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Knowledge and practice of burn first aid among parents of under-age children☆

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Abstract The objective of this study is to assess the level of knowledge and practice of burn first aid management among parents. A cross-sectional study was conducted among parents of under-age children in the Taman Desa Darul Naim area of Pasir Tumbuh, in Kelantan, Malaysia, using an adapted survey from Davies et al. Out of 80 respondents, 46.3% showed minimal knowledge of burn first aid, 47.5% had moderate knowledge, and 6.3% extensive knowledge. There was a significant relationship between the demographic data and the knowledge of burn first aid for gender ($p = 0.02$), but no significant relationship between the level of knowledge and level of education ($p = 0.29$) or age ($p = 0.09$). The findings indicate that the level of knowledge of burn first aid is limited. Education for parents of under-age children, including demonstrations of burn first aid, is needed to promote safe action and prevent further injury in the community.

Introduction

It is estimated that about 26,500 deaths are reported every year due to burn injuries affecting the skin or organic tissues.[1] They are caused by heat, radioactivity, electricity, friction, or exposure to chemicals, and are part of a global public health crisis in which more than 90 percent of cases have been reported in low-income to middle-income countries.[2] A burn is a dynamic condition where within a few hours, a first-degree burn injury can have a more profound effect on the skin structure and change to second-degree, and a second-degree burn could worsen to third-degree.[3] Prompt first aid to the burn injury could reduce the seriousness and depth of tissue damage, which will also reduce knock-on effects, including reducing the duration of the hospital and the extent of surgical intervention.[4] One of the most effective treatments is to cool the burned parts using

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luke-warm running water with an optimum temperature of 15 degrees Celsius for 20 min.[5]

There are many ways of treating burn injury practiced by society.[6] Unfortunately, many of these suggested treatments are still practiced even though there is no reason or strong evidence to support their effectiveness. Among the pre-hospital remedies frequently used are cold or luke-warm water, ice, oils, powders, and natural plant therapies, the effectiveness of which may not be supported by research. In Malaysia, most people believe in using traditional treatments rather than getting immediate treatment from nearby clinics or hospitals even for minor burns that occur at home, such as spillages of hot liquids or splashes of hot oils. They prefer to use soy sauce, butter, toothpaste – anything that is easy to find in their home – as first aid for their burns, rather than running water for 20 min.[7] The public's knowledge and practice in relation to the first aid management of burns should be addressed as it is the public who will tackle the problem first when an incident occurs, before the intervention of a doctor or paramedics, and before a victim is sent to a clinic or hospital. Thus, the objective of this study is to assess the level of knowledge and practice of burn first aid management among parents of under-age children.

Methods

We conducted a cross-sectional study design involving parents of under-age children in one residential area in Kelantan to determine their levels of knowledge concerning burn first aid. We used Krejcie and Morgan's sample size table as a means of calculating the sample size for this study.[8] According to the table, if the population is 100 and the sample size required is 80 people. The researcher distributed the questionnaire to 80 respondents. The questionnaires used in this study were adapted[9] and adopted by consensus of a panel of experts in emergency and nursing care for burns through a forward and backward translation process. The questionnaire was in two parts: Part 1 contained eight questions about Sociodemographic Data: age, gender, ethnicity, level of education, occupation, and course. Part 2 had 14 questions to do with knowledge and practice about burn first aid, including types of first aid, the first type of aid used, how long-running water was used on the wound, and the material used to cover the burn. The end of this section asked respondents whether they knew or knew more about first aid. Responses to the statements were measured using a 4-point Likert scale: 'strongly agree', 'agree', 'disagree', and 'strongly disagree'. A pilot study was conducted to determine whether the instrument used for the measurement had high reliability and validity. Fifteen adults participated in the pilot study, which revealed a Cronbach alpha value of 0.53. A Cronbach alpha value is 0.5 and above shows that the research questions are appropriate and applicable.[10] The suggested sample size for a pilot study ranges from 10 to 30.[11]

