

**Research Article**

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Assessing First Aid Knowledge for Burns Among the Maltese Population: Identifying Gaps and Informing Public Health Strategies

Christine Vella* and Juanita Parnis*Surgical Trainee, Mater Dei Hospital, Malta****Corresponding author:** Christine Vella, Surgical Trainee, Mater Dei Hospital, Malta**Received Date:** July 15, 2024**Published Date:** July 29, 2024**Abstract**

Burn injuries are a significant public health concern due to their potential for causing severe physical damage, long-term disability, and even death. Prompt and effective first aid can mitigate the severity of burn injuries, reduce complications, and improve overall outcomes. However, knowledge of appropriate first aid measures for burns varies widely among the general public, often leading to improper treatment. This study aims to evaluate the level of first aid knowledge for burn injuries among the Maltese population and identify specific knowledge gaps that require targeted educational interventions.

A cross-sectional survey design was employed, utilising a structured questionnaire comprising 15 scenarios to assess participants' knowledge of appropriate first aid measures for various burn types, including thermal, electrical, and chemical burns. The questionnaire was provided in both Maltese and English to ensure comprehensive understanding. Participants were recruited through convenience sampling from public areas, ensuring a diverse representation of age groups and socio-economic backgrounds. Informed consent was obtained, and data protection regulations were strictly adhered to. The results indicated a mixed level of awareness among the participants, with significant gaps and misconceptions. While 50% of participants correctly identified the appropriate response for a child who pulls boiling water onto themselves, only 44% knew the correct response for an acid splash on the face. Notably, 100% incorrectly believed that burns always lead to scarring. However, 92% correctly identified that ice should not be used directly on burnt skin, and 87% knew that cold running water is the appropriate method for cooling a burn.

These findings highlight the need for targeted educational interventions to improve first aid knowledge among the Maltese population. By addressing these knowledge gaps through public health strategies and educational programs, the management of burn injuries can be significantly improved, ultimately enhancing health outcomes and reducing the burden on healthcare systems.

Keywords: Burn injuries; First aid knowledge; Maltese population; Public health; Educational interventions; Burn treatment; Cross-sectional survey; Thermal burns; Electrical burns; Chemical burns; Emergency response; Health education; First aid training; Burn management; Knowledge gaps

Introduction

Burn injuries represent a significant public health concern due to their potential for causing severe physical damage, long-term disability, and even death. Effective first aid administered promptly after a burn can mitigate the severity of the injury, reduce

complications, and improve overall outcomes. However, the general public’s knowledge of appropriate first aid measures for burns varies widely, and misconceptions or lack of knowledge can lead to improper treatment [1].

This study seeks to evaluate the level of first aid knowledge for burn injuries among the Maltese population. By assessing the understanding and application of correct first aid techniques in different burn scenarios, this research aims to identify specific knowledge gaps that require targeted educational interventions. The findings are intended to inform public health strategies and enhance the effectiveness of first aid training programs, ultimately aiming to improve the management of burn injuries and reduce their impact on individuals and the healthcare system.

Through a structured questionnaire distributed to a diverse cross-section of the population, this study examines responses to various burn scenarios, including thermal, electrical, and chemical burns. The analysis of these responses provides a comprehensive overview of the current state of first aid knowledge in Malta and highlights areas where public education can be improved.

Data Collection

Table 1: Demographic and Educational Profile of Study Participants.

Category		Number (n=100)
Gender	Female	70
	Male	30
Age	18-30	35
	31-50	35
	>50	30
Educational Level	Primary School	8
	Secondary School	23
	Tertiary Education	69
Occupation	Student	8
	Employed	77
	Unemployed	15
Background	Medical	47
	Non-Medical	53
Knowledge in first aid?	Yes	77
	No	23
Source of information	Books	10
	TV	12
	Internet	15
	Friends and Family	8
	Previous courses	55

Table 2: Questionnaire with Scenario Responses for First Aid Knowledge.

