

## PARENTAL PERCEPTION AND PRACTICE OF FIRST AID MEASURES FOR BURNS IN CHILDREN UNDER FIVE

Hanaa Ibrahim El Sayed<sup>1</sup>, Azza Anwar Aly<sup>2</sup>, Faten Hasan Alam<sup>3</sup>, Safaa Tawfik  
Elmanzalawy<sup>4</sup>

<sup>1</sup>Assistant Professor of Pediatric Nursing, Faculty of Nursing, Menoufia University, Egypt.

<sup>1</sup>Associate Professor of Pediatric Nursing, Ibn Sina National College for medical studies, KSA.

<sup>2</sup>Assistant professor of Medical-Surgical Nursing, Faculty of Nursing, Damanhur University,  
Egypt.

<sup>2</sup>Associate Professor of Medical Surgical Nursing, Ibn Sina National College for medical studies,  
KSA

<sup>3</sup>Assistant Professor of Psychiatric & Mental Health Nursing, Faculty of Nursing, Menoufia  
University, Egypt.

<sup>3</sup>Associate Professor of Psychiatric & Mental Health Nursing, Ibn Sina National College for  
medical studies, KSA.

<sup>4</sup>Lecturer of Community Health Nursing, Faculty of Nursing, Menoufia University, Egypt.

### Abstract

**Background:** Pediatric burn injuries and their associated wound care procedures are extremely painful evoking a traumatic experience and a range of psychological reactions. **Aim:** This study aimed to assess parental perception and practice of first aid measures for burns in children under five. **Design:** Cross-sectional design was utilized. **Setting:** This study was carried out at Menoufia University Hospital. **Sampling:** Non-probability convenient sample of 200 parents was included in the sample from February to May 2022. **Results:** The mean age was 4.5 years and the most affected site was the upper limb (40%), followed by multiple regions (25%). More than half of the studied parents (59%) were aged between 20 and 30 years old and 76.5% of the studied sample was female. Less than half of the studied sample agreed that second-degree burns appear in the form of blisters filled with fluid (48.5%). More than half of the studied parents (57.5%) cooling the burnt area with cold water and the majority of parents agreed to integrate first aid into education. **Conclusion:** There is a need for delivering teaching programs to enhance the knowledge, and practice level of parents regarding burn and first aid measures. **Recommendations:** Raising parents' awareness about burn prevention strategies and developing appropriate interventions to reduce burn injuries.

**Keywords:** Perception, Practice, First aid measures, Burn, Children

### Introduction

Pediatric burns can lead to significant disability that may have an impact on the children's quality of life throughout their lifespan (Nour et al., 2018). It is a global public health problem, accounting for an appraised 180 000 deaths annually. Injury to the skin or other organic tissues is caused by hot liquids or solids, flames, radiation, radioactivity, chemicals, friction, and electricity (Deng et al., 2016). The vast majority of these occur in low- and middle-income nations, with over

two-thirds occurring in Africa and South-East Asia (Parray et al., 2015; Lotfi et al., 2018 & World Health Organisation, 2018). Burns and scalds are the third most prevalent cause of injury in the industrialized world in addition to the most common type of injury in the pediatric population, especially among children under the age of five (Deng et al., 2016). Every year, over 7,400,000 people suffer from burns all over the world (Wong et al., 2022).

World Health Organization (2016) declared burn injuries as a serious public health problem, highlighting the death rate to be 7-fold higher in low-and-middle-income countries (LMICs) than in high-income countries (HICs). Burn injuries are most common in Sub-Saharan Africa and Southeast Asia. Women and children, particularly in the lower socio-economic groups are affected (Purcell et al., 2020). Burn is a major cause of morbidity and mortality, and is considered the fourth most common type of trauma worldwide (Elkafssaoui et al., 2011).

Burns in the pediatric age group are generally accidentally occurring. Many of these injuries happen at home, where young children spend the majority of their time. Numerous causes of burning in youngsters include a lack of understanding of a harmful situation, carelessness, and a reduced capacity to react appropriately in a risky scenario (Anlatici et al., 2002). The superficial thickness (first degree) is painful does not blister and does not make a scar. Partial or intermediate thickness (second degree) is the second type characterized by a superficial partial thickness of burn that does not require surgery but may develop scar and the burn become more painful (Mehta and Tudor, 2022).

