Original Article

# Knowledge and attitude of children safety at home among population in Saudi Arabia

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## Abstract

**Background:** Unintentional injury to children at home is a public health problem and it is a significant cause of death and disabilities. It accounts for 40% of all child deaths. To our knowledge, there have been no similar studies done on Arabic countries that show the prevalence of home injuries among children. **Aim:** We aimed to assess the adults' knowledge and attitude toward child safety at home in Saudi Arabia. **Methods:** A cross-sectional study was conducted among 1,301 participants, during August 2017, who are older than 18 years old and have at least one child in the family. Data were collected by an online questionnaire assessing the believes, knowledge, and behavior of the participants. Analysis was carried out using IBM SPSS Software version 21, using descriptive analysis, *t*-test, and one-way ANOVA. **Results:** It was found that gender, age, marital status, employment status, and the type of accommodation played key roles in the awareness of children safety at home, the study showed that females and age group above 25, married, employees, and those who lived in flats had more awareness than the other groups, respectively. **Conclusion:** The majority of the population had good awareness about children's safety at home. Despite the good level of awareness, more public health education is recommended to improve the awareness and the prevention methods of these injuries.

**Keywords:** Attitude, child safety, knowledge, Saudi Arabia

## Introduction

Unintentional injury to children (0–18) years at home is a public health problem and it is a significant cause of death and disabilities.[1-4] It accounts for 40% of all child deaths worldwide.[1,2,4] Unintentional home injuries (UHI) not only result in substantial health problems for children and have negative impacts on their families but also result in a high economic burden for countries.[5,6] A report published in 2008 by the Centers for Disease Control and Prevention (CDC) found that more than 12,000 people aged 0 to 19 years old die from unintentional injuries and an estimated more than 9.2 million are treated from nonfatal injuries in emergency departments in the United States, 2000 –2006.[7] In general, CDC also, reported that males experienced higher rates of injury-related deaths and nonfatal injuries than females,[7,8] and they found that the younger the age, the higher the risk of home injuries were,[9,10] with the relationship between injury risk and age varying with

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the mechanism of injury.[10] A study conducted in 2016 by the International Journal of Critical Illness and Injury Science showed that the common leading causes of deaths due to unintentional accidents among those under the age of 20 years from the Eastern Mediterranean region included Saudi Arabia were from drowning (6.8 per 100,000), burns (4.5 per 100,000), falls (2.9 per 10, 000), and poisoning (1.6 per 100,000).[11] The insufficient knowledge on safe-keeping behavior of parents leads to higher rates of child injury,[12] and another study conducted in Sweden showing that the lower the educational level of the parents, the higher the risk of home injuries due to fewer precautions taken by parents.[13] An intervention study reported an important positive effect on mothers' awareness of child injury after workshops and extended information of individual mothers at home during home visits.[14] However, home safety education with the provision of free safety equipment intervention in a randomized controlled trial study showed an increase in safety practices of families for a couple of years but did not reduce the rate of unintentional injuries.[15] Child injuries at home are very common, but it is also preventable.

Placing the infants on their back while sleeping in the crib is an effective way to avoid suffocation while sleeping. Drowning can be prevented by fencing the swimming pool. Swimming lessons for children above 4 years of age are recommended. Smoke detectors at home, teaching the children about the place and the technique to use the fire extinguisher, and how to respond and act during a fire, can prevent fire-related injuries. Poisons should be kept away from children, inducing vomiting after toxic ingestions are not recommended.

Parents should provide their children with safety equipment like wearing a helmet while bicycling to reduce head injuries.[16]

It is important to increase the awareness of the safety of family members at home to prevent these injuries and decrease the problems associated with both morbidity and mortality. In the well-baby clinic in primary healthcare primary centers, counseling the parents about the prevention of injury in children is the key element to avoid injuries, this is done by parent education about the risk factors and the causes that will lead to these injuries and how to prevent them from happening.[17]

Until now, there have been no similar studies conducted in Arabic countries that show the prevalence of home injuries among children, nor on the attitude of children safety at home to prevent these injuries. Therefore, we aim to determine the knowledge and attitude of children's safety at home in Saudi Arabia.

