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AN OBSERVATIONAL STUDY OF FIRST AID KNOWLEDGE AND PRACTICE FOR BURN INJURY IN RURAL INDONESIA

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ABSTRACT

INTRODUCTION: Burn injuries in rural communities necessitate an accurate assessment of burn size and severity to decide if they may be treated in a community hospital or require care at a burn center. Proper treatment of burns is crucial as they can result in death or disability with long-lasting effects. In order to reduce disability and prevent deaths, it is crucial to know and practice correct first aid methods for treating burns in rural populations. This study sought to survey knowledge and practice of first aid in burn-related injuries amongst the rural population in Indonesia.

MATERIAL AND METHODS: The study conducted was a descriptive cross-sectional study. It involved 151 respondents residing in a rural area of Eastern Indonesia. A self-administered questionnaire assessed their knowledge and practice of first aid for burn-related injuries. Data were analyzed using univariate analysis.

RESULTS: Out of the 151 respondents surveyed, 76.2% were unfamiliar with the recommended burn-related injury first-aid practices. Half of the respondents (59.4%) indicated using toothpaste as their first-aid treatment for burn-related injuries.

CONCLUSIONS: This current study showed insufficient knowledge and practice of first aid in burn-related injuries amongst the rural population in Eastern Indonesia.

KEYWORDS: burns; emergency treatment; first aid; knowledge; rural population

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INTRODUCTION

A burn is an injury induced by applying dry heat to the body surface, such as flames, radiant heat, or hot objects [1]. Burns is a significant public health problem that ranks fourth among all injuries worldwide [2]. According to the World Health Organization (WHO), 180,000 deaths yearly occur due to burns. In high-income countries, the death rate from burns has decreased. On the other hand, in countries with moderate incomes, the mortality rate due to burns has increased by over sevenfold. [3]. Based on the Indonesia National Survey Data or Riskesdas (2013), in Indonesia, the occurrence of burns currently stands at 0.7% and is projected to rise to 1.3% in 2018 [5]. The highest number of burn injuries occur in developing countries; among women, 80% of burns occur in the home environment, and 20% occur in the workplace [6, 7].

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In Indonesia, studies have revealed that parental awareness of burns first aid is low, but few treatments to enhance this knowledge have been studied [8]. Although rural areas in Indonesia are home to 44% of the country's population, information on burns in Indonesia is severely constrained, as it is primarily available only in national referral centers within Indonesia's most prominent cities [9]. The consequences of mishandling first aid for burns are damaging. It is important to note that mishandling first aid for burns can have fatal consequences, which many individuals may not know [10, 11]. The community's lack of knowledge often leads to using toothpaste, soy sauce, coconut oil, butter, and honey for treating burns [12, 13].

Burn injuries, including smoking, electrical appliances, cooking, water heating, and chemical products, are common in residential environments [14]. Knowledge about proper first aid for burns is necessary for the general public or ordinary individuals due to the common occurrence of burns daily. Having accurate knowledge about first aid for burns will reduce the overall impact of the injury [15]. It is crucial to examine the understanding and application of first aid for burn injuries among rural individuals in Indonesia, recognizing the crucial role stay-at-home mothers play as first responders in such incidents that commonly happen within their homes.

MATERIAL AND METHODS

Study design, setting, and respondents

We conducted a cross-sectional, observational study due to their ability to mirror populations and conditions encountered in everyday circumstances. This approach would facilitate the inclusion of substantial number of patients, thereby enabling the evaluation of treatment effects within a more heterogeneous populace [16]. The study area covered a rural area of Awu Village, Central Sulawesi, Indonesia. This small rural area covers 3.00 km^2 and is inhabited by an estimated population of approximately 1.144 individuals.

We used a purposive sampling method with the following inclusion criteria: consenting housewives aged 18 and above and having prior experience in treating burn injuries. The sample consists of 151 housewives selected using a purposive sampling technique.

Instrument and data collection

We obtained sociodemographic information from the questionnaire, such as age and education level. To evaluate knowledge of burns, we utilized a self-administered questionnaire created by Lam et al. [17]. Afterward, we converted the questionnaire into Indonesian from English. Respondents were requested to fill out the questionnaire within a time frame of around 10–15 minutes. The questionnaire in this study was split into two sections. The initial section of the questionnaire consists of five questions, each offering three answer choices. A score of 1 is awarded for each correct answer the respondent provided. If the respondent answers incorrectly, they will receive a score of 0. The score obtained by the respondent can range from 0 to a maximum of 5. The objective of the second part of the questionnaire is to investigate the respondents' experiences. It consists of four statement items, allowing them to select multiple answers if applicable.