Deep partial-thickness burns require surgery and form more scars and are less painful there are blisters and weeps, with increasing depth, risk of infection, with increasing depth, and increased risk of scarring (Schaefer and Szymanski, 2021). Full thickness (third degree) is characterized by dryness, insensate to light touch, and pinprick, small areas will heal with substantial scar or contracture, and large areas require skin grafting and a high risk of infection. The fourth degree involves muscle or bone and leads to loss of the burned part (Stiles, 2018).

The main physical issues that a hand-burned survivor endures are deformities, impairments, wound infections, intense pain, contractures, and hypertrophic scars (Afifi et al., 2016). In addition to physical difficulties, patients have various psychological issues, such as anxiety, posttraumatic stress disorder, depression, sleep disorders, cosmetic problems, reliance, body image dissatisfaction, and low self-esteem (Kornhaber et al., 2014).

An accurate assessment of burn depth at admission is important in making proper decisions about dressings and surgery. However, the burn wound is a dynamic living environment that will change depending on both internal factors such as the release of inflammatory mediators and proliferation of bacteria, and external factors (such as dehydration, systemic hypotension, and cooling (Timothy et al., 2022). Therefore, it is significant to assess the wound at regular intervals until healing. Optimal wound treatment reduces morbidity and mortality in major injuries. It also shortens recovery time and return to normal function and reduces the need for secondary reconstruction ([Papini, 2004](#)).

The American Burn Association recommends referrals for patients with partial thickness burns greater than 10% of total body surface area, full thickness burns, injury of the face, hands, feet, genitalia, or major joints, chemical burns, electrical, or lightning strike injuries, significant inhalation injuries, burns in patients with multiple medical disorders, burns in patients with accompanying traumatic injuries. Patients being transferred to burn centers do not need extensive debridement or topical antibiotics before transfer. Whether transferring or referring to a burn center, parents should contact them before beginning extensive local burn care treatments (Soni et al., 2017; Burn and Trauma Branch of Chinese Geriatrics Society, 2018 & Regan and Hotwagner, 2022).

Minor burns to treat patients with the following approaches cooling the small areas of the burn with cooled tap water or saline solution to prevent the progression of burning and to reduce pain, plus cleaning with mild soap and water or mild antibacterial wash (Grammatikopoulou et al., 2019). Debate continues over the best treatment for blisters. However, large blisters are debrided while small blisters and blisters involving the palms or soles are left intact. Then covering the burnt area with topical antibiotic ointments or cream with absorbent dressing or specialized burn dressing materials is commonly used. To promote patients' comfort, give prescribed pain medications as needed. Splints can also provide support and comfort for certain burned areas (Regan and Hotwagner, 2022).

Nurses have role management to help burn patients adapt and cope with new physiques and sport the parent with data about the remedy of burn promotion quality of existence (Lotfi et al., 2018). There are many complications induced by burns like bodily problems that result from deformities or scar contractures, adjustments in pores and skin shade and body contour, and loss of body parts may additionally limit the patient's return to previous activities, also visible burn scars can also intrude with an individual's social activities and result in social isolation patients with huge burn injuries go through from an upsetting that effects on their everyday thinking, behavior, and lifestyle (Lernevall et al., 2019).

Many parents of burn-injured children struggle with feelings of guilt, anger, depression, and anxiety (Kornhaber, 2018) Many parents also experience that they blame themselves or that they are blamed by their partner, family members, the burn-injured child, health professionals, or others. Studies show that parents of burn-injured children can experience posttraumatic stress disorder symptoms (Willebrand and Sveen, 2016). Children are at great risk of having a non-adaptive outcome after the burn injury. Clearly, there should be more focus on parental support as it profoundly affects the burn-injured child's coping and outcomes. To generate more knowledge on parental support in relation to pediatric burn injuries, we explored staff members' lived experiences of supporting parents (Lernevall et al., 2019). Therefore, this study aimed to assess parental perception and practice of first aid measures for burns in children under five.

