

# Knowledge, attitude, and sources of information towards burn first aid among people referred to a burn centre in the north of Iran

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## Abstract

Optimal management of burns begins with first aid from the first hours of injury. Adequate knowledge of how to perform first aid for burns can reduce the consequences of injury. Therefore, this study aims to determine the knowledge, attitude, and sources of information assessment towards burn First aid among people referred to a burn centre in the north of Iran. A questionnaire-based survey was conducted to assess knowledge, attitude, and sources of information towards burn first aid among people referred to a burn centre in the north of Iran in 2023. In this survey, a convenience sampling method was adopted. The variables consisted of four items on socio-demographic information, 15 items on knowledge, ten items on attitude, and one item on sources of information related to burn First aid. A total of 371 individuals responded to the survey. The mean age of participants was  $31.90 \pm 8.49$  years old. The mean score of the total knowledge of the participants in the research was  $6.04 \pm 3.05$ . There was a statistically significant relationship between the variables of age, sex, marital status, place of residence, level of education, and history of receiving first aid training with the participants' knowledge level. The average score of the total attitude of the participants was  $44.08 \pm 3.88$ . Out of 371 participants, 214 people (57.7%) had an average attitude, and 157 people (42.3%) had a good attitude towards burn first aid. There was a statistically significant relationship between place of residence, level of education, and history of receiving first aid training with the participants' attitudes in the research. In addition, the level of knowledge had a statistically significant relationship with the participants' attitude level in the research ( $p$ -value  $< 0.001$ ). The majority of participants have limited knowledge of burn first aid. This lack of knowledge could lead to severe consequences. Therefore, healthcare organizations should

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review and promote consistent guidelines for burn first aid to tackle and minimize the effect of this grave injury.

#### KEYWORDS

attitude, burns, first aid, knowledge

#### Key Messages

- Adequate knowledge of how to perform first aid for burns can reduce the consequences of injury
- The mean score of the total knowledge of the participants in the research was  $6.04 \pm 3.05$
- The average score of the total attitude of the participants was  $44.08 \pm 3.88$
- The level of knowledge had a statistically significant relationship with the participants' attitude level ( $p$ -value  $<0.001$ )

## 1 | INTRODUCTION

Burns severely harm the skin and underlying structures, indicating a serious medical emergency requiring prompt treatment.<sup>1,2</sup> Burns can have potentially devastating injuries that range from physical, functional, and occupational injuries to cosmetic and psychosocial consequences.<sup>3,4</sup> To keep the severity of tissue damage to a minimum and minimize the impact of pain, a prompt application of first aid for the burn is eminently important.<sup>5</sup> Adequate knowledge of how to perform first aid for burns can reduce the consequences of injury.

Optimal management of burns in the acute phase always begins with first aid. Immediately using cool running water from the first hours of injury can significantly impact burn outcomes and reduce healthcare complications and costs.<sup>6</sup> Many studies have evaluated the level of awareness and attitude of different world populations regarding first aid. Despite the ease of performing first aid, most of these studies have shown the public's insufficient knowledge of first aid for burns. Most people use different types of topical substances for burn injuries that have no scientific basis. The most used ingredients include ice, herbal medicines, oil, honey, vinegar, flour, toothpaste and eggs. Improper use of first aid measures increases post-burn complications.<sup>5,7</sup> Because some of the materials used are non-sterile and promote the proliferation of bacteria on the wound's surface, for example, using ice leads to vasoconstriction, leading to hypothermia, especially in children. Nevertheless, the findings of some studies have shown that the knowledge of burn first aid is more in people who participated in the first aid course.<sup>8–10</sup>

According to our knowledge, there were very few reports of burn prevention programs in Iran. In addition, our experience treating burn patients shows that many

patients and their caregivers (family members) need to be made more aware of burn prevention and first aid. These observations emphasize the importance of early prevention of burns and increased awareness. Based on the available literature, studies were not found on the level of knowledge and attitude towards first aid for burns among those who refer to burn centres in Gilan province. Therefore, this study aims to determine the knowledge, attitude, and sources of information toward burn first aid among those who refer to the emergency department and the burn clinic of Velayat Hospital in Guilan province as baseline information to develop an effective burn prevention program in Iran.