Scenario	Possible answers
A mother was distracted whilst cooking and a child pulls a pot of boiling water onto her. Boiling water splashes on face and clothes. What should the mother do?	Remove all clothing
	Remove all clothing and apply running water
	Leave all clothing and apply running water

Methodology

This study employed a cross-sectional survey design to evaluate the knowledge of first aid in burn scenarios among the Maltese population. A structured questionnaire comprising 15 scenarios was developed to assess participants’ knowledge of appropriate first aid measures for different types of burns, including thermal, electrical, and chemical burns. To accommodate linguistic preferences and ensure comprehensive understanding, the questionnaire was provided in both Maltese and English.

Participants and Sampling

Participants were recruited through convenience sampling, ensuring a diverse representation of various age groups and socio-economic backgrounds. Recruitment occurred in public areas, and individuals were invited to participate voluntarily. Informed consent was obtained from all participants prior to their inclusion in the study, and ethical considerations were strictly adhered to. Participation was anonymous, and confidentiality of the collected data was maintained throughout the study. Data protection clearance was secured in compliance with relevant regulations.

A 40-year-old male is cleaning his swimming pool when acid splashes onto his face. What should he do?	Keep all clothing and clean area with towel
	Keep all clothing and jump into pool
	Keep all clothing and shower under running water
	Remove all clothing and shower under running water
Burns always lead to scarring	TRUE
	FALSE
Ice should be used directly on burnt skin	TRUE
	FALSE
Antibiotics should always be used after burns	TRUE
	FALSE
All burns require hospital admission	TRUE
	FALSE
A 28year old female was blowing off her candles and unfortunately her t-shirt caught fire. What should she do next?	Put out the fire only
	Put out the fire and remove t-shirt
	Remove t-shirt and apply ice
	Remove t-shirt and apply running water
How should you cool a burn?	Ice water
	Cold running water
	Warm running water
Running water should be applied for:	10 minutes
	20 minutes
	30 minutes
If a blister is formed one should;	Leave the blister until it bursts
	Apply petroleum jelly to the blister
	Burst open the blister and apply petroleum jelly

The questionnaire was administered in person, allowing participants the choice to complete it in either Maltese or English. This approach ensured that language barriers did not impede the participants' ability to accurately respond to the scenarios presented. The scenarios were designed to cover a broad spectrum of burn injuries and required participants to identify the correct first aid treatment for each case.

The collected data was subjected to quantitative analysis to

gauge the participants' level of knowledge regarding first aid for burns. The primary metric for analysis was the percentage of correct responses for each scenario. Additionally, areas where participants exhibited lower levels of knowledge were identified to highlight specific topics that may benefit from targeted educational interventions. The results of this analysis were intended to inform future public health strategies and educational programs aimed at improving first aid knowledge for burns among the general population in Malta.

Results

Table 3: Comparison of Correct and Incorrect Responses for Various Burn Treatment Scenarios.

Scenario Description	Correct Response	Percentage Correct (%)	Incorrect Responses	Percentage Incorrect (%)
Boiling water on child (leave clothing, apply running water)	Leave all clothing, apply running water	50	Remove all clothing	10
			Remove all clothing and apply running water	35
Acid splash on face (remove clothing, shower under running water)	Remove all clothing, shower under running water	44	Keep all clothing and clean area with towel	5
			Keep all clothing and jump into pool	8
			Keep all clothing, shower under running water	43

Burns always lead to scarring	FALSE	0	TRUE	100
Ice on burnt skin	FALSE	92	TRUE	8
Antibiotics after burns	FALSE	75	TRUE	25
All burns require hospital admission	FALSE	85	TRUE	15
T-shirt catches fire (put out fire, apply running water)	Remove t-shirt and apply running water	50	Put out fire only	28
			Put out fire and remove t-shirt	17
			Remove t-shirt and apply ice	5
Cooling a burn	Cold running water	87	Ice Water	5
			Warm running water	8
Duration for running water	20 minutes	35	10 minutes	48
			30 minutes	17
Blister treatment	Burst open the blister and apply petroleum jelly	12	Leave blister until it bursts	68
			Apply petroleum jelly to the blister	20

