Assessing Knowledge of First Aid Management of Burns Amongst Syrian Private University Students.

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Abstract

Background:

Burn related injuries (BRIs) are relatively common, mostly accidental, and highly preventable forms of injury. First aid management of BRIs can have a significant impact on the outcome and morbidity of these injuries, yet there seems to be an inadequacy in the knowledge related to burn management worldwide. Hence, our study aimed to delineate the level of knowledge and awareness of burn first aid treatment (BFAT) amongst undergraduate students, and the impact training courses had on that knowledge.

Methods:

A cross-sectional study was conducted among students of the Syrian Private University using a self-administered questionnaire. The questionnaire consisted of: socio-demographic characteristics and questions assessing their knowledge of first aid. The statistical study was conducted using SPSS software. The demographic characteristics were described, and the sample distribution was described according to the study variables that measure students' awareness of burns measures. The averages of the independent groups were also compared using parametric tests (T-Test Independent Samples, One way ANOVA).

Results:

The students obtained an average score ($4.79, \pm 1.467$) in knowledge of first aid burn treatment, as there was an insufficient degree of awareness among the participants. Gender, college, and parents' educational level were not statistically significant factors, whereas students with better economic level and students with higher school years and those who received training achieved higher mean scores of knowledge ($P\text{-value} < 0.05$).

Conclusions:

The majority of students had insufficient general knowledge about first aid for burns, highlighting the need to incorporate this topic into the curriculum. In addition, awareness should be spread in the community through multimedia and formal training sessions, both of which are necessary to raise awareness and reduce the incidence of burn-related injuries.

Introduction

Burn related injuries (BRIs) are said to take place when part of or all of the layers of the skin are disrupted by hot liquids (scalds), by hot solids (contact burns), or by a flame (flame burns); moreover, injuries to the skin caused by radiation, electricity, or chemicals are also classified as burns [1]. Socio-environmental advancement and modernization have led to an increase in the number of accidents in our daily lives, with BRIs constituting the major portion of such events. Injuries related to burns and fires account for

more than 300,000 deaths annually throughout the world [2]. According to the American Burn Association (ABA), more than 450,000 individuals present to the emergency departments, clinics, or physician's offices to receive treatment for a burn-related injury in the United States and Canada; both of which are high-income and developed countries [3]. The vast majority of these burns are not fatal, not lethal, and preventable. Also notable is the fact that even though the morbidity and mortality due to fire and flames has declined worldwide over the years, 90% of deaths caused by burns and fires still occur in low- and middle-income countries (LMIC), where burn prevention programs are not common and quality of acute management is inconsistent [2].

In Syria, the absence of a National Burn Registry program and the under-reported nature of BRIs, make it difficult to estimate the annual burden of injuries related to burns and fires presenting to hospitals and to the handful of specialized burn centers located in urban areas [4]. The majority of the most common BRIs occur within the household, which means that the first respondents in these cases are usually the family members, friends, etc [1,5-6]. Hence, to be able to manage these common, non-fatal burns, it is important to have a clear understanding regarding burn first aid treatment (BFAT), because the provision of optimal first aid treatment can significantly decrease tissue damage, fasten wound re-epithelialization, and reduce associated scarring [7]. On the other hand, inadequate knowledge and incorrect application of techniques can not only influence the outcome of the injury, but may also hinder proper recovery, and at worst, exacerbate the damage caused by the initial injury.

Several studies have been conducted worldwide to demonstrate the adequacy of knowledge regarding BFAT, spanning across a variety of ages and groups. A majority of these studies have shown a lack of understanding and knowledge of BFAT in groups such as medical students and healthcare workers in the United Kingdom; the Saudi population; students in Nigeria; and adults in Australia [8-12]. A limited number of studies on this topic have been carried out in Syria, where one study revealed a general lack of knowledge of BFAT among medical students in Aleppo, and data showed that factors such as progress in school years, prior knowledge of first aid burns, and attendance of a first aid/training course They are associated with higher levels of knowledge [13]. This reflects that imparting the knowledge and basic training regarding BFAT should be a point of focus to not only students belonging to schools, colleges, and universities, but also to the general population.