## 2 | MATERIALS AND METHODS

### 2.1 | Data source and design

A descriptive cross-sectional study was done at a burn centre in the north of Iran. From January to April 2023, a survey was conducted on 371 people who refer to the Emergency Department or outpatient clinic. The questionnaire was delivered in person. The contents of the survey included: (1) general information including age, gender, working experience, marital status, educational level, residence, information sources, and previous participation in first aid training courses (2) knowledge of first aid (15 questions) for thermal burns, chemical burns, and electrical burns. All consenting people  $\geq 18$  years of age, without a prior history of burn, were included in the study. Moreover, individuals  $< 18$  years of age and those who refused to participate in the study were excluded. To gather data, the researchers made visits to the burn center. The selection of samples was conducted through a convenience sampling technique. Eligible people signed

the informed consent form before completing the questionnaire. The consent forms clearly explained the study's objectives and emphasized the voluntary nature of participation. In addition, the participants were assured that their information would remain anonymous and confidential. A total of 426 people were identified and invited to participate, finally 371 patients participated in the study. Those who agreed were given a unique ID. Participants completed the self-report questionnaire while waiting to see their physician, and any ambiguities in the answers were resolved by asking questions from the respondent.

Based on a similar study,<sup>1</sup> we assume that the ratio of knowledge of first aid in the subjects under study was equal to  $p = 0.33$ . Considering the confidence level of 0.95 and the error level 0.05, the minimum sample size using the formula  $Z^2P(1-P)/d^2$  was calculated at 334.

## 2.2 | Ethics statement

The present research was part of a M.D. thesis, which the research deputy of the Guilan University of Medical Sciences supported. In addition, this research was approved by the Ethics Committee of Guilan University of Medical Sciences (IR.GUMS.REC.1401.468).

## 2.3 | Statistical analysis

Data were analysed in Statistical Package for the Social Sciences (SPSS) 28 (IBM SPSS Statistics, IBM Corporation, Armonk, NY, USA). There was no missing data. Parametric variables were presented by means and standard deviation (SD), while qualitative variables were presented by number and percentage. The Kruskal Wallis Test, Chi-square, Spearman's correlation coefficient, Fisher's exact test, and Mann-Whitney U test were applied to comparing groups. The  $p$  values of less than 0.05 determined the statistically significant difference.

## 3 | RESULTS

At the end of the assessment period, 371 people responded to the survey, with an 87% response rate. The participants' age ranged from 18 to 74, with a mean of 31.90 (SD = 8.49) years old. 196 (52.8%) were female, and 175 (47.2%) were male. Of the total participants, 198 (53.4%) respondents were married. Most respondents were well-educated (had a university degree and above). Most (71.6%) of the respondents did not take the training in first aid (Table 1).

TABLE 1 Demographic characteristics of respondents.

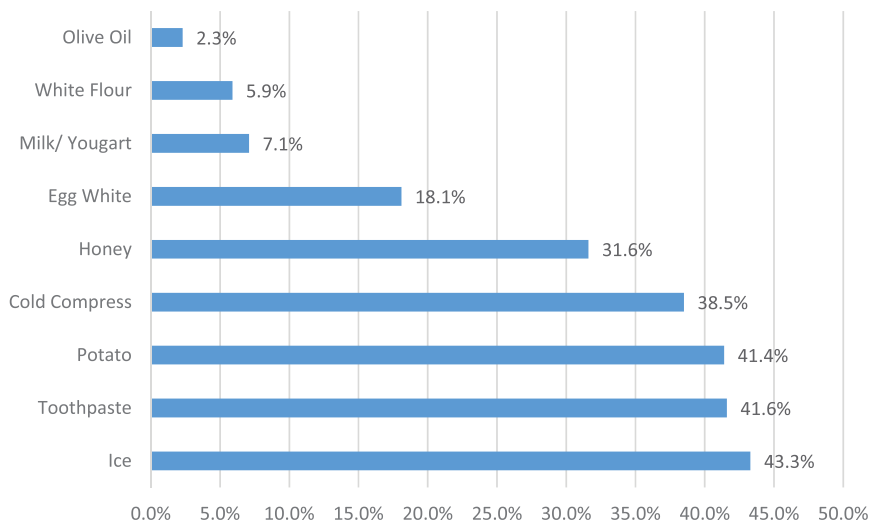
Demographic variables	Number	Percentage
Age (mean $\pm$ SD)	31.9 $\pm$ 8.49	
Gender		
Male	175	(47.2)
Female	196	(52.8)
Marital status		
Non-married	173	46.6
Married	198	53.4
Level of education		
High school	61	16.4
Diploma	84	22.6
University degree	226	60.9
Residence location		
Rural	142	38.3
Urban	229	61.7
Training courses experienced	41	11.1

