological Bulletin* 136.6 (2010): 915-942.
23. American Academy of Pediatrics. "Council on sports medicine and fitness: trampoline safety in childhood and adolescence". *Pediatrics* 130.4 (2012): 774-779.