Keeping this in mind, the aim of our study was to delineate the level of knowledge and awareness of burn first aid management amongst medical and non-medical students and to highlight the urgent need of addressing gaps, if any, in this knowledge. We also aim to assess the impact of attending first aid training and/or courses on the knowledge of BFAT, and hence, demonstrate the usefulness of implementing them as part of the student's curricula.

Method

Study preparation, participants:

This cross-sectional study was conducted online in December 2020 using an appropriate sampling pattern among students of the Syrian Private University in Damascus, Syria. Students were asked to participate voluntarily. Written informed consent was obtained from all participants. They were informed that all of their responses were anonymously recorded, that responding to all questions was not mandatory, and that they were allowed to opt out of the survey at any time. The inclusion criteria included students studying at the Syrian Private University, 18 years and over. The objectives of the study were explained to the students in written form attached to the questionnaire. Ethical approval was obtained from the Institutional Review Board (IRB), Faculty of Medicine, Syrian Private University.

Study tools:

A self-administered questionnaire was used in Arabic language, which was distributed randomly to the students of the Syrian Private University regarding first aid for burns. This poll was based on previously published studies [24]. The questionnaire includes:

1 - Socio-demographic information (8) A question about age, gender, college, school year, marital status, financial status, and educational level of the father and mother.

2–10 questions that assess knowledge of first aid, including knowledge of the sources of the burn, the most common site of burns, the most important factor contributing to the severity of the burn, the best initial step to take immediately after the burn, the optimal time to cool down the burned area, the action taken if the person wears jewelry / Ornaments, the action taken when a blister forms in the burned area, the action taken when a person gets a burn in the face / neck area, the pain of treating minor burns, and the actions taken when the person catches fire.

3- The questionnaire also inquired whether the participants had received any training or attended any educational workshop on burn management, and also asked about sources that contribute to their current knowledge of burns (eg their educational institute, books, magazines, radio, television, internet, etc.).

The statistical study was conducted using SPSS software. The demographic characteristics were described, and the sample distribution was described according to the study variables that measure students' awareness of burns measures. The averages of the independent groups were also compared using parametric tests (T-Test Independent Samples, One way ANOVA).

Results

The study included 252 students from the Syrian Private University of various specializations. Below we review some characteristics of the sample according to demographic variables and study variables that measure students' awareness of first aid for burns.

Patients' ages ranged between 18 and 28 years, with an average of 22.08 years, but their overall ages deviated from the mean by $2.276 \pm$ years.

Approximately two thirds of the sample are females (165 female students), or 65.5% of the sample, compared to one third of the sample are males (87 male students), representing 34.5% of the sample. The largest percentage of students are single, as their percentage reached 81.7% of the sample (206 students), while the related percentage was 10.7% (27 students), and only 7.5% of the sample are married (19 students).

More than half of the sample had a good economic level, i.e., sufficient to secure basic needs with some luxuries, and their percentage was 58.7% of the sample (148 students), which is the largest group, followed by students whose economic level is excellent that ensures comfort and luxury, and their percentage is 20.6% (52 students), then the students whose level is The average economic level is sufficient to meet the basic needs of the family, and their percentage is 17.9% of the sample (45 students). As for the students whose economic level is low and not sufficient to meet the basic needs of the family, their percentage is 2.8% of the sample (7 students).

The largest proportion of fathers were university graduates with a rate of 45.6% (115 fathers), followed by those who had studied up to secondary school with a rate of 15.9% (40 fathers), then those who obtained a master's degree with 12.3% (31 fathers), then those who could read and write at a rate of 11.5% (29 fathers). A father), then those who attended an intermediate institute and their percentage was 7.9% (20 fathers), then those who obtained a doctorate and their percentage was 6.3% (16 fathers), while those who could not read and write their percentage was only 0.4% (one father).

The largest percentage of mothers are university graduates, and their percentage is 37.7% (95 mothers), followed by those who studied until high school with 27.8% (70 mothers), then those who are able to read and write with a rate of 13.9% (35 mothers), then those who studied an intermediate institute with 9.9% (25 mothers), then those who obtained a master's degree and their percentage was 5.2% (13 mothers), then those who obtained a doctorate and their percentage was 3.2% (8 mothers), while those who could not read and write their percentage was only 2.4% (6 mothers).