**Aim of the study:**

This study aimed to assess parental perception and practice of first aid measures for burns in children under five.

**Research question:**

1. What are the perceptions of parents about first aid measures for burns in children?
2. What are the practices of parents about first aid measures for burns in children?

**Subjects and Methods**

**Design:** A cross-section design utilized to conduct this study.

**Setting:** This study was carried out in the burn department at Menoufia University Hospital, Menoufia Governorate, Egypt.

**Sampling:** Non – probability convenient sample of 200 parents was included in the sample from February to May 2022.

**Inclusion criteria:** All parents who are willing to participate in the study.

**Exclusion criteria:** Parents who don't complete the questionnaire sheet

**Sample Size:** The sample size has been calculated by the Raosoft website, the margin of error is 5%, and the confidence level is 95% the population size has been set as 250 and the minimum expected sample size is 150 subjects from parents with burnt children under five in Menoufia University Hospital.

**Tool of Data Collection:**

**Tool:** One tool was utilized to conduct this study through a structured interviewing questionnaire. It was adopted from Alatrez et al., (2021) and modified by the researchers after revising the related literature. It was written in a simple Arabic language. It was used to assess parents' perceptions and practices. It comprises 4 parts:

**Part 1:** Socio-demographic characteristics of parents such as age, gender, educational level, children number, age of children, sex, and attendance of training programs about first aid measures for the burn.

**Part 2:** Sources of information about first aid of burn in children included three questions about previous knowledge about first aid of burn in children, sources of information, and previous training.

**Part 3:** Parent's perception of burn included 3 questions about clinical manifestations of the first, second, and third degree of burn.

**Part 4:** Practices of parents toward first aid measures for burns, it consists of 7 questions.

**Scoring system:**

The Scoring system was developed by the researchers. For the knowledge part, each correct step got one and zero points for incorrect answers. In the practice part, each correct step got one score and zero points for incorrect practice.

**Validity and reliability:**

The validity test was performed by three experts in the nursing program, at the Faculty of Nursing, Menoufia University. The reliability of the tool was tested by Cronbach's alpha coefficient (0.09).

### Pilot study:

It was performed on 20 parents (10% of the overall sample) to evaluate the tool's applicability and clarity, with no changes made. Those parents were involved in our study subjects.

### Ethical considerations:

Official permission was obtained to carry out the study from responsible authorities after an explanation of the purpose of the study was obtained. They assured that participation in the study is voluntary. Informed consent was attained from those who accepted to take part in the study. The confidentiality of collected data is maintained. Data is safely stored in a cabinet and no one can get access to the data except the investigators.

### Field Work:

Data was collected from the previously mentioned setting. Before began of the study, an official letter was taken from the directors of the mentioned setting, to obtain their agreement. Permission was obtained from them after an explanation of the study's goal. Data were collected from parents from February to May 2022, data were collected for three months. The researchers spent three days a week on the morning shift. Items were filled by an interview questionnaire sheet. It took nearly 5-10 minutes to complete the questionnaire sheet.

### Statistical analysis

Data were fed to the computer and then analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described via numbers and percentages.

