



Knowledge, Attitudes, and Practices Concerning Burn First Aid among Parents in Jordan: A Cross-sectional Study

Hind Al Shikh, RN, MSN¹; Salam Bani Hani, RN, PhD^{2*}; Hanan Abu-Musameh RN, MSN³

¹ Department of Applied Sciences, Irbid University College, Al-Balqa Applied University, Irbid, Jordan.

² Nursing Department, School of Nursing, Irbid National University, Irbid, Jordan. * Corresponding Author.
Emails: banihani.salam@yahoo.com; s.banihani@inu.edu.jo

³ Maternal and Child Health Nursing, Al-al Bayt University, Al-Mafraq, Jordan.

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ABSTRACT

Background: Burn is ranked as the fourth leading cause of trauma that causes an injury to the skin and other organic tissues, mainly brought on by heat, radiation, radioactivity, electricity, friction, or chemical contact. **Purpose:** This study aims to assess the knowledge, attitudes, and practices of burn first aid among Jordanian parents. **Methods:** A cross-sectional descriptive design was used by recruiting 217 parents. **Results:** The average age was (M=34.9, SD=10.9) years. Most participants were female (n=202, 93.1%) and housewives (n=142, 65.4%). Generally, about one half of the participants had adequate knowledge about first aid for burn injury (n=111, 51.2%). For attitude, parents show a positive attitude toward going to the doctor before doing anything in case of having a burnt child (94.0%). For practices, parents had adequate safe practices toward burnt children (n=200, 92.1%). Significant mean differences were found between being a female [t (216) =-1.03, p=0.002] for knowledge and [t (216)=-1.45, p=0.003] for practices, and between receiving an emergency course to treat burn (M=1.77±0.422) with those who did not receive the emergency course [t (216)=-1.36, p=0.004] for knowledge and [t (216)=-1.38, p=0.003] for practices. **Conclusion:** Comprehensive educational and preventive efforts are needed to improve parents' understanding, attitudes, and practices surrounding the treatment of burns in children. **Implications for Nursing:** This study identifies a knowledge gap among parents that nurses can fill through advocacy, education, and practice enhancements, ultimately improving outcomes for children in Jordan who have suffered burn injuries.

Keywords: Burn, First aid, Knowledge, Attitudes, Practices, Parents, Children, Jordan.

What does this paper add?

1. A low level of knowledge of burn injuries in some aspects could lead to mismanagement of burn injuries.
2. A positive attitude was shown among parents toward going to the hospital immediately after the incidence of burn injury.
3. Most parents reported good practices toward burn injuries.
4. Comprehensive educational and preventive efforts

are needed to improve parents' understanding, attitudes, and practices surrounding the treatment of burns in children.

Introduction

A burn is a damage to the skin or other organic tissues, mainly brought on by heat, radiation, radioactivity, electricity, friction, or chemical contact (Padalko et al., 2019). Burns caused by heat arise when part or all of the skin's or other tissues' cells are damaged

by heated liquids, heated solids, and flames (Mobayen et al., 2021). According to the World Health Organization (WHO), children are the group most susceptible to burns (WHO, 2022). Young children are at the greatest risk of burns due to their thin skin, limited mobility, and lack of awareness about dangers, such as hot surfaces, liquids, or open flames (Emond et al., 2017). Studies showed that children under six are more likely to experience burns at home, particularly from scalds (hot liquids) and contact burns (hot surfaces) (Duke et al., 2011; Kemp et al., 2014). Besides, most burns in young children are preventable, and appropriate first aid can reduce complications. Assessing parental knowledge and practices helps identify gaps that can be addressed through public health initiatives and education campaigns.

Burns are ranked as the fifth most frequent reason for non-fatal childhood injuries. While inadequate adult supervision is a significant danger, child abuse is responsible for a significant portion of burn injuries in children (WHO, 2022).