## Methodology

This is a population-based cross-sectional study conducted in the Kingdom of Saudi Arabia from five regions, namely, southern region, eastern region, central region, northern region, and mainly western region during August 2017 among the family members. Inclusion criteria were individuals above 18 years who have a child below 18 years. A sample size of 1,301 was included in this study, which is four times the study population size and it was measured by the SurveyMonkey website. We gathered different information such as demographic data (age, gender, marital status, and family income), parent's beliefs, and parents' knowledge and behavior by a valid and reliable online questionnaire. The questionnaire was distributed online through social media websites. Each participant signed an electronic consent before filling the questionnaire. Descriptive statistics were used to describe the quantitative data using numbers and percentages. Different scores are summarized using minimum, maximum, mean, and standard deviation. Comparing the scores across different factors (age, sex, nationality, disabled children in family, martial, region, employment, and accommodation) was done using Student's *t*-test and one-way ANOVA when the data are normally distributed and Mann–Whitney *U* test when the data are not normally distributed. Spearman's correlation is done to test for correlation between ordinal variables and the different scores. Statistical significance was set at $P < 0.05$ and analysis was performed using IBM SPSS statistics, version 23 (IBM, Armonk, NY, USA). Ethical clearance was obtained from the biomedical ethics research committee of King Abdulaziz University Hospital. Ethical clearance was obtained from the biomedical ethics research committee of King Abdulaziz University Hospital on June 2017.

## Results

This study is based upon the replies of a specific questionnaire from 1,301 participants.

Sociodemographic characteristics of the participants are summarized in [Table 1].

A total of 80.2% of the participants are females (1044); of which 36.6% of them are in the age group from 18 to 25 years, and 26.1% from 26 to 35 years, whereas 37.3% were above 35 years. More than half of the participants are married (59.4%), whereas the singles represented (36.4%), the divorced 3.3%, and widows (0.9%) only. Most of the participants are Saudis (91.5%) and the highest percentage of participants were from the western region, which represented 74.6% of all participants. A total of 67.9% of the participants had a diploma or a university degree and 12.3% had postgraduate studies. Participants with a high-school level of education are 18.4%, whereas those who had primary education only are 1.4%.

A total of 42.4% of the participants are employees, 31.1% are students, and 15.8% are unemployed. Furthermore, 60.6% of the participants said they always participate in the care of children, whereas 31.1% do that sometimes, 7.6%) rarely participate in the care and only eight participants (0.6%) never participated.

Almost half of the participants (49.4%) are in families with 3–5 members, 44% had families with 5–9 members, and only 6.5%