Nearly half of the sample, ie 50.4% of them (127 students) have a family member working in the medical field, compared to 49.6% (125) who have no family member working in the medical field. 87.3% of the sample (220 students) are students in medical colleges, either human medicine, dentistry, or pharmacy, compared to 12.7% of them (32 students) who are students of information and communications engineering, petroleum engineering, or business administration.

Medical students constituted 63.5% of the sample (160 students), while the rest of the students, or 36.5%, are students of other specialties at the Syrian Private University.

Students of other disciplines (other than human medicine) were distributed to 21.7% (20 students) dental students, 43.5% (40 students) pharmacy students, 18.5% (17 students) information and communication engineering students, 3.3% (3 students) petroleum engineering students and 13% (12 students) of them are business administration students.

The percentage of first-year students from all disciplines was 9.9% of the sample (25 students), while the percentage of second-year students was 15.9% (40 students), and the percentage of third-year students was 5.2% (13 students), and in the fourth they were 13.1% (33 students). And in the fifth year, they represented 29.8% (75 students), while the sixth year students represented 26.2% of the sample (66 students), or nearly a quarter of the sample.

17.5% of the sample (242 students) chose hot water as one of the causes of burns, 13.3% of them (184 students) chose steam, 16.4% (227 students) chose chemicals, 2.9% (40 students) chose rubber and leather, 3% of them (41 Students) chose paint, 17.1% (236 students) chose fire, 16% (221 students) chose electricity and 13.8% of the sample (190 students) chose radiation as one of the causes of burns. Knowing that the causes of burns are hot water, steam, chemicals, fire, electricity and radiation

The most common place on the body for burns to occur, according to the opinion of the students of the Syrian Private University, is the upper extremities, where the percentage of students who voted for that was 39.7% (100 students), followed by the palm of the hand, where 39.3% of the students (99 students) voted for that, then the face and neck where they voted 10.7% of them (27 students), then the front face of the torso and the percentage of those who voted for that 6.7% (17 students), then the lower extremities and the percentage of those who voted for that 3.2% (8 students), and only 0.4% of the students (1 student) found that The genitals are the most common place on the body for burns to occur

While more than half of the sample find that the most dangerous place on the body where burns occur is the face and neck, 54.4% (137 students), 36.5% (92 students) find that the genitals are the most dangerous place for burns, 4.4% (11 students) choose the face The anterior torso and 2% (5 students) chose the palm, 1.6% (4 students) chose the back of the torso and 1.2% (3 students) chose the upper extremities as the most dangerous place in the body where burns occur

The largest percentage of students, 86.9% of them (219 students) find that the kitchen is the most common place for burns incidents, and this may be due to the use of fire and burning materials constantly and the lack of awareness to follow safety procedures in the kitchen, compared to 7.9% of them (20 students) who chose the workplace, and 2 5% (5 students) chose the bathroom, 1.2% (3 students) chose the bedrooms, and 2% of the students (5 students) did not know which place is the most common place for burns to occur.

70.2% of the students (177 students) find that the duration of exposure to the agent causing the burn is the most important factor contributing to the severity of the burn and this is true, compared to 13.1% of them (33 students) who chose the time between exposure and treatment, 10.7% of them chose the method of care provided (17 students)), and 2% of the students (5 students) chose the educational level of the caregiver, while 4% of them (10 students) did not know which of the above factors is the most important factor contributing to the severity of the burn

More than half of the sample i.e. 54.4% of them (137 students) find that cooling the burning area with running tap water is the first step that should be taken when a burn occurs and this is true, 27.8% of them

(70 students) chose to remove any clothing or accessories as a first step that should be taken when a burn occurs. 7.5% (19 students) choose to seek medical care, 4% (10 students) choose to put a clean dressing on the burn, 1.6% (4 students) choose to put the burn area in a bowl of water, 1.2% (3 students) choose to put ice, 0.8% (2 students) chose to put honey or toothpaste on the burn site, while 2.8% of the students (7 students) did not know what the first step to take when a burn occurred.