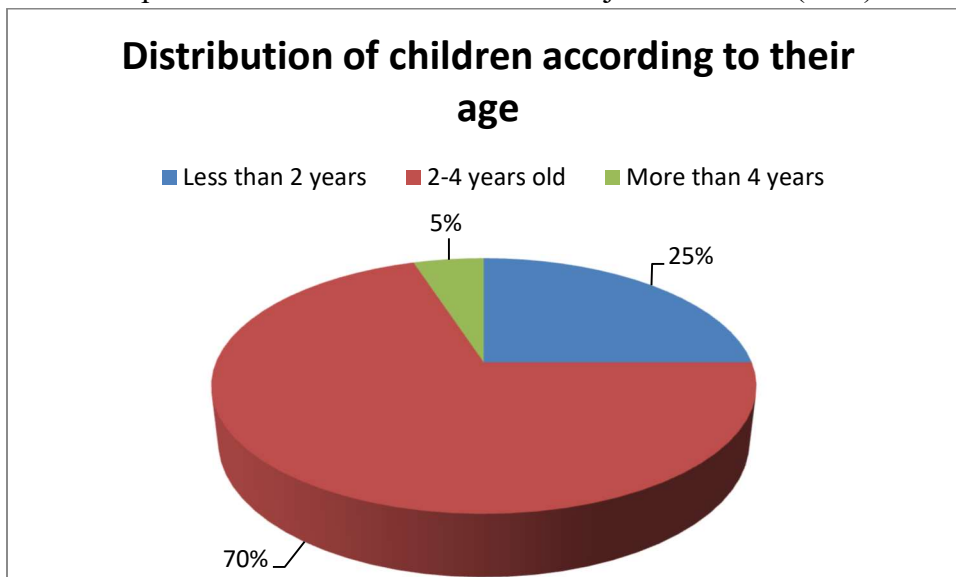
## Results

Table 1: Demographic characteristics of the studied sample

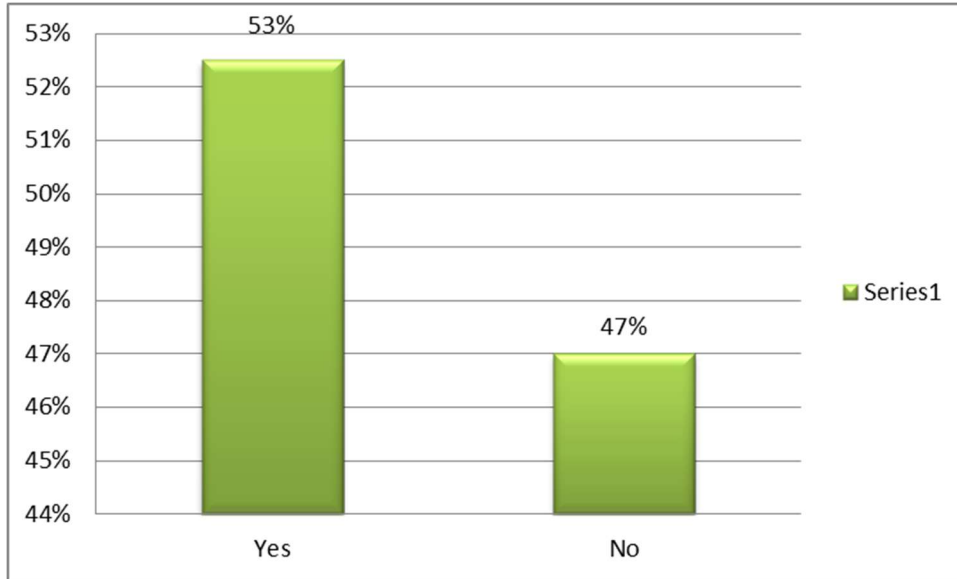
Characteristics	No	%
<b>Age of parents</b>		
20-30	118	59 %
30-40	51	25.5%
More than 41	31	15.5 %
<b>Gender</b>		
Male	47	23.5 %
Female	153	76.5 %
<b>Educational Level</b>		
Illiterate	5	2.5%
Preparatory level	6	3 %
Secondary level	57	28.5 %
Bachelor degree	132	66 %

<b>How many children do you have?</b>		
One	79	39.5%
Two	44	22%
More than three	77	38.5%
<b>Have you ever had an accident that caused burn injuries?</b>		
Yes	105	53%
No	95	47%
<b>Do you have a first-aid kit for burn injuries at home?</b>		
Yes		
No	108	54%
	92	46%