We obtained approval from Open University Malaysia (OUM) to conduct this study. Upon approval by the university, the researcher applied for and obtained permission from the head of the residential area (*Penggawa*) Pasir Tumbuh, where the location of this study. The research involved residents in Taman Desa Darul Naim area in Pasir Tumbuh district. The researcher distributed this questionnaire to respondents, Taman Desa residents, for data collection. The questionnaires were only given to respondents who met the criteria as set by the researcher. The researcher obtained verbal and written consent from the respondents. Respondents were asked to give honest and sincere responses based on their knowledge and understanding related to the study being conducted. Respondents were given 15–20 min to answer the questionnaire. Then the data from the completed questionnaires were entered into a database using SPSS version 24.

Table 1 Characteristics of participants ($n = 80$).

	Frequency	Percentage
Gender		
Male	26	32
Female	54	68
Age (years)		
21–3 0	7	10
31–40	23	29
41–50	38	47
Above 51	12	15
Race		
Malay	71	89
Chinese	4	5
Indian	3	4
Others	2	2
Marital status		
Married	74	93
Divorced	6	7
Religion		
Islam	71	89
Buddhism	3	4
Christianity	1	1
Hinduism	3	4
Others	2	2
Level of education		
Primary school	4	5
Secondary school	51	64
Diploma and above	25	31
Occupation		
Government servant	20	25
Private company	14	18
Self-employed	46	57
First aid knowledge		
Yes	9	11
No	71	89

Results

Table 1 shows the characteristics of the participants in terms of gender, age, race, marital status, religious belief, level of education, occupation, and first aid knowledge.

Table 2 shows the frequency and percentage of the level of knowledge regarding burn first aid among parents of under-age children. The majority of respondents had low

Table 2 Frequency and percentage of the level of knowledge regarding burn first aid among parents ($n = 80$).

Category	Frequency	Percentage (%)
Low	37	46.3
Moderate	38	47.5
High	5	6.3

($n = 37$, 46.3%) to moderate ($n = 38$, 47.5%) knowledge, while only five respondents (6.3%) had extensive knowledge of burn first aid.

Table 3 shows the distribution of answers from the burn first aid questionnaires completed by parents of under-age children. Three items show higher mean values as compared to the rest; item number 11 'first aid as initial treatment in rescuing victim' (mean = 3.67, SD = 0.47); item number 4 'in the event of fire, stop and roll if the clothes are on fire' (mean = 3.51, SD = 0.50); and item number 10 'depth of wound will increase if no burn first aid' (mean = 3.48, SD = 0.50). Meanwhile, the lowest three items are item number 12 'burn first aid is common and does not require health education' (mean = 1.67, SD = 0.54); item number 5 'burn first aid with running water' (mean = 2.27, SD = 0.63); and item number 7 'running water to the burn area can reduce pain' (mean = 2.43, SD = 0.65).

Table 4 shows the analysis of respondents' preferred technique in administering burn first aid. Most of the respondents used plain water (26%) or soy sauce (25%) to treat burn injury at home followed by the egg (11%). Eight respondents (10%) used toothpaste and butter, respectively. The other six respondents (8%) used ice, five (6%) used cold water, and three (4%) used flour as first aid for burn injury.

Table 4 Analysis of respondents' preferred techniques for burn first aid.

Technique	Frequency	Percentage
Plain water	21	26
Soy sauce	20	25
Egg	9	11
Toothpaste	8	10
Butter	8	10
Ice	6	8
Coldwater	5	6
Wheat flour	3	4

Discussion

The findings of this study indicated that parents of under-age children have a low to moderate level of knowledge regarding burn first aid at home. They lack information about how to react to burn injuries in their children. Previous studies show that more than half of the adult population lacks knowledge about first aid,[9] and that less than one-third of the parents have extensive knowledge about the emergency treatment of burns, which is almost identical to the findings of this study. In Australia, a study involving 2602 respondents who answered the questionnaire found that 30–50% of respondents gave wrong answers about the first aid management of burns.[4] It is evident that a lack of knowledge

Table 3 Distribution of answers for burn first aid questionnaires among household parents.