Burns are a major global public health issue that causes an estimated 180,000 fatalities annually (Gerstl et al., 2021). Nearly two-thirds of these accidents occur in the WHO's African and Southeast Asian regions, and the majority occur in low- and middle-income countries (WHO, 2022). On the other hand, burn fatality rates have been declining in many high-income nations; today, the rate of burn-related child deaths in low- and middle-income nations is more than seven times greater than in high-income nations (Jacobs et al., 2021). Additionally, non-fatal burns are a major contributor to morbidity, which includes extended hospital stays, disability, and ugliness, frequently accompanied by rejection and shame (Kornhaber et al., 2018).

According to the statistics, every year, around 173,000 children from Bangladesh suffer mild to severe burns (Mughasieeb, 2022). A temporary disability affects 17% of burnt children in Bangladesh, Colombia, Egypt, and Pakistan, whereas a permanent handicap affects 18% of them (Sheridan, 2018). In rural Nepal, burn injuries rank second in frequency and cause 5% of disabilities (Mytton et al., 2019).

In Jordan, a survey performed by Hamdam (2018) reported that the majority of burns (89.1%) were unintentional, the majority of patients (71.0%) arrived at hospitals within 24 hours, the majority of burn patients (52.8%) were male, and the greatest age group (35.2%)

impacted was 1-10 years old. Red ointment was the most often utilized first aid medication in Arabia for burns (82.6%), with nearly a half of the burns (50.5%) being caused by scalds, 58.0% having second degree burns, and 88.6% occurring at the patient's home.

Generally, burns can cause significant disruptions to economic systems by impacting parents' ability to support their burnt children, the cost of medical care, and the productivity of society as a whole (Woolard et al., 2021). Burns are considered preventable injuries that can be avoided using primary prevention techniques (Loos et al., 2022). By combining preventative measures with advancements in the treatment of burn victims, high-income nations have significantly reduced the number of burn fatalities (Charles et al., 2017). However, in low- and middle-income nations, the majority of these advancements in prevention and care have only been partially implemented. Significant drops in the incidence of burn-related mortality and disability would probably result from further efforts in this direction (Jacobs et al., 2021). Strategies for prevention should focus on the risks associated with particular burn injuries, vulnerable population education, and community first aid training. Hence, this study aims to assess knowledge, attitudes, and practices about burn first aid among Jordanian parents.

Methods

Study Design

A cross-sectional descriptive design was used.

Population and Settings

The accessible population was all Jordanian parents, whereas the target population was Jordanian parents who met the inclusion criteria (1) who had a child under 6 years, (2) parents aged between 18 years and 50 years, (3) able to read and write, and (4) agreed to participate and fill out the questionnaire. Parents were recruited from the in-hospital settings, outpatient clinics, and community settings in different areas of Jordan. The study started in February 2024 and ended in May 2024. The sample was calculated using the G*power, which shows that the minimum required sample was 185 parents; based on $\alpha = 0.05$, power = 0.80, and moderate effect size = 0.30 (Faul et al., 2009). However, a larger number of participants was collected to compensate for the attrition rate or missing data that could happen during the data collection process.

Instrument

A self-administered questionnaire was adopted through a forward and backward translation procedure, and a panel of experts in emergency and nursing treatment for burns agreed upon the adoption of the questionnaire used in this study (Davies et al., 2013). The survey consisted of two sections: Part 1, which focused on socio-demographic information, including sex, age, education level, occupation, and whether they received a first aid program related to burn injury. Part 2: The knowledge, attitudes, and practices of burn first aid were tested and composed of questions covering topics, such as forms of first aid, the initial form of aid applied, the length of time pouring water on the wound, and the material used to cover the burn. If the participants agreed with the response item, they got (agree=1), and if they did not agree, they scored (disagree=0). Scores were summed for each item to identify adequate and inadequate knowledge and practice scores.

Since the scale consists of 0 or 1 responses, the total score reflects the overall presence of healthy practices and positive attitudes. A higher total score indicates a greater adoption of these behaviors, while a lower score suggests fewer such practices and attitudes.