The ideal time for cooling the burner is 20 minutes and only 9.1% of the students (23 students) answered that, while 23.8% of them (60 students) find that 5 minutes is the ideal time for cooling the burn, 17.9% (45 students) chose 10 minutes as sufficient time, 23.4% (59 students) chose 15 minutes as sufficient time and 4.4% (11 students) find that cooling the incinerator needs 30 minutes, compared to 21.4% (54 students) who do not know what is the ideal time to cool the incinerator.

41.7% of the students (105 students) answered that the correct behavior when seeing a burning person is to ask him to stand and throw himself on the ground and roll over, 35.3% of them (89 students) chose to put a cover on the person to put out the fire, 7.9% chose to call an ambulance only. Without any other measures, 11.5% of them (29 students) chose to throw water at the person who was burning, compared to 3.6% of the students (9 students) who did not know what to do when they saw someone on fire.

81.3% of the students (205 students) did not receive any training or attend workshops regarding burn management, compared to 18.7% of them (47 students) who received training on that.

As for the students' evaluation of their skills in providing first aid to the burn victim, we note that only 0.8% of the students (two students) have high skill, 17.1% of them (43 students) have good skill, 35.3% of them (89 students) have medium skill, 37.7% Of them (95 students) have little skill, compared to 9.1% of the students (23 students) who do not have any skill about providing first aid to a burn victim.

We note that educational institutions were the largest source of knowledge in first aid with the vote of 32.4% of students (102 students), then the Internet, as was the opinion of 22.9% of students (72 students), then books and articles by 8.9% of students (28 students), then Colleagues or family members by 8.6% (27 students), as for television and workshops, the percentage of students who chose them as a source of knowledge was 6% (19 students) for each, and 8.3% of students (26 students) had other sources, compared to 7% of students (22 students) They have no knowledge

The students' awareness degrees about first aid for burns ranged between 1 and 8 with an average of 4.79 degrees, but their scores in total may deviate from the average by $1.467 \pm$

When comparing the degree of awareness between males and females, the average score for males was (4.61), while for females was (4.88), without statistically significant differences ($P\text{-value} > 0.05$).

The degree of awareness was also compared with the educational level of both the father and the mother, where the average scores of fathers who were not able to read and write was lower than the rest of the levels. ($P\text{-value} > 0.05$)

When comparing the degree of awareness with the economic level, there was a statistical significance in the average degrees of awareness of first aid for burns between the group of students with a low economic level and each of the groups with a medium, good and excellent economic level, where the average degree of awareness increases with the increase in the economic level (P-value < 0.05).

When comparing the degree of awareness between the presence or absence of a family member working in the medical field, the average scores of those who have a relative working in the medical field were (4.81) and (4.77) for those who do not have, without a statistically significant difference in the average degrees of awareness (P-value > 0.05)

When comparing the degree of awareness by college, the average score of medical college students was (4.85), while the non-medical college student was (4.41) without a statistically significant difference in the mean degrees of awareness (P-value > 0.05).

The grades of the sixth year students are higher than the rest of the years (5.14), where the average degrees of awareness increases with the increase of the school year, except for the second year students whose average degrees of awareness were lower than the average degrees of awareness of the first year students (P-value < 0.05).

The degree of awareness was also compared according to receiving training in first aid for burns, the degrees of those who received training (5.30) were higher than those who did not (4.57) (P-value < 0.05).

The average score of those who received their information from the Internet (4.74), television (4.58), books and articles (4.89) was lower than those who received it from the university (5.06), and training workshops (5.63) (P-value < 0.05)

When comparing the average degrees of awareness according to the student's self-assessment, it appeared that the average degrees of awareness increased with the increase in the student's assessment of his skill in providing first aid, except for the average degrees of awareness of students with good skills, which was lower than the average degrees of awareness of students with medium skills, but both are close (P-value < 0.05)

Discussion

Our results revealed a lack of knowledge of the basics of first aid for burns, where the average degree of awareness was (4.79), and these results are consistent with other studies conducted in Nigeria, the United Kingdom and Saudi Arabia [9–11]. In the study conducted in Australia, 30%-50% of incorrect answers were observed for various scenarios related to burning, with scores improved by 14.5%-17.2% in participants who had taken the first aid course in the past five years [12]. Another study conducted in the United Kingdom reflected the low knowledge among health care workers [9]. The situation in Syria also follows this global trend, as our results were comparable with other studies conducted in these countries in terms of insufficient knowledge about first aid for burns.