The knowledge and preference toward the application of home remedies to burn wounds were also assessed (Figure 1). Among the 371 people screened; Ice was chosen as a remedy to treat burns by 43.3%, toothpaste was chosen by 41.6%, while potato was chosen by 38.5% of respondents.

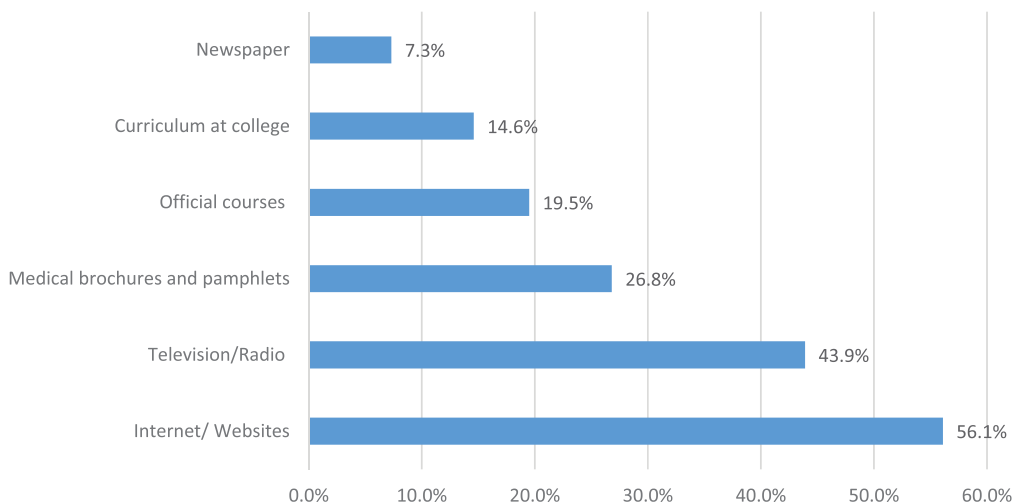
Training courses experienced in burn first aid were present in 41 respondents (11.1%). About half of the participants got information on first aid for burns mainly from websites and the Internet, while very few indicated that the information was obtained from official courses (19.5%) (Figure 2).

The total mean score of knowledge of burn first aid was 6.04 (SD = 3.05). Among participants, 54.7% stated that only water should be applied to the burned areas with hydrochloric acid. Most participants (56.9%) answered correctly that for a person whose clothes caught fire in the open air, the appropriate action is to lay the injured person on the ground and ask her to lie on the ground. There was a statistically significant difference between the variables of age, sex, marital status, place of residence, level of education, and history of receiving first aid training with the participants' knowledge level (Table 2).

Out of 371 participants, 214 people (57.7%) had an average attitude, and 157 people (42.3%) had a good attitude towards burn first aid. There was a statistically significant relationship between place of residence, level of education, and history of receiving first aid training with the participants' attitudes in the research. In addition, the level of knowledge had a statistically significant



**FIGURE 1** Home remedies for burned injured areas.



**FIGURE 2** Sources of burn first aid information.

relationship with the participants' attitude level in the research ( $p$ -value  $<0.001$ ) (Table 3).

Table 4 shows the relationship between the knowledge level and the attitude level of the participants. Based on the results obtained, there is a statistically significant correlation between the knowledge level and the attitude level toward burn injury first aid ( $p$ -value  $<0.001$ ). In that way, as the knowledge level increases, the level of attitude of people increases and vice versa (Table 4).

## 4 | DISCUSSION

Burns can have potentially devastating injuries that range from physical, functional, and occupational injuries to cosmetic and psychosocial consequences. This can place heavy burdens on both their families and society.<sup>11</sup> Improving people's awareness of burn prevention and first aid could effectively reduce the occurrence of such unfortunate incidents. Therefore, great attention should be paid

to the implementation of educational programs in connection with increasing the awareness level of society about the principles of burn first aid. The most effective and appropriate first aid approach to burn management is the application of cold running water to cool the burn for at least 20 min, as it helps reduce burn depth and tissue damage, relieve burn pain, and decrease the severity of damage and hospital stay.<sup>12</sup> In the present study, when asked how to manage the burn wound with hydrochloric acid, 54.7% of participants chose the option of "immediately applying cold running water to cool the burn for 20–30 min".