The scoring system is based on correct responses to knowledge, -attitude-, and practice-related questions, with higher scores reflecting better KAP. Poor knowledge: $\leq 50\%$ correct responses, Moderate knowledge: 51-75% correct responses, and Good knowledge: $>75\%$ correct responses.

After piloting the tool, we found that it met the intended objectives effectively. Therefore, no changes were made, and it was adopted as originally designed. The tool was used in a study performed by Halil et al. (2021) who reported a Cronbach's alpha value of 0.53, which indicates that the study topics are pertinent and suitable.

Knowledge was composed of seven items that covered information related to picking the blisters, removing clothes immediately after the burn, keeping the child away from cooking, and educating the children to use a fire extinguisher. Attitudes regarding burns are focused on realizing parents' usage to treat burns, such as traditional methods, like using tomato paste, toothpaste, yogurt, herbs, or medications. For practices, it is composed of five items related to immersing the scaled burn with water, applying ice to the burnt area,

ensuring a safe scene at the site of incident, removing clothes to prevent adherence on the skin, and behaving calmly in case of electrical burn.

Ethical Considerations

Approval from the University was obtained under number (#2024/2023/8/97). Upon approval, the researchers obtained permission from the hospital and community settings to reach the participants. Verbal consent was obtained from eligible participants. Considering their knowledge and comprehension of the research under investigation, the respondents were asked to provide candid and real answers. To complete the questionnaire, the respondents had 15-20 minutes.

Data-collection Procedure

After granting the required approval, the required settings were contacted to announce the study purpose, significance of the study, and benefits from participation in the current study. A comfortable space was provided to the parents, and verbal consent approval was obtained. To ascertain whether the measurement tool had good reliability and validity, a pilot study was carried out. The pilot study involved twenty parents who had a Cronbach's alpha score of 0.83, which indicates that the study topics are relevant and appropriate.

Statistical Analysis

Statistical Package for Social Science, version 25, was used to analyze the collected data. Data was checked for missing values and inconsistencies. Descriptive statistics of means, frequencies, standard deviations, and percentages were used with categorical and continuous demographics. Inferential statistics of correlation were performed to assess the relationship between the knowledge, attitudes, and practices of parents and their demographic characteristics. Additionally, an independent-sample t-test and ANOVA were used to assess the mean differences between total knowledge and practices and parents' demographics. The *p-value* was significant at < 0.05 .

Results

A total of 217 parents have participated in this study. Among the sample, the average age was ($M=34.9$, $SD=10.9$) years. Most of the participants were female ($n=202$, 93.1%) and were housewives ($n=142$, 65.4%). One-third of parents were holding the secondary

certificate. Most parents did not receive an emergency course to treat burns as first aid (n=167, 77%). See

Table 1.

Table 1. Demographic data of participants (n=217)

Item	n (%)
Age Mean=34.9, SD=10.9	
Sex	
Male	15 (6.90)
Female	202 (93.1)
Educational Level	
Secondary	76 (35.0)
Diploma	60 (27.6)
BSc	53 (24.4)
Higher Education	28 (12.9)
Child Number	
> 2	71 (32.7)
≤ 2	146 (67.3)
Mother's Employment	
Employed	75 (34.6)
Housewife	142 (65.4)
Did you receive an emergency course to treat burn?	
Yes	
No	50 (23.0)
	167(77.0)

Notes: n=Number, %=Percentage, SD=Standard Deviation.

Most parents think that it is incorrect to pick blisters before seeing a doctor (n=196, 90.3%), a tiny percentage believe that enrolling kids to help while cooking is harmless (n=52, 24.0%), and most parents disagree with waiting for the burn to heal if their child gets burnt (n=

184, 84.4%). About two-thirds of parents believe that their children need to know how to use the home fire extinguisher (n=168, 77.4%). Generally, about a half of the participants had adequate knowledge about first aid for burn injury (n=111, 51.2%). See Table 2.