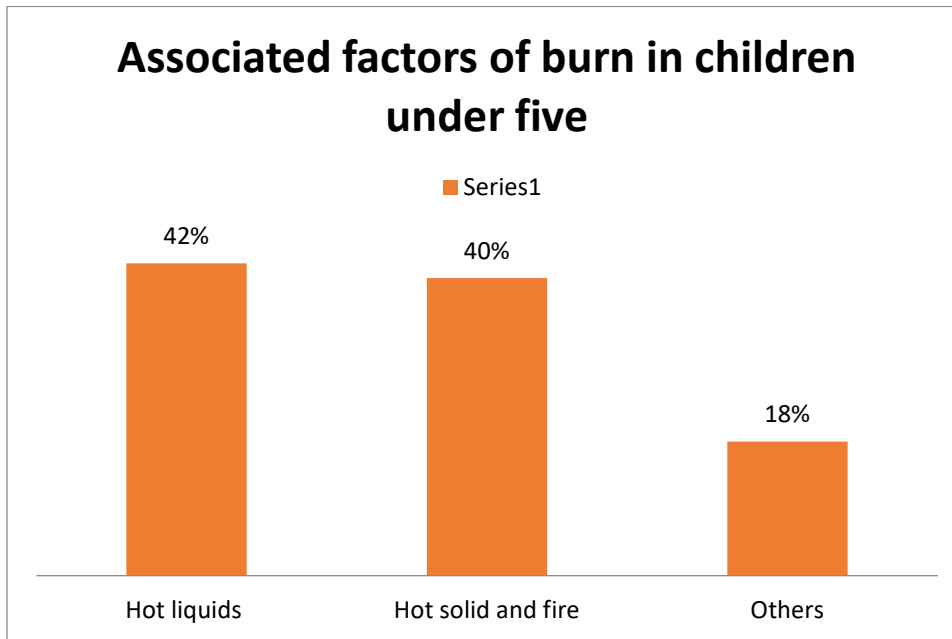
Table 1: shows demographic characteristics of the studied sample. It was revealed that more than half of the studied sample (59%) was aged between 20 and 30 years old while of them were older than 41 years old (15.5%). The majority of the studied sample was female (76.5%). Regarding the educational level, 66% of the studied sample had bachelor's degrees, while the minorities of them were illiterate and preparatory level (2.5% and 3% respectively). Moreover, 39.5% of studied parents had one child and 38.5% of them had more than three children. Moreover, more than half of studied parents had a first-aid kit for burn injuries at home (54%).



**Figure 1: Distribution of children according to their age**, it was revealed that 70% of the studied children aged between 2-4 years old and 25% of the studied sample less than 2 years old.



**Figure 2: Percentage of Parents with children who had previous burns.** It was revealed that more than half of studied children (53%) had previous burn.



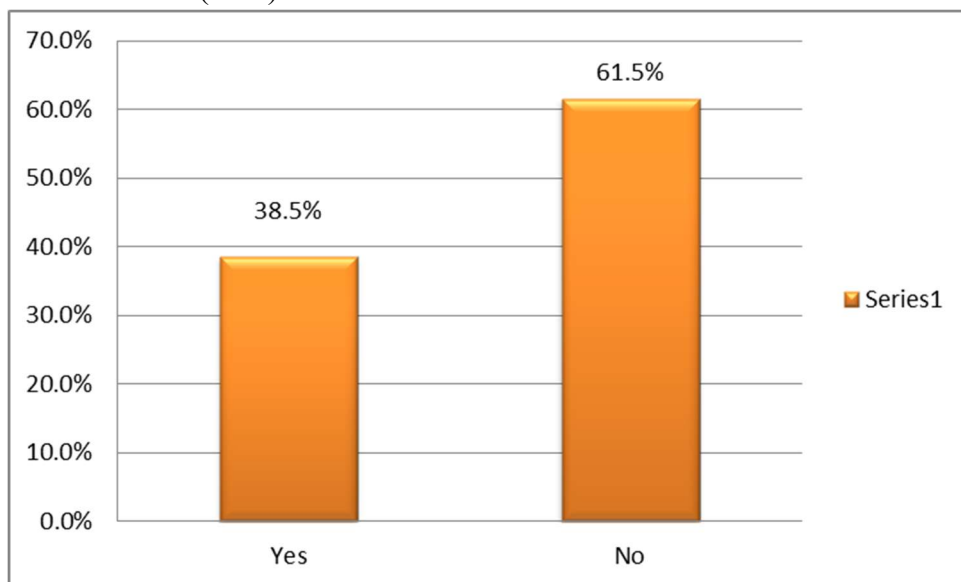
**Figure 2: Associated factors of burn in children under five,** it was showed that 42% are burnt with was hot liquids, while hot solids and fires caused 40% of cases.