In a survey conducted by Harvey et al. in New South Wales, 7320 individuals participated through a telephone-based survey. The results revealed that 82% of the respondents indicated their intention to use water for cooling a burn. However, only 9.4% would do so for an optimal 20 min. Implementing other first aid measures was reported to be less than 1%.<sup>10</sup>

In another study by Taira et al. conducted in New York, 211 burn victims were examined regarding their

**TABLE 2** Knowledge toward burn injury first aid by socio-demographic characteristics ( $n = 371$ ).

Demographic variables	Knowledge	<i>p</i> -value
Age (mean (SD))	6.04 (SD = 3.05)	<0.001
Gender		
Male	5.24 (SD = 2.59)	<0.001
Female	6.75 (SD = 3.26)	
Marital status		
Single	5.54 (SD = 3.13)	<0.001
Married	6.48 (SD = 2.92)	
Level of education		
High school	3.41 (SD = 2.28)	<0.001
Diploma	6.11 (SD = 2.33)	
University degree	6.72 (SD = 3.09)	
Residence location		
Rural	5.29 (SD = 2.74)	<0.001
Urban	6.5 (SD = 3.15)	
Training courses experienced		
Yes	9.05 (SD = 2.85)	<0.001
No	5.67 (SD = 2.87)	

pre-hospital actions. The findings demonstrated that 73% of the participants engaged in cooling their burns. Specifically, 39.9% used tap water, 25.2% used ice, and 8.9% used a cooling blanket. Dressings were applied by only 22.2% of the individuals.<sup>13</sup> In the present study, more than half of the participants were female. The average age of the participants was 31.90 years. In a similar study conducted in Germany, about 54.8% of the participants in the research were women, and their average age was 37.2 years.<sup>1</sup> In addition, in a study conducted in Saudi Arabia, the majority of participants were women (71.8%).<sup>14</sup> Education and literacy level are important factors for correctly adopting first aid measures. In the current study, 60.9% of our respondents had a University degree. Kattan et al. reported in their study that most of the research participants were university graduates, 51.1% of whom had a bachelor's degree.<sup>5</sup>

In the present study, the most common source of burn first aid information was websites and the Internet, which is similar to a previous study conducted in Saudi Arabia.<sup>15</sup> On the other hand, two other studies conducted in New South Wales and Saudi Arabia showed that first aid books and official courses were the commonly mentioned sources of burn first aid information.<sup>5,16</sup>

In the present study, the participants' knowledge of first aid was relatively low ( $6.04 \pm 3.05$ ). But respondents had a relatively good attitude to burn first aid, so holding first aid training courses related to burn injuries with

**TABLE 3** Attitude toward burn injury first aid by socio-demographic characteristics ( $n = 371$ ).

Demographic variables	Attitude		<i>p</i> -value
	Moderate	Good	
Gender			
Male	114	61	0.006
Female	100	96	
Marital status			
Single	91	82	<0.001
Married	123	75	
Level of education			
High school	36	25	<0.001
Diploma	66	18	
University degree and above	112	114	
Residence location			
Rural	90	52	<0.001
Urban	124	105	
Training courses experienced			
Yes	17	24	<0.001
No	197	133	

appropriate standards in terms of quantity and quality and periodic monitoring can effectively improve their knowledge. Wallace et al. surveyed 2602 adults on burn first aid.<sup>8</sup> The results found that only 30% to 50% of participants had relatively good knowledge. The correct response rate was 15% higher in the groups trained in first aid in the last 5 years (about 50% of the participants) than in the other participants. In addition, in a study conducted by Davis et al. to evaluate the knowledge of family members regarding burn first aid in hospitals, the findings showed that only 32% of the participants had sufficient knowledge of first aid for burns.<sup>17</sup> In the present study, there was a significant difference between the average knowledge score of male and female participants, and the knowledge level of female participants was higher. Generally, because women are responsible for taking care of children at home and managing household affairs, it is natural that they have better experience and knowledge about first aid in burns. On the other hand, the high prevalence of burns in children can confirm this issue.