Table 2. Knowledge of parents about first aid treatment of burns

Items	Agree	Disagree	M (SD)
	N (%)	N (%)	
Correct to pick blisters before seeing a doctor	21 (9.70)	196 (90.3)	1.90 (0.29)
Enrolling your kids to help while cooking is harmless	52 (24.0)	165 (76.0)	1.76 (0.43)
If your child gets burnt, I will wait for it to heal	33 (15.2)	184 (84.4)	1.85 (0.36)
If you are going to the doctor immediately after a burn injury, such as a scald, you need to cover the burn with a clean, dry cloth	136 (62.7)	81 (37.3)	1.37 (0.49)
If a child has a simple burn, just clean the wound with cold water 3-5 minutes	130 (59.9)	87 (40.1)	1.40 (0.49)
Children need to know about fire hazards and how to handle and report fire incidents	202 (93.1)	15 (6.90)	1.07 (0.25)
Children need to know how to use the home fire extinguisher	168 (77.4)	49 (22.6)	1.23 (0.42)
Total Knowledge	Inadequate	106	48.8%
	Adequate	111	51.2%

Notes: N=Number, %=Percentage, M=Mean, SD=Standard Deviation.

Figure 1 demonstrates the attitudes of parent, where it was found that 94.0% of parents will go to the doctor

before doing anything in case of having a burnt child, while 28.1% of them apply egg white, 12.9 % of them

apply herbals, 18.0% of them apply toothpaste, 6.0% apply tomato paste, and 43.8% of parents apply yogurt

to the burnt area. Only 17.5% apply medications, such as petroleum jelly and burnt cream.

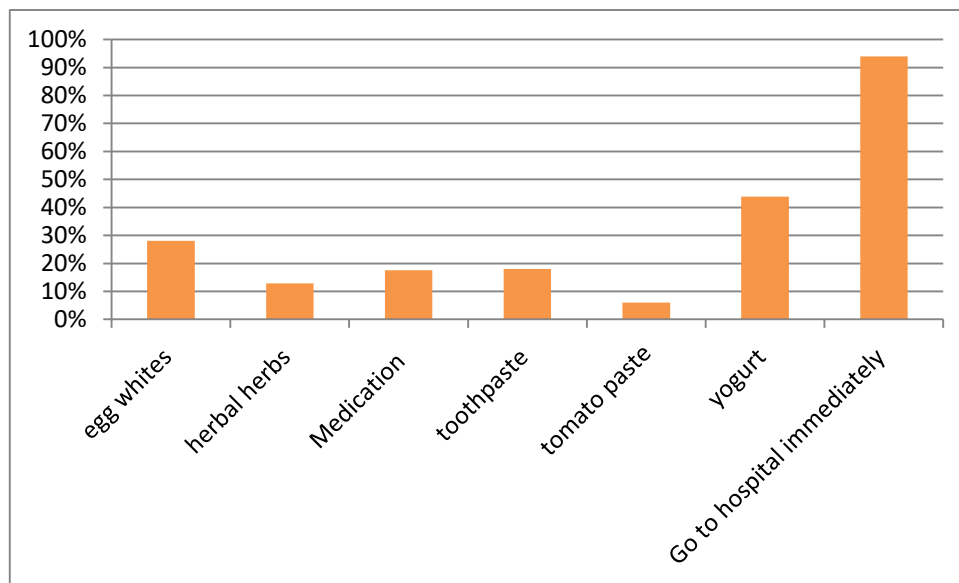


Figure 1. Parents' attitudes toward burn injuries

Concerning the practices of parents toward burning, about a half of parents believe in immersing the burnt area for about 15-20 minutes in water (n=115, 53.0%). Regrettably, about one-third of parents agree to apply ice to the burnt area (n=70, 32.3%). Most parents ensure their safety and take their children away from the fire site to a safe scene (n=203, 93.5%). Additionally, the majority of parents remove clothes to prevent adherence

with the child's body, and if it was adherent, they cut it down and removed it carefully (n=189, 87.1%). Generally, parents behave calmly in electrical burns, since they cut the current before touching the child and take him/her to a safe environment, check the signs of life, and seek medical help (n=202, 93.1%). Generally, parents had adequate safe practices toward burnt children (n=200, 92.1%). See Table 3.