No	Statement	Strongly disagree %	Disagree	Agree	Strongly agree	Min	Standard deviation
1	Burn first aid is a life-saving action.	0	0	55	45	3.45	0.50
2	Burn first aid could be done anywhere.	0	0	82.5	17.5	3.17	0.38
3	Most cases of burns occur in children.	0	2.5	50.0	47.5	3.45	0.54
4	In the event of a fire, stop and roll if the clothes are on fire.	0	0	48.8	51.3	3.51	0.50
5	Burn first aid with running water.	6.3	63.8	26.3	3.8	2.27	0.63
6	Burn first aid by holding the affected area under running water for 20 min.	1.3	61.3	30.0	7.5	2.43	0.65
7	Running water to the burn area can reduce pain.	0	55.0	37.5	7.5	2.52	0.63
8	All types of burn wounds should be treated at a nearby clinic or hospital.	0	15.0	57.5	27.5	3.12	0.64
9	If there is any swelling, remove any constricting items such as rings, bracelets.	0	0	82.5	17.5	3.17	0.38
10	Depth of wound will increase if no burn first aid.	0	0	51.3	48.8	3.48	0.50
11	Burn first aid is used as an early treatment to rescue the victim.	0	0	32.5	67.5	3.67	0.47
12	Burn first aid is common and does not require health education.	36.3	60.0	3.8	0	1.67	0.54

regarding burn first aid is a global issue, and serious action should be taken to prevent further complications. Studies in New South Wales found that the general population had little or no knowledge about the treatment of burn first aid, and that respondents who spoke English were more knowledgeable than those who did not speak English, which was probably due to the researchers using phone calls for data collection.[12] Every region of every continent in the world has an issue with knowledge deficiency regarding burn first aid, particularly among the parents and guardians of children.

Everyone should be educated in burn first aid. It is important that all classes of the general public should understand the concepts and that basic management of first aid should be emphasized.[6] Burn first aid courses are important and very relevant to meet the needs of community living, as researchers believe that most of our society is not accustomed to the situation and thus suffer anxiety or panic when seeing someone injured, similar to other research studies that reported the influence of cultural context in Malaysia.[13,14] These accidents can happen anywhere at home or at school, in the workplace, and so on. All cases should be given emergency assistance or early treatment to provide relief to the victim and to attempt to prevent the injury from becoming more severe or critical during the time it takes to obtain treatment from a clinic or hospital. Children being scalded at home were reported to be among the more common cases seen at hospitals.[15] The most common remedies used by parents are water and soy sauce. It is believed that the use of soy sauce is culturally informed from generation to generation without any research evidence. Although running water is the most strongly recommended method, the respondents did not know that the required time to hold the burn under running water is at least 20 min.

There are some studies that dispute the effects of care, such as Vaseline and toothpaste being applied to the burned parts. In 2003, there was a study that disputed the use of Vaseline in burn first aid in which the researcher stated that the grease of Vaseline did not allow the release of heat from the burns and possibly even promoted infections.[16] In addition, studies have found that toothpaste may stick to the burns and cause wounds to take longer to heal.[17] Another clinical treatment study on children's health in Australia at Queensland's Royal Children's Hospital studied the use of 'Burn-aid', one of the 'hyrodressing' containing tea tree oil now available on the market, as a treatment for burns.

Conclusion

This study has identified the level of knowledge about and practices used to burn first aid among parents of under-age children in one of the residential areas in Malaysia. The level of knowledge was found to be low, and various methods are used to manage burn injury at home, which are based on the local context. As a result, it is fair to conclude that there is a need to burn first aid education for parents, to teach them how to manage burn injuries effectively and safely within the community. The traditional ways and alternative methods by parents to treat burn injuries require further investigation. Apart from increasing knowledge and improving practice, burn first aid education will also create a sense of well-being and safety within society.

Conflict of interest

The authors declare no conflict of interest.

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