In the present study, the level of knowledge and attitude was higher and more positive in individuals who had previously received first aid training. According to the survey, only 11.1% of the participants stated they had received burn care training. In studies conducted in Saudi Arabia<sup>5</sup> and Pakistan,<sup>18</sup> less than half of the

**TABLE 4** The relationship between the knowledge level and the attitude level toward burn injury first aid.

Variable	Descriptive indicators			The correlation coefficient	p-value
	Mean (SD)	Min	Max		
Knowledge	6.04 (SD = 3.05)	0	14	0 < 185	0 < 001
Attitude	44.08 (SD = 3.88)	35	55		

respondents had taken part in training courses for first aid and burn management. These results indicate a weak penetration of information campaigns and education regarding first aid for burns in the community. Moreover, the commonly selected home remedy to be applied on a burn-injured area was ice, toothpaste, and potato. This is in accordance with several existing studies.<sup>19,20</sup>

In the current study, the age variable had a statistically significant difference with the knowledge level of the participants. In this way, people's awareness scores increase with age. In line with our study, Bassam et al.'s findings showed a significant difference between parents' age and knowledge of burns first aid. The logical explanation for these findings can be that people may have sufficient knowledge of first aid due to having experienced burns in themselves or family members. This experience or exposure to burn cases increases their awareness of the importance of burn first aid and may motivate them to learn about proper treatment. In addition, older individuals may have had more opportunities for education and training in first aid, either through formal courses or workplace training programs. However, it is important to note that while there may be a general trend of increasing knowledge of burn first aid with age, however, it is possible that some younger individuals can also possess significant knowledge in this area depending on their personal experiences, education, and exposure to information. In our study, the knowledge of burn first aid was higher in married people than in others. This may explain that married individuals often have additional responsibilities, such as caring for their spouse and children. This increased level of responsibility may motivate them to acquire knowledge of first aid to ensure the safety and well-being of their family members.

Consistent with Bassam et al.'s study,<sup>21</sup> the current study showed a significant correlation between knowledge level and attitude toward burn first aid; as individuals' knowledge levels increase, their attitude toward burn first aid increases. This relationship can be explained in this way gaining knowledge about burn first aid increases awareness of the importance of timely and appropriate actions in treating burns. This awareness leads to a positive attitude toward burn first aid, as individuals understand the consequences of not providing proper care. Conversely, individuals with a positive

attitude toward burn first aid are more likely to seek out and acquire knowledge in this area. Their positive attitude is a driving force to enhance their knowledge and skills, as they recognize the importance of being prepared and capable of responding to burn incidents. It is important to note that some people may possess knowledge but not have a positive attitude toward burn first aid because of personal factors or biases. Similarly, someone may have a positive attitude without extensive knowledge, indicating the need for ongoing education and awareness campaigns to bridge gaps and ensure that knowledge and attitude are aligned.

#### 4.1 | Limitations

One of the limitations of this study is to measure the knowledge and attitude of the participants without examining their actual performance. In addition, the lack of attention to the different cultures of the researched society is another limitation of this study, and it is suggested to pay attention to these points in future studies.

## 5 | CONCLUSION

The majority of participants have limited knowledge of burn first aid. This lack of knowledge could lead to severe consequences. In addition, the study showed that participants have a positive attitude toward burn first aid. This means they would be receptive to educational programs about burn first aid. Therefore, healthcare organizations should review and promote consistent guidelines for burn first aid to tackle and minimize the effect of this grave injury.

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#### CONFLICT OF INTEREST STATEMENT

Each author has contributed substantially to the conception and design of the study or acquisition of data or

analysis and interpretation of data, drafting the article or revising it critically for important intellectual content. Each author has seen and approved the contents of the submitted manuscript. None of the authors has any personal or financial conflicts of interest.

### DATA AVAILABILITY STATEMENT

The data and materials supporting this study's findings are available from the corresponding author upon reasonable request.

### ETHICS STATEMENT

The present research was part of a M.D. thesis, which the research deputy of the Guilan University of Medical Sciences supported. Also, this research was approved by the Ethics Committee of Guilan University of Medical Sciences (IR.GUMS.REC.1401.468).

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