**Table 1: Characteristics of the participants in the study presented in numbers and percentages**

| | Frequency | Percent |
|---|---|---|
| Age in years | | |
| 18-25 | 476 | 36.6 |
| 26-35 | 340 | 26.1 |
| Over 35 | 485 | 37.3 |
| Gender | | |
| Female | 1,044 | 80.2 |
| Male | 257 | 19.8 |
| Marital status | | |
| Widow | 12 | 0.9 |
| Single | 473 | 36.4 |
| Married | 773 | 59.4 |
| Divorced | 43 | 3.3 |
| Nationality | | |
| Saudi | 1,190 | 91.5 |
| Non-Saudi | 111 | 8.5 |
| Region | | |
| Southern region | 67 | 5.1 |
| Eastern region | 90 | 6.9 |
| Northern region | 53 | 4.1 |
| Western region | 971 | 74.6 |
| Central region | 120 | 9.2 |
| Education | | |
| Illiterate | 1 | 0.1 |
| Primary | 18 | 1.4 |
| High school | 239 | 18.4 |
| Diploma or university degree | 883 | 67.9 |
| Postgraduate | 160 | 12.3 |
| Employment | | |
| Housewife | 113 | 8.7 |
| Student | 405 | 31.1 |
| Unemployed | 205 | 15.8 |
| Retired | 22 | 1.7 |
| Employee | 551 | 42.4 |
| Other | 5 | 0.4 |
| Participation in care of children | | |
| Always | 789 | 60.6 |
| Sometimes | 405 | 31.1 |
| Rarely | 99 | 7.6 |
| Never | 8 | 0.6 |
| Number of family members | | |
| 3-5 | 643 | 49.4 |
| 5-9 | 573 | 44.0 |
| >9 | 85 | 6.5 |
| Number of girls less than 18 years | | |
| 0 | 337 | 25.9 |
| 1 | 478 | 36.7 |
| 2 | 290 | 22.3 |
| 3 | 113 | 8.7 |
| 4 | 32 | 2.5 |
| 5 | 23 | 1.8 |
| >5 | 28 | 2.2 |
| Number of boys <18 years | | |
| 0 | 300 | 23.1 |
| 1 | 475 | 36.5 |
| 2 | 300 | 23.1 |
| 3 | 124 | 9.5 |
| 4 | 41 | 3.2 |
| 5 | 34 | 2.6 |
| >5 | 27 | 2.1 |
| Number of disabled kids | | |
| 1 | 74 | 5.7 |
| 2 | 9 | 0.7 |
| ≥3 | 5 | 0.4 |
| Total | 88 | 6.8 |
| Total income | | |
| Less than 6,000 (LOW) | 160 | 12.3 |
| 6,000-9,999 (LOW to MIDDLE) | 236 | 18.1 |
| 10,000-14,999 (MIDDLE) | 330 | 25.4 |
| 15,000-19,999 (MIDDLE to HIGH) | 207 | 15.9 |
| 20,000 and over (HIGH) | 173 | 13.3 |
| Refused to mention | 195 | 15.0 |
| Residence | | |
| Flat | 689 | 53.0 |
| Villa | 489 | 37.6 |
| Shared house | 89 | 6.8 |
| Other | 34 | 2.6 |
| No of rooms in the house | | |
| 1 | 12 | 0.92 |
| 2 | 52 | 4.00 |
| 3 | 144 | 11.07 |
| 4 | 257 | 19.75 |
| 5 | 344 | 26.44 |
| 6 | 155 | 11.91 |
| 7 | 149 | 11.45 |
| More than 7 | 188 | 14.45 |

had over nine family members. A total of 88 participants said that they have disabled kids in the family, which represents 6.8% of all participants. Participants with middle income (10,000–14,999 SR) represented the highest frequency (25.4%), whereas the lowest are the low income (less than 6,000 SR) representing 12.3%. A total of 53% of the participants are living in flats, 37.6% are in villas, whereas 6.8% are living in shred houses. A total of 26.4% of the participants are living in accommodation with five rooms, whereas other room numbers are of lower frequencies.

The difference in scores related to believes, knowledge, and practice is compared across various participant characteristics, and the result is presented in [Tables 2 and 3]. There was a significant gender difference, with a higher score for the females in the knowledge and practice score and the total score, with *P* value < 0.001 for both scores.

There is also a significant difference in the score in the aspect of age, where participants in the age group of 18–25 had statistically significant lower scores in the knowledge and practice score and the total score than the other two age groups with a *P* value < 0.001 for both scores.

There is also a significant difference in the score in the aspect of marital status, where single participants had a statistically significant lower score in the knowledge and practice score than the married and the divorced with a *P* value < 0.001. The singles group also had a significantly lower score than the married in the total score with *P* value < 0.001.

For the employment status, the student group has a significantly lower score than all other groups in believes and knowledge and practice score with *P* value 0.029 and < 0.001, respectively.

**Table 2: Representing summary statistics of the believes, knowledge and practice, and total average score**

| | *n* | Minimum | Maximum | Mean | Std. deviation |
|---|---|---|---|---|---|
| Believes score | 1,301 | 1.70 | 4.90 | 3.41 | 0.51 |
| Knowledge and practice | 1,293 | 1.82 | 5.00 | 4.05 | 0.55 |
| Total average score | 1,301 | 2.03 | 4.91 | 3.84 | 0.46 |

Also, the student's group has a significantly lower score than all other groups, and the employee group has a lower score than the housewives' group in the total score with *P* value < 0.001.