Table 3. Practices of parents concerning first aid treatment of burns

Items	Agree	Disagree	M (SD)
	N (%)	N (%)	
I immediately immerse the burn area in water for an average of 15-20 minutes on the scald burn	115 (53.0)	102 (47.0)	1.47 (0.50)
I immediately apply ice to the burn area on the scald burn	70 (32.3)	147 (67.7)	1.68 (0.47)
I ensure my safety and take the child away from the fire, and put him/her in a safe environment	203 (93.5)	14 (6.50)	1.06 (0.25)
I remove the clothes in the burn area without adherence to the body. If it was adherent, I cut it and then remove it carefully	189 (87.1)	28 (12.9)	1.13 (0.34)
I behave calmly in electrical burns, I cut the current before touching the child and take him/her to a safe environment, check the signs of life, seek medical help	202 (93.1)	15 (6.90)	1.07 (0.25)
Total Practices	Inadequate	17	7.8%
	Adequate	200	92.1%

Notes: N=Number, %=Percentage, M=Mean, SD=Standard Deviation.

Pearson product-moment correlation was run to assess the relationship between parents' age and their

total knowledge and practices toward first aid of burn. No significant correlations were found between age and

total knowledge of parents ($r=-0.056$, $p=0.408$) and between age and total practices of parents ($r=-0.107$, $p=0.116$).

Independent-sample t-test was conducted to assess the mean differences between total knowledge and practices with sex, receiving an educational course about first aid of burn, having more or less than two children, and employment status. We found significant differences between sex of being female

($M=1.07\pm0.254$) rather than male [$t(216) = -1.03$, $p=0.002$] for knowledge and [$t(216)=-1.45$, $p=0.003$] for practices, and between receiving an emergency course to treat burns ($M=1.77\pm0.422$) with those who did not receive the emergency course [$t(216)=-1.36$, $p=0.004$] for knowledge and [$t(216)=-1.38$, $p=0.003$]. See

Table 4.

Table 4. Differences between knowledge and practices and parents' demographic characteristics

Item		Total knowledge	Total practices
Sex	Male	15 (6.9)	15 (6.9)
	Female	202 (93.1)	202 (93.1)
	t	-1.03	-1.45
	p-value	0.002*	0.003*
Educational level	Secondary	76 (35.0)	76 (35.0)
	Diploma	60 (27.6)	60 (27.6)
	BSc	53 (24.4)	53 (24.4)
	Higher education	28 (12.9)	28 (12.9)
	F	1.008	1.869
Child number	p-value	0.426	0.117
	>2	71 (32.7)	71 (32.7)
	≤2	146 (67.3)	146 (67.3)
	t	1.006	-1.054
Mother's employment	p-value	0.320	0.523
	Employed	75 (34.6)	75 (34.6)
	Housewife	142 (65.4)	142 (65.4)
	t	1.523	1.642
Receiving an emergency course to treat burns	p-value	0.025	0.073
	Yes	50 (23.0)	50 (23.0)
	No	167 (77.0)	167 (77.0)
	t	-1.36	-1.38
	p-value	0.004*	0.003*

Note: * significant at < 0.5 .

Discussion

Burns in children pose a serious global health risk and frequently have dire physical and psychological repercussions (Padalko et al., 2019). Understanding the knowledge, attitudes, and practices of parents regarding first aid for burns among children is crucial for improving outcomes in pediatric burn cases. In this study, most parents did not have access to emergency courses regarding first aid for burns for their children. This finding was consistent with a study performed by Al Dhafiri et al. (2022) who reported that 74.9% of parents did not receive prior training in treating burn injuries. Furthermore, a single-group pre-test/post-test study was conducted by Cetinkaya and Odabasi (2021) to assess the effect of educational courses on treating

burn injuries. The results showed that parents' burn knowledge is improved by basic first aid training. It is recommended to ensure public health awareness about burn injuries among children and improve the basic intervention requirements for appropriate first aid for burn injuries.