**Table 2: Information about first aid for burns in children**

Characteristics	No	%
Do you have previous knowledge of first aid for burns in children?		
	Yes	117 58.5%

	No	83	41.5%
<b>If the answer is yes, what are the sources of your information (you can choose more than one answer)</b>			
	Social media	68	34%
	Courses and training	52	26%
	TV and Media	30	15%
	Relative and friends	41	20.5%
	Doctors and nurses	48	24%
	Books	18	9%
	None of the above	77	38.5%
<b>Have you ever attended any first aid courses before?</b>			
	Yes	77	38.5%
	No	123	61.5%

**Table 2: reveals sources of information about first aid for burns in children.** It was shown that 58.5% of parents had previous information about first aid for burns in children whereas 34 % had their information from social media, and approximately one quadrant of them gained information from doctors and nurses (24%).



**Figure 3: Distribution of the studied parents about the previous training regarding burn and its first aid measures,** it was revealed that more than one-third of studied parents got previous training regarding burn and its first aid measures ( 38.5%).

**Table 3: represents Parents' knowledge about the degree of burn**

Characteristics	No	%
<b>The first degree of burn characterized by redness of the skin only</b>		
Agree	122	61%
Disagree	78	39%



<b>The second degree of burns appears on the form of blisters filled with fluid</b>		
Agree	97	48.5%
Disagree	103	51.5%
<b>The third degree of burn occurs when the body tissues appear dry/charred</b>		
Agree	85	42.5%
Disagree	115	47.5%

Table 3: represents Parents' knowledge about the degree of burn, it was revealed that more than half of studied sample agreed that first degree of burn characterized by redness of the skin (61%). Less than half of the studied sample agreed that second-degree burns appear in the form of blisters filled with fluid (48.5%). While, 42.5% were agreed that third degree of burn occurs when the body tissues appear dry/charred.

**Table 4: Parents' practices about first aid for burns**

Characteristics	No	%
<b>Applying ice directly to the skin when having a burn</b>		
Agree	60	30 %
Disagree	140	70%
<b>The use of butter, fat, and toothpaste reduces the severity of the burn</b>		
Agree	92	46 %
Disagree	108	54 %
<b>To cover the burn, use non-stick gauze or a clean piece of cloth</b>		
Agree	195	97.5%
Disagree	5	2.5%
<b>Go to the doctor if the burn appears to be inflamed (red, swollen, painful)</b>		
Agree	182	91%
Disagree	18	9%
<b>Putting sunscreen when the child goes out of the house to protect him</b>		
Agree	149	74.5%
Disagree	51	25.5%
<b>Third degree burns are serious and require immediate medical attention</b>		
Agree	117	88.5%
Disagree	23	11.5%

Table 4: represents parents' practice about first aid for burns, it was revealed that the majority of studied parents disagreed to apply ice directly to the skin when having a burn (70%). More than half of the studied parents' (54%) disagreed to use butter, fat, and toothpaste reduces the severity

of the burn. To cover the burn, 97.5% agreed to use non-stick gauze or a clean piece of cloth. Furthermore, the majority of parents (91%) went to the doctor if the burn appears inflamed (red, swollen). In addition to 74.5% of parents put sunscreen on when their child goes out of the house to protect him and 88.5% agreed that third-degree of burns are serious and require immediate medical attention.