Regarding the type of accommodation, the group who live in a shared house has a lower score than the group living in a villa in the believes score with *P* value = 0.005. The group living in flats has a higher score than those living in a villa and shared house in the knowledge and practice score with *P* value < 0.001. The group who lives in a shared house has a lower score than the group who lives in a flat in the total score with *P* value < 0.001.

There was no significant difference regarding the nationality, the presence of a disabled child in the family, and the region in the country.

Correlation between the different scores and other factors is studied using Spearman's correlation. There is a weak

**Table 3: Relationship between different factors and the different scores**

| | *n* | Believes | | | Knowledge and practice | | | Total score | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Test and significance | Mean | SD | Test and significance | Mean | SD | Test and significance |
| Gender | | | | | | | | | | |
| Male | 257 | 3.36 | 0.49 | Student's *t*-test | 3.90 | 0.60 | Mann-Whitney *U* test | 3.72 | 0.49 | Mann-Whitney U test |
| Female | 1,044 | 3.42 | 0.51 | 0.081 | 4.08 | 0.53 | <0.001 | 3.87 | 0.45 | <0.001 |
| Nationality | | | | | | | | | | |
| Saudi | 1,190 | 3.41 | 0.50 | Student's *t*-test | 4.05 | 0.56 | Student's *t*-test | 3.84 | 0.46 | Student's *t*-test |
| Non-Saudi | 111 | 3.35 | 0.53 | 0.273 | 3.99 | 0.46 | 0.236 | 3.78 | 0.41 | 0.185 |
| Disabled children in the family | | | | | | | | | | |
| Disabled | 88 | 3.352 | 0.5634 | Student's *t*-test | 4.03 | 0.54 | Student's *t*-test | 3.82 | 0.48 | Student's *t*-test |
| No disabled | 1,213 | 3.409 | 0.5026 | 0.308 | 4.05 | 0.55 | 0.818 | 3.84 | 0.46 | 0.797 |
| Age in years | | | | | | | | | | |
| 18-25 | 476 | 3.37 | 0.51 | ANOVA | 3.92 | 0.57 | ANOVA | 3.73 | 0.47 | ANOVA |
| 26-35 | 340 | 3.44 | 0.51 | 0.155 | 4.09 | 0.54 | <0.001 | 3.88 | 0.46 | <0.001 |
| Over 35 | 485 | 3.41 | 0.50 | | 4.13 | 0.51 | | 3.91 | 0.44 | |
| Marital | | | | | | | | | | |
| Widow | 12 | 3.34 | 0.43 | ANOVA | 4.05 | 0.41 | ANOVA | 3.82 | 0.33 | ANOVA |
| Single | 473 | 3.37 | 0.52 | 0.341 | 3.90 | 0.59 | <0.001 | 3.72 | 0.48 | <0.001 |
| Married | 773 | 3.43 | 0.50 | | 4.13 | 0.51 | | 3.90 | 0.44 | |
| Divorced | 43 | 3.38 | 0.47 | | 4.15 | 0.53 | | 3.91 | 0.43 | |
| Region | | | | | | | | | | |
| Southern | 67 | 3.37 | 0.57 | ANOVA | 66 | 4.04 | ANOVA | 67 | 3.82 | ANOVA |
| Eastern | 90 | 3.55 | 0.49 | 0.073 | 89 | 4.11 | 0.319 | 90 | 3.92 | 0.171 |
| Northern | 53 | 3.35 | 0.58 | | 52 | 3.92 | | 53 | 3.73 | |
| Western | 971 | 3.39 | 0.50 | | 966 | 4.04 | | 971 | 3.83 | |
| Central | 120 | 3.43 | 0.47 | | 120 | 4.09 | | 120 | 3.87 | |
| Employment | | | | | | | | | | |
| Housewife | 113 | 3.52 | 0.51 | ANOVA | 4.21 | 0.46 | ANOVA | 4.00 | 0.40 | ANOVA |
| Student | 405 | 3.37 | 0.52 | 0.029 | 3.91 | 0.59 | <0.001 | 3.73 | 0.48 | <0.001 |
| Unemployed | 205 | 3.45 | 0.48 | | 4.09 | 0.52 | | 3.89 | 0.44 | |
| Retired | 22 | 3.50 | 0.45 | | 4.29 | 0.51 | | 4.04 | 0.42 | |
| Employee | 551 | 3.39 | 0.51 | | 4.08 | 0.53 | | 3.85 | 0.45 | |
| Accommodation | | | | | | | | | | |
| Flat | 689 | 3.39 | 0.51 | ANOVA | 4.10 | 0.52 | ANOVA | 3.87 | 0.45 | ANOVA |
| Villa | 489 | 3.45 | 0.50 | 0.005 | 3.99 | 0.59 | <0.001 | 3.82 | 0.48 | <0.001 |
| Shared house | 89 | 3.27 | 0.50 | | 3.92 | 0.54 | | 3.71 | 0.46 | |