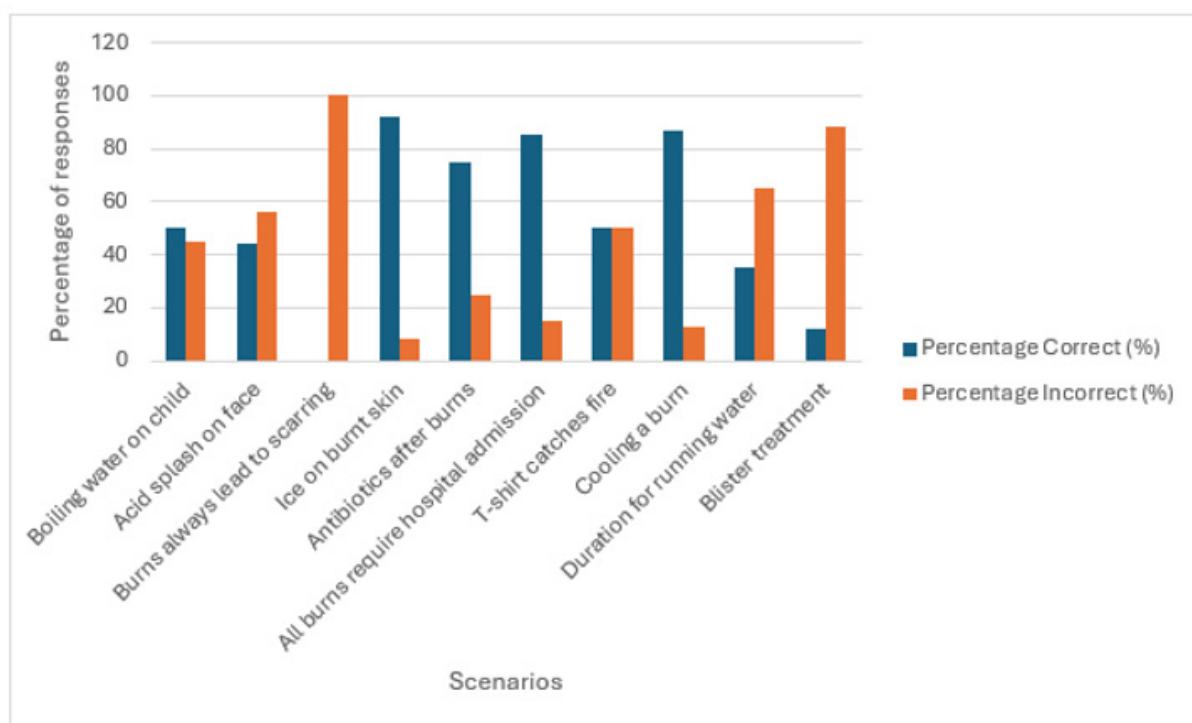


Figure 1

Discussion

The findings of this study reveal a considerable level of awareness and understanding of basic first aid procedures for burn injuries among the Maltese population. Notably, 69% of the participants had successfully completed tertiary education, which may have contributed to their overall knowledge and awareness of burn-related injuries. However, the results also highlight significant gaps and misconceptions that need to be addressed through

targeted educational interventions.

For instance, the scenario where a child pulls a pot of boiling water onto themselves showed that only 50% of participants correctly identified the appropriate first aid measure of leaving clothing on and applying running water. The other 50% either suggested incorrect actions such as removing clothing and applying running water or simply removing clothing. This indicates a need for clearer public education on the immediate steps to take in such

common household accidents to prevent further injury.

In the case of an acid splash on the face, the correct response was to remove all clothing and shower under running water, yet only 44% of participants selected this option. A similar percentage (43%) chose to keep all clothing and shower under running water, while a smaller portion suggested ineffective or harmful actions. This scenario underscores the necessity of emphasising the importance of decontamination and proper removal of contaminated clothing in educational materials.

A particularly concerning finding was the unanimous belief (100%) that burns always lead to scarring, which is a significant misconception. This highlights a critical area where public health education must intervene to provide accurate information about burn healing and the factors that influence scar formation.

On a positive note, 92% of participants correctly identified that ice should not be used directly on burnt skin, and 87% knew that cold running water is the appropriate method for cooling a burn. These high percentages indicate that some correct first aid principles are well understood, likely due to existing public health campaigns or general health knowledge. In a study conducted by T.H.J. Venter et al, the application of ice water at 1–8°C, a higher degree of necrosis was observed in comparison to the wounds that were not subjected to cooling. In the other group, where tap water at 12–18°C was used, both clinical and histological evidence indicated that the cooled wounds exhibited reduced necrosis compared to the uncooled wounds, resulting in a faster healing process [2]. Treatment with hot water (above 40°C) was found to be detrimental to wound healing [3].