**Table 5: Factors associated with burns among children under-fives**

Variables	N	%	p value
<b>Age of children (years)</b>			
Less than 2	50	25%	<0.001**
2-4	140	70%	
More than 4	10	5%	
<b>Age of parents</b>			
20-30	118	59 %	0.674
30-40	51	25.5%	
More than 41	31	15.5 %	
<b>Caregiver Gender</b>			
Male	47	23.5 %	0.021**
Female	153	76.5 %	
<b>Educational Level</b>			
Illiterate	5	2.5%	0.956
Preparatory level	6	3 %	
Secondary level	57	28.5 %	
Bachelor degree	132	66 %	
<b>Family size</b>			
3	79	39.5%	0.379
4	44	22%	
5 or more	77	38.5%	
<b>History of burn</b>			
Yes	105	53%	0.216
No	95	47%	
<b>Previous knowledge about burn</b>			
Yes	117	58.5%	0.388
No	83	41.5%	

Table 5: Factors associated with burns among children under-fives, it was showed that there is no significant relation was found between parents' age, family size, history of burns, and previous knowledge about burns. However, there were highly statistically significant differences between the age of children and caregiver gender ( $p < 0.001$  and  $p = 0.021$  respectively).

### Discussion:

Burn injury is a universal public health problem that causes serious physical, functional, and psychosocial consequences. An immediate first aid measure after burns reduces tissue damage size quickens burn recovery and increases survival rate. Concerning the demographic characteristics of the studied parents, it was revealed that more than half of the studied sample (59%) was aged between 20 and 30 years old and the majority of the studied caregivers were female (76.5%). This result was corresponding with El Seifi et al., (2020) who mentioned that the mean age of participants 35.25 ( $\pm 12.52$ ) years; two-thirds (66.1%) were female. This was contradicted by Al-Johani et al., (2018) who mentioned that the age of 40% of them ranged between 31 and 40 years whereas 31.5% ranged between 20 and 30 years and more than half of them (55.6%) were male.

Regarding the educational level, 66% of the studied sample had bachelor's degrees, while the minorities of them were illiterate and preparatory level (2.5% and 3% respectively). This result was corresponding with Elsayed et al., 2022, and El Seifi et al., (2020) who reported that half of the respondents, (50.5%) held a bachelor's level of education, (26.0%) received education to the secondary-school level, and 10% studied higher education. This clarified the importance of providing educational programs about proper and harmful practices, erroneous practices performed during the first intervention may make evaluation and treatment procedures in emergency care.

Regarding the distribution of children according to their age, it was revealed that 70% of the studied children aged between 2-4 years old and 25% of the studied sample less than 2 years old. This was demonstrated by Tusiime et al., (2022) who reported that the mean age of studied children was 2.94 years and the most injured children were between 2 and 4 years old (70.2%) This was in line with Nadolny et al, (2019) who revealed the majority of burns occurred in children aged 1-6 years. This age group was also found to be vulnerable to many injuries because they are start walking and exploring the environment and trying to become gradually independent from their parents. Therefore, the implementation of health education programs is vital to promote their safety. The study revealed that more than half of the studied children (53%) had previous burns caused by hot liquids (42%), while hot solids and fires are 40% of cases. This was demonstrated by Tusiime et al., (2022) who mentioned that the prevalence of burns in the study was 32%. The commonest (42.2%) cause of burns was hot liquids, while hot solids and fires caused 41% and 17%, respectively. This may be caused by the frequent movement of children in the kitchen and touching hot materials kept within reach. So, safety measures in the home environment are important to protect children.

Regarding the sources of information about first aid for burns in children, it was shown that 58.5% of parents had previous information about first aid for burns in children whereas 34 % had their information from social media. This was similar to a study in Egypt that revealed that 56.1% of mothers reported that mass media was the source of information (Eldousky, 2012). In India, mass media presented 45.8% of the sources of knowledge (Sonavane et al., 2014). Also, this was supported by a previous study carried out in Riyadh, Saudi Arabia, Almass et al., 2015 reported that the main source of information regarding first aid among parents was mass media.

These effects clarified the role of mass media in transferring information about first aid to a familiar population. Therefore, care has to be paid to the fine of statistics in mass media. Also, it was revealed that more than one-third of studied parents got previous training regarding burn and its first aid measures (38.5%). This clarified the intense need for a continuous training program to increase parents' knowledge and practice.