**Table 4: Correlation between some factors (e.g., educational level, participation in care, no. of family members, income and room numbers and the different scores (believes, total average score, knowledge and practice)**

| Variable | Correlation Coefficient | Believes | Knowledge and practice | Total average score |
|---|---|---|---|---|
| Educational level | Correlation Coefficient | 0.028 | 0.040 | 0.043 |
| | Sig. (two-tailed) | 0.306 | 0.146 | 0.119 |
| | *n* | 1,301 | 1,293 | 1,301 |
| Participation in care | Correlation Coefficient | −0.146** | −0.243** | −0.261** |
| | Sig. (two-tailed) | 0.000 | 0.000 | 0.000 |
| | *n* | 1,301 | 1,293 | 1,301 |
| Number of family members | Correlation Coefficient | 0.010 | −0.090** | −0.069* |
| | Sig. (two-tailed) | 0.726 | 0.001 | 0.013 |
| | *n* | 1,301 | 1,293 | 1,301 |
| Number of girls <18 years | Correlation Coefficient | −0.010 | −0.012 | −0.008 |
| | Sig. (two-tailed) | 0.729 | 0.656 | 0.763 |
| | *n* | 1,301 | 1,293 | 1,301 |
| Number of boys <18 years | Correlation Coefficient | −0.029 | −0.031 | −0.024 |
| | Sig. (two-tailed) | 0.289 | 0.266 | 0.391 |
| | *n* | 1,301 | 1,293 | 1,301 |
| Average income | Correlation Coefficient | 0.149** | 0.012 | 0.060* |
| | Sig. (two-tailed) | 0.000 | 0.693 | 0.047 |
| | *n* | 1,106 | 1,102 | 1,106 |
| Number of rooms | Correlation Coefficient | 0.082** | 0.006 | 0.030 |
| | Sig. (two-tailed) | 0.003 | 0.830 | 0.275 |
| | *n* | 1,301 | 1,293 | 1,301 |

negative correlation between the three scores and the rarity of participation in the care of children (which means a positive correlation between the scores and the frequency of participation in children's care), with *P* value < 0.001 in the three scores. See [Table 4].

There is a very weak negative correlation between the number of family members and the knowledge and practice score and the total score with *P* values = 0.01 and 0.013, respectively.

There is a very weak positive correlation between the average income and the believes score and the total score with *P* values < 0.001 and 0.047, respectively.

There is also a very weak positive correlation between the number of rooms and the believes score with *P* values = 0.003.

There is no significant correlation in the case of educational level or the number of boys or girls in the family.

## Discussion

In this study, we aimed to measure the awareness about children's safety at home regarding many factors categorized as parents' beliefs and parents' knowledge and practice.