In addition to the low knowledge scores in general, in our study there were no statistical differences between medical and non-medical colleges, this result is opposite to each of the studies conducted in both Pakistan and Saudi Arabia [14, 24], but this does not deviate from the general trend of health care workers who have insufficient knowledge of first aid for burns [8, 9].

Aside from highlighting degrees of knowledge, it is also important to focus on individual responses to questions related to cremation, so that our educational approach is more focused.

Regarding the question about the best step after a burn injury, more students (54.4%) chose the correct answer for “cooling under running tap water” and this is in line with studies conducted in Pakistan, UK and Saudi Arabia [6, 9, 15]. Correct knowledge of the first step is critical because using alternative methods such as ice/ice/ice water bags can increase the risk of tissue injury, tissue damage and necrosis, and the risk of hypothermia if used in larger amounts for a long period of time [6, 16, 17]. Likewise, applying traditional home remedies like toothpaste, clay, butter, etc. It can not only contaminate the wound and trap heat within the tissues but also make it difficult to assess the severity and depth of burns [6, 17].

Regarding the optimal cooling time for the burning area, only 9.1% answered correctly (“20 minutes”), this percentage is lower than both studies conducted in Saudi Arabia and Nigeria [4, 10, 11]. It should be noted that incorrect responses may be due not only to a lack of information but rather to an inconsistency in the available data. For example, variance in the literature regarding optimal cooling time ranges from 10 to 30 minutes and results in many “correct” answers [6, 8].

Unsurprisingly, to the question of what to do when a blister forms, (80.2%) answered correctly (“leave it until you seek medical help”), which is consistent with the studies of Saudi Arabia and the United Kingdom [19, 10]. False beliefs such as piercing, applying and applying toothpaste need to be addressed in the future to get rid of misconceptions, because such actions may exacerbate the initial infection.

In contrast to the Pakistan study, where the majority of participants (82.3%) knew the correct answer to remove jewelry and accessories from the burned area, students in our survey answered poorly (33.7%) [18].

Regarding the maneuver “stop, throw oneself on the ground, and roll” in case the clothes caught fire, we found that (41.7%) answered correctly in our study compared to the results of a study conducted on medical students in Pakistan where (73%) of the students answered correctly [14].

Our study also highlights that for students, educational institutions to which they belonged (32.4%) were the main source of information for knowledge related to first aid for burns, followed by workshops and the Internet, and this is consistent with the results of other studies [14]. With this in mind, the internet should also be used to impart knowledge related to BFAT and first aid in general to the younger generation, as they are more inclined to use social media platforms rather than traditional methods as sources of information such as television and radio.

Limitations

While our study has highlighted several important findings, there are certain limitations in this study. The sample size used was small and not representative of university students as a whole. We also used appropriate sampling and the sample was not random or matched on the basis of sex and age. Additionally, the use of a closed question can lead to an overestimation of the participant's knowledge. Also, we did not assess participants' practical skills in performing first aid, and their knowledge scores may not necessarily translate to their practical performance. Furthermore, the time between a person receiving first aid training and their participation in this study was not taken into account or compared to their average score.

Conclusion

This is the first study of its kind that evaluated students' awareness of first aid for burns and examined their knowledge of the various risk factors and causes of burns. In our study, there was a general lack of knowledge of first aid for burns among undergraduates. The students had low average scores, as insufficient awareness was observed among the participants. Gender, college, and parents' educational level were not statistically significant factors, while students with better economic level, students of higher school years and those who received average training achieved higher knowledge scores. Prospective studies should be conducted on a larger scale to identify the various barriers and factors affecting first aid practices for burns in Syria, to significantly reduce the incidence of this common and preventable injury. Also, widespread community awareness programs should be included in the means of disseminating modern information. Burn safety guidelines should be an essential part of the school curriculum. Recurring training sessions for all types of accidents should be conducted regularly.

Declarations

Competing interests: None of the authors have any competing interests. The authors alone are responsible for the content and writing of the article. No conflict of interest is declared.

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