Moreover, this study demonstrates a good detailed knowledge about the burnt area, since most parents disagree with picking a blister before seeing the doctor or waiting for the burn until it healed. Besides, most parents agreed to raise their children's awareness about fire hazards and the urgent need to know the correct use of fire extinguishers. This finding is in the same line with a qualitative study performed by Tollow et al. (2022) aiming to explore the perceptions of parents toward burn

injuries. One of the main extracted themes was related to “acknowledging the burn trauma” to raise the level of awareness regarding burn knowledge among the children themselves to promote their safety. Besides, a study conducted by Al Dhafiri et al. (2020) found that parents have a good knowledge of burns, since a total of 81.8% of the participants in the treatment applied water to the damaged area, 72.3% removed clothing or accessories from the area of injury, and 51.8% used ice to cool the injured area. Additionally, a study performed by AlQahtani et al. (2019) reported sub-optimal knowledge of evidence-based burn first aid, including cooling burns with running water for at least 20 minutes. While a majority is aware of using water, the specifics of application are often misunderstood. This gap may be due to limited exposure to formal first aid training and reliance on informal sources, perpetuating misinformation.

Generally, in the current study, parents reported their basic knowledge related to burns, like cooling the burn with running water. This finding is relatively inconsistent with the results of a systematic review performed by Burgess et al. (2019) who reviewed a total of 14 studies to conclude that the mean score of parents’ knowledge of burnt children was 51.4/100, which refers to a moderate level of knowledge. However, basic information related to burn injury is relatively well-known, especially with the advancement in technology and the availability of several information resources, such as websites, social media, and educational sessions that are conducted regularly in outpatient centers.

Regarding attitudes, most parents recognize the importance of first aid for burns, but they may underestimate the urgency of proper treatment. In this study, most parents realize the importance of going immediately to the doctor without delay or waiting for the burn to heal. This finding was inconsistent with a study performed by Al Dhafiri et al. (2022) who reported that only 36.1% of parents believed that they should go to the doctor immediately to treat the burn. However, only a tiny percentage reported their usage of medications, and most of them used the traditional methods. This result could be related to the fact that traditional practices are deeply rooted in Jordanian culture and may be passed down through generations, leading parents to rely on them despite having formal education. Also, widespread misconceptions about the effectiveness of traditional remedies may persist due to social influence, word of mouth, or even healthcare

professionals not addressing these practices directly.

In the current study, around a half of the participants believed that using yogurt on the burnt area is useful in treating burns. While only 17.5% of them agree to use medications, such as petroleum jelly. A cross-sectional study showed a positive attitude toward using traditional methods, such as using honey and toothpaste (Kattan et al., 2016). Another study performed by Yilmaz and Andsoy (2020), reported usage of traditional methods, such as yogurt, toothpaste, salt, egg white, grated potato, apple juice, olive oil, and flour on the burnt area. Traditional methods were based on beliefs, cultures, and lifestyles rather than on a scientific basis. However, our society is highly educated and has good access to different reliable resources that could restrict traditional methods, which could delay the proper healing process of burn injury. A study performed in Jordan by Hamdan (2018) reported that Jordanian parents' attitudes towards home-based remedies and immediate medical care are influenced by cultural beliefs. Traditional remedies, such as honey, aloe vera, and toothpaste, are often preferred over immediate care. However, younger, educated parents may also be more willing to learn first aid techniques, similar to Lebanon's interest in such training.