We will be discussing the significant results in demographic data. First, regarding the gender, (1,041, 80.2%) of the recipients were females, which could be due to more participation of females in general (mothers, sisters, etc.) in caring for the children. A Hungarian study conducted in 2015 stated that (87.6%) of the questionnaires were filled by children's mothers. The significance of variation in our research is thought to be higher as we collect the research from different groups of the population, including parents, siblings, etc., not only parents (i.e., mother and father) as the Hungarian study.[18]

Second, regarding the accommodation, although villas, in general, have more hazards than flats and thus need to be more secure, we find that people who live in villas have a lower knowledge and practice score than those who live in flats (*P* value < 0.001). It might be due to parents' busy lifestyle which affects the quality of their knowledge or time spent checking the safety measures at their homes thus the practice of safety measures, or maybe due to limited hazards in flats, which make it easier to be aware of all hazards and take the proper measures of prevention.

Third, regarding the employment status, (551, 42.4%) of the recipient are employees, 363 of them are females, whereas 113 (8.7%) are housewives, who represent the highest and the lowest percentages, respectively. We find that the employee group has a lower score than the housewives' group in the total score (*P* value < 0.001). This result indicates that employment status affects the awareness about safety measures of children at home. As an explanation of this result, housewives are more involved in taking responsibility for children care at home, this result does not mean that employee mothers are neglecting their children but indicates the need for more awareness for this particular group. We found no significant difference regarding nationality, the presence of a disabled child in the family, and the region in the country.

The overall assessment of parents' beliefs revealed that the community to some extent has satisfying believes regarding the ten items that were asked about. Majority of contributors agreed that their homes and neighborhoods are safe enough for their children. Although 44.1% think that accidents are just part of growing up, 61.7% think that many accidents can be prevented. Although 471 (36.2%) disagree that they do not know enough information to protect their children, 333 (25.6%) and 301 (23.1%) were neutral and agreed on the previous question, respectively. A percentage that cannot be discarded and must be taken into consideration for further evaluation or even for intervention. Both finance and time were not an issue for about half of the participants. A total of 36.5% disagree on the difficulty of keeping their children away from accidents, thus, we assume that they have the ability, and they are willing to put an effort into keeping their children safe. In addition, 32.7% think that their children would not obey their commands, which would keep them away from accidents. This issue may be due to the use of the wrong means used by parents and to solve this we can implement programs/workshops about the appropriate way to deal with children regarding keep them safe and the different approaches for different children/mothers' personalities.[19]

We measure the knowledge and practice regarding different risk factors, and we will be discussing each separately.

## Fire risk and poison risk

In our study, we asked, "If you are a smoker, how often do you keep cigarettes out of children reach?" and a percentage of 62.3% was for the answer (not applicable), meaning they are not smokers, this is thought to reduce risk of both causing fires due to children manipulation with the cigarettes and decreases the chance of children ingestion and poisoning with cigarettes. The American Association of Poison Control Center (AAPCC)[20] reported that accidental ingestion of tobacco products is relatively low compared with other products such as cleaning products, drugs, and dietary supplements; a result that is to some extent, similar to ours. An Australian study was done to evaluate the unintentional ingestion of over the counter (OTC) medications in children younger than 5 years old has shown that 73.9% of the presentation to the Victorian Poisons Information Centre in 1 year.[21] Comparing the results of the previous two studies with our results regarding the risk of poison with drugs and cleaners, 66.5% of the participants always make sure to keep drugs and cleaners out of children's reach.

In regard to plant poisoning, a recent study done in Sri Lanka, 2017 found that the strongest risk factor for plant poisoning is the presence of poisonous plants in the home garden. In our study, we assessed the chance for children to be poisoned by poisonous plants that may be found in home gardens. About 53% of participants have no gardens. A total of 46.3% have gardens and 25.9% out of them always remove or keeps poisonous plants out of children's reach. This may indicate some knowledge about how to keep children safe in regard to the presence of poisonous plants in home gardens.[22]

## Drowning risk

Drowning is a major public health problem worldwide. It is the third leading cause of unintentional injury death, accounting for 7% of all injury-related deaths.[23] Nonfatal drowning injuries can cause severe brain damage that may result in long-term disabilities.[24,25] A parent's knowledge and behavior that can prevent drowning injuries in children at home are demonstrated in this study, which shows a good practice of parents. More than half (53.6%) of the participants do not have a swimming pool in their home or apartment complex. A total of 32.0% of the participants said they always make sure that the swimming pool is fenced and has a locking gate, whereas 7% do that usually. Furthermore, 44.8% of them said they never allow their children to play near any water unsupervised, whereas 12.1% rarely do that.