Concerning parents' information about degrees of burn, it was revealed that more than half of the studied sample agreed that First degree of burn is characterized by redness of the skin (61%). Less than half of the studied sample agreed that second-degree burns appear in the form of blisters filled with fluid (48.5%). While 42.5% agreed that a third-degree of burn occurs when the body tissues appear dry/charred. This was clarified by Alomar et al., (2016) who mentioned that Knowledge of burn first aid among caregivers is limited. Besides, Furthermore, Moore et al., (2022) suggested low parental understanding of burns first aid in Ireland and suggests using an educational film as an effective approach of boosting knowledge levels. Therefore, various first-aid measures should be educated to provide effective burn first-aid measures and reduce morbidity, and improve the outcome.

Regarding Parents' practice of first aid for burns, it was revealed that the majority of studied parents disagreed to apply ice directly to the skin when having a burn (70%). More than half of the studied parents (54%) disagreed to use butter, fat, and toothpaste reduces the severity of the burn. To cover the burn, 97.5% agreed to use non-stick gauze or a clean piece of cloth. Furthermore, the majority of parents (91%) went to the doctor if the burn appears inflamed (red, swollen). In addition to 74.5% of parents Put sunscreen on when their child goes out of the house to protect him and 88.5% agreed that third-degree burns are serious and require immediate medical attention.

This finding is in agreement with Harvey et al., (2011) who reported that 82 % of respondents applied water to cool burn wounds. Meanwhile, Taira et al., (2010) mentioned that 73 % of respondents cooled burn wounds. This was contradicted by Scheven et al., (2012) who mentioned that only 26 % of respondents applied cold water to cool burn wounds. This is rendered to the cooling process that reduced mortality, associated with pain relief, improved wound healing, and decreased cellular damage and this Our result is consistent with Bennett et al., (2019).

The majority of the studied sample (70.5 %) agreed to cover the burn with non-stick gauze or a clean piece of cloth. However, the majority of the studied sample disagreed to apply ice directly to the skin at the site of the burn (70%). In this regard, several studies stated that direct ice application to the burn wound increases the severity of the burn by causing vasoconstriction in the burn area and causes hypothermia and shock (Davies et al., 2013 and Al Qahtani et al., 2019). Furthermore, the majority of parents (91%) went to the doctor if the burn appears inflamed (red, swollen, painful) and they agreed that third-degree burns are serious and require immediate medical attention (88.5%). This will help them to gain effective first-aid measures for burn cases and aid to develop appropriate interventions to reduce burn injuries.

Concerning parents' opinions about the training of first aid measures, it was illustrated that the majority of parents agreed to integrate first aid into education and identified the importance to have a first aid kit at home (94% and 96% respectively). Also, more than two-thirds of the studied sample are ready to attend first aid courses (73.5%) and 64% of them are able to give information on first aid to family and friends (64%). So, providing educational courses is essential for keeping parents up-to-date about first aid measures for the burn. So, prevention measures will be addressed in order to lower the risk of certain burns in children.

Concerning the factors associated with burns among children under-fives, it showed that there is no significant relation was found between parent's age, family size, history of burns, and previous information about burns. However, there were highly statistically significant differences between age of children and caregiver gender ( $p < 0.001$  and  $p = 0.021$  respectively). This was corresponding with Alomar et al., (2016) who mentioned that there is no significant correlation was found between the age, family size, history of burns, or training and knowledge. So, first aid training is vital to provide the correct assistance to avoid any complications.

## Conclusion

The findings concluded that there are variations of parents' knowledge and practice. Therefore, there is a need for the implementation of teaching programs to enhance the knowledge and practice level of parents regarding burn and first aid measures.

## Recommendations

The following recommendations are based on the study's findings:

- Raising awareness among parents about prevention and first aid measures for burns in infants and children.
- Using a combination of teaching methods for parents like auditory (verbal instructions and feedback), kinesthetic (demonstration, hands-on practice), and visual (video and learning materials) and translating into the parent's language.
- Culturally appropriate burns prevention programs should target each population group accordingly.
- Future studies should focus on the causes and severity of burn injuries in different settings for generalizing the results.

## Acknowledgment

The authors are grateful to all parents and children who helped us in data collection and for their cooperation in conducting this study.

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