Hence, when creating public health interventions, it is essential to comprehend these cultural impacts. Educational programs should respect cultural beliefs while gradually introducing scientifically supported burn care practices. Without ignoring cultural values, incorporating family influencers, religious leaders, and well-known community members into awareness efforts may assist in changing attitudes toward evidence-based first aid.

In practice, many parents cool burns under running water, which is the correct initial response. However, incorrect practices, like applying ice, are still common. This result was consistent with a study performed in Saudi Arabia by Mortada et al. (2020) who reported that more than a half of participants used cold water at the site of burnt injury (n=304, 64.8%).

On the other hand, this study showed good practices toward ensuring a safe environment for both parents and children at the site of the burn, removing the clothes that could adhere to children's skin, and behaving calmly in electrical burn cases. These findings were inconsistent with a study conducted in Nepal by Phuyal et al. (2020) who reported that only 40% of respondents would

remove their clothes in case of catching fire; 3 out of 10 households said that they would shower the sufferer in water or let him/her jump into water. Besides, they reported that just three out of every 100 homes said that they would halt, drop and roll, the sufferer, but roughly one in ten said that they would cover the flames with a cloth. This finding was consistent with a study conducted by Bataineh et al. (2018). who reported that Jordanian parents' burn management practices are influenced by their knowledge and attitudes. Studies show a high prevalence of traditional remedies and inconsistent evidence-based methods. The current study shows a significant difference between knowledge and practices and demographic factors that are related to sex and receiving educational emergency training related to first aid for burns.

On the other hand, these results were inconsistent with the findings of a study conducted by Phuyal et al. (2020) which revealed no correlation between burn awareness ratings and demographic characteristics of age, gender, and education. However, a study performed by Alomar et al. (2016) demonstrated significant differences between knowledge and practices that improved with participants who reported having information from training courses that raised their level of awareness about treating burn injuries.

In Jordan's cultural context, blending urban modernity and rural traditions influence the KAP framework. Family plays a central role in childcare, with parents often relying on elders for advice as reported in a study performed by Arabiat et al. (2019). The region's patriarchal structure influences decision-making, with mothers deferring to older family members. Religion and natural substances, like honey, may also influence KAP. Socio-economic status and education levels vary, with urban parents showing better knowledge and safer practices.

Strengths and Limitations

This study is the first of its kind that assesses parents' knowledge, attitudes, and practices about burn first aid in Jordan. Numerous interventions may be implemented to raise awareness of this knowledge, which can save lives and prevent the devastating effects of poor management of burn injuries.

However, a convenience sample employment for this cross-sectional study could have a chance that the results will vary depending on the socio-demographic

characteristics. Thus, more comprehensive research is still required to provide more precise estimates regarding the population of Jordan caregivers' knowledge of pediatric burn first aid. Furthermore, the limited sample size restricted the applicability of generalizing the results. Also, the gender imbalance among participants is another limitation that may affect the generalizability of the findings.

Implications for Nursing

Educating parents on appropriate burn first aid practices, such as using running water to cool burns, avoiding dangerous home cures, like toothpaste and butter, and understanding when to seek medical attention, has a critical role that nurses can play. It is possible to guarantee broad knowledge by implementing educational programs in community centers, schools, and maternity and child health clinics.

Conclusion

Generally, the results of this study show a low level of knowledge of burn injuries in some aspects that could lead to mismanagement of burn injuries. A positive attitude was shown among parents toward going to the hospital immediately after the incidence of burn injury. Additionally, most parents reported good practices toward burn injuries. No significant differences were found between socio-demographic variables and KAP except in sex and receiving emergency training programs of first aid related to burn injury.

Comprehensive educational and preventive efforts are needed to improve parents' understanding, attitudes, and practices surrounding the treatment of burns in children. We can enhance the immediate response to burn injuries and lessen long-term problems by clearing up myths, advocating proper first-aid procedures, and offering unambiguous information.

Data Availability

Data is available upon reasonable request from the corresponding author.

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Conflict of Interests

The authors have no conflict of interests to declare.

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