However, misconceptions persist, as evidenced by the fact that 25% of participants incorrectly believed that antibiotics should always be used after burns, and 15% thought all burns require hospital admission. These findings suggest that while there is a foundational understanding of burn care, there is still a significant portion of the population that holds incorrect beliefs that could potentially lead to inappropriate first aid measures.

The scenario where a t-shirt catches fire revealed that only 50% of participants correctly advised putting out the fire and applying running water. This scenario is particularly critical, as improper actions can exacerbate injuries and complicate recovery. Public education efforts should focus on clearly communicating the importance of extinguishing flames and cooling burns as immediate priorities.

Regarding the duration for applying running water to a burn, only 35% correctly identified 20 minutes as the appropriate time. This indicates that while many know to use running water, the optimal duration for effective cooling is not as widely understood. Clarifying this in educational campaigns can improve the efficacy of first aid provided by the general public. Finally, the proper treatment of blisters formed by burns was correctly identified by 12% of participants, who knew to burst open the blister and apply petroleum jelly. This highlights the need for specific guidance on managing burn blisters.

To further increase public awareness and understanding of proper burn care, several recommendations can be adopted. Effective public education and awareness campaigns should be designed and implemented to increase knowledge of first aid for burns, emphasising the correct steps to take following a burn injury. Community outreach programmers can be organized to provide hands-on training and demonstrations, making the information accessible and practical for all age groups.

In addition, schools should incorporate first aid for burns into their curricula. Educating students from a young age equips them with the knowledge and skills needed to respond effectively in emergency situations. Similarly, workplaces can offer training sessions on first aid for burns to ensure employees are prepared to handle such incidents [4].

Healthcare providers play a crucial role in disseminating information and resources about burn first aid. They can collaborate with community organizations to educate the public and provide valuable insights during medical consultations. Displaying informational posters at clinics, such as the one designed for the Plastic and Burns Clinic, can serve as constant reminders of the essential first aid measures for burn injuries, reinforcing the information provided during consultations [5].

Future research should focus on evaluating the long-term effectiveness of these educational interventions and identifying the most impactful methods for improving first aid knowledge. Additionally, exploring the cultural and demographic factors that influence first aid practices can help tailor education programs to better meet the needs of specific populations [6].

Limitations

This study on first aid knowledge for burns among the Maltese population has several limitations. Firstly, the use of convenience sampling may not provide a representative sample of the entire population, as participants who were more available or willing to participate might differ in knowledge from the general populace. Additionally, the reliance on self-reported data through questionnaires can introduce response bias, with participants potentially overestimating their knowledge or providing socially desirable answers. The scenarios presented in the questionnaire may not encompass the full range of burn situations individuals might encounter, and the format may not fully capture practical first aid skills or decision-making in real-life emergencies. Completing the questionnaire in a simulated environment may not accurately reflect participants' responses during actual emergency situations, where stress and immediacy can lead to different reactions. Furthermore, participants' ability to recall information and understand the questions correctly can vary, potentially impacting the accuracy of their responses, especially considering variations in health literacy levels. The study might not account for all cultural and demographic factors influencing first aid knowledge and practices, and knowing the correct procedures does not necessarily mean individuals will perform them correctly in an emergency. Ethical considerations ensure anonymity and

confidentiality, but participants might still fear being identified, influencing their responses. Lastly, non-response bias could skew results, as individuals who chose not to participate might have different knowledge levels compared to those who did. Addressing these limitations in future research could provide a more comprehensive understanding of first aid knowledge for burns and aid in developing more effective educational interventions.

Conclusion

While the general Maltese population shows a considerable level of understanding regarding basic burn first aid, targeted educational programs are necessary to address the existing gaps. By implementing comprehensive public health strategies and continuous education efforts, we can significantly enhance the community's ability to respond effectively to burn injuries, ultimately improving health outcomes and reducing the burden on healthcare systems.

Acknowledgement

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Conflict of Interest

No conflict of interest.

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