## Fall risk

Falls from height carry significant morbidity and are costly to the healthcare system.[26] Falls from windows and balconies have long been recognized as a health hazard facing children in large, eastern cities.[27] The incidence of falls from heights has remained high in urban areas despite public education and building codes that require window guards and safety rails.[28] A parent's knowledge and behavior that prevent fall injuries in children at home are demonstrated in this study, which showed the careful practice of parents with their children. A total of 34.5% of participants said they never leave their children alone on bed, table, or countertop, whereas 24.7% said they do it rarely. While 37.9% of participants said they always make sure that the gate at the top and bottom of all stairs are closed to prevent their children from falling. A total of 39% of participants said that they do not care about this issue because it is not applicable to their situation, 41.3% said they always move away all furniture from windows to prevent their children from climbing up near the window, 18.1% of participants said that this issue is not applicable to them, and 47.3% said they always make sure that there are no children around while mopping the floor and 26.1% usually make sure of that. A total of 53.2% said they always check that the window locks are working and 19.7% usually check it.

## Electrical shock risk

Electrical injury is a significant problem associated with high morbidity and mortality.[29,30] It required long hospital stays, and the incidence of permanent complications is high that potentially is necessitating lifelong rehabilitation and support.[31] Most electrical injuries in children occur at home.[32] A parent's knowledge and behavior that prevent electrical injuries in children at home are demonstrated in this study showing the good practice of parents. A total of 56.2% of the participants said they always make sure that all electrical sources are covered and kept out of children reach. More than half of them (66.0%) said they always make sure that all electrical items (blow dryers, shavers)

are kept in a safe place and out of children reach in both the toilets and kitchen and only 14 participants (1.1%) never do that. This disagreed with a study conducted in Iraq in 2013 that found only 10.2% of mothers showed good knowledge of preventing electrical injuries.[33]

## Burn risk

The results showed that participants who answered by "always" check the water temperature before using it for their children was 947 (72.8%) out of 1,301. We believe that these numbers are attributed to the level of education. Whereas 67.9% had a diploma or university degree, 12.3% were postgraduate. These results are consistent with a previous study conducted in the national institute of children's health from 1998–2000, which showed that the lack of education and low socioeconomic status are significant risk factors for burn injury among children. A total of 77.5% of incidents occurred at home and 75.4% were due to hot water exposure.[34]

## Choking/suffocation risk

There are several factors attributed to the increased incidence of choking in children like food, coins, and toys. We asked participants about whether they let their children eat food known as choking hazards (nuts, popcorn, grapes, etc.) and the highest percentage is (sometimes, 387, 29.8%). A total of 194 (14.9%) never let their children eat hazardous food. Results indicate a low level of awareness; maybe the act of watching children while they eat is one of the causes of why parents are lenient in this action.

## Cut's risk

A total of 68.5% of contributors have demonstrated (always) for keeping sharp objects away and 1.4% never keep them away. The awareness level here is very high, although 1.4% is not acceptable, because serious and may be fatal injuries could happen.

## Limitation and strength

We believe this study has many potential strength points. To our knowledge, it is the first study conducted regarding the awareness of safety at home in Saudi Arabia and includes a relatively large sample size from different regions of Saudi Arabia. Also, the study includes different risks to measure the awareness, which gives the chance for future studies to focus on particular risks which were of least awareness and knowledge among the participants. However, there are a few limitations that include: first, most of the participants were females and this is as we explained earlier those females are more involved in children care at home. Another limitation was that most of the participants were from the western region, and this is because the research team is living in the western region and it was much easier to access people from the western region, which can be the point where we start in the future, to collect data from other regions in Saudi Arabia.

In conclusion, we believe this manuscript address the importance of safety awareness at home as this might help to prevent fatal injuries that can cause serious morbidities and mortalities and poses an economic burden for the community and health system.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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