Data analysis

The data on the knowledge and practice of first aid in burn-related injuries was analyzed using Statistical Product for Social Sciences (SPSS) Ver. 20 through univariate analysis. The results were presented as a proportion of the frequency distribution.

Ethical consideration

This research has been declared ethically feasible by the Health Research Ethics Committee of the University of Muhammadiyah Malang (KEPK UMM) with Number E.5.a/121/KEPK-UMM/V/2020.

RESULTS

Out of a total of 151 respondents, almost half were aged between 25–35 years (50.3%), the proportion of respondents with junior high school education (39.1%) and high school (36.4%) showed an almost equal percentage. The proportion of respondents most came from the Bajo Tribe (31.8%) (Tab. 1).

Out of a total of 151 respondents, 76.2% of them did not know the best way to provide first aid for burns; almost all respondents (92.1%) did not know how long it would take to flush the burn area with water, and 77.4% of the 151 respondents did not know that a clean cloth could be used to cover the part affected by the burn (Tab. 2). In the question item about actions that can be taken within the first 15 minutes when providing first aid to

Table 1. Demographic characteristics of respondents (n = 151)

Demographic characteristics	n	[%]
Age		
< 25 years	76	13
25–35 years	19	50.3
36–45 years	28	19
> 45 years	26	17.2
Educational levels		
Elementary School	11	7.3
Junior High School	59	39.1
Senior High School	55	36.4
College	26	17.2
Ethnic group		
Bajo	48	31.8
Balantak	4	2.6
Banggai	20	13.2
Bugis	15	9.9
Buton	14	9.3
Gorontalo	14	9.3
Java	16	10.6
Makassar	1	0.7
Minahasa	8	5.3
Muna	2	1.3
Saluan	9	6.0

Table 3. Causes of burns (n = 151)

Causes of burns	n	[%]
Doused with hot water	76	30.5
Hit muffler	44	17.7
Exposed to hot oil	86	34.5
Got hit by fire	1	0.4
Exposed to electric iron	27	10.8
Exposed to hot pot	6	2.4
Electric shock	9	3.6

Table 4. Remedies for burn-related injuries

Remedies for burn-related injuries	n	[%]
Soy sauce	7	3.9
Oil	17	9.4
Toothpaste	107	59.4
Do nothing	3	1.7
Cold Water	43	23.9
Cold Egg White	1	0.6
Wound Ointment	1	0.6
Banana Slice	1	0.6

Table 2. Knowledge of first aid in burn-related injuries

Question	Correct answer	[%]	Wrong answer	[%]
What is the best way to treat burns?	36	23.8	115	76.2
How long does it take to flush the water on the burn wound?	12	7.9	139	92.1
Is it necessary to cover the affected part of the burn?	34	22.5	117	77.4
What did you do in the first 15 minutes of giving first aid to help a burn victim?	33	21.8	118	78.2
Will all burn injuries heal on their own using traditional remedies (home remedies)?	31	20.5	120	79.5

help victims who have burns, 78.2% of respondents answered incorrectly, and 79.5% of respondents thought that all burn injuries would heal on their own using traditional medicine (Tab. 2).

The causes of burns that often occur in the home environment are exposure to hot oil (34.5%) and scalding with hot water (30.5%) (Tab. 3).

Of a total of 151 respondents, more than half (59.4%) used toothpaste as first aid for burns and used plain cold water as the second choice (23.9%) (Tab. 4).

Of the 43 respondents (out of a total of 151) who used plain cold water as first aid for burns, more than half (48.8%) applied ordinary cold water to burns for 5–10 minutes (Tab. 5).

DISCUSSION

The perspectives of community and emergency care in layperson first aid for burn research are critical for improving results and lowering morbidity and

Table 5. Duration of application of cold water in first aid for burn-related injuries (n = 43 out of n = 151)

	n	[%]
Less than 5 Minutes	8	18.6
5–10 Minutes	21	48.8
More than 10 Minutes	14	32.6

mortality. According to studies, there is a need for improvement in the basic care of burn patients, particularly first aid management [18]. The primary focus in the early management of burn injuries is to ensure the survival of the individuals affected. This condition may occur due to the time it takes, which can range from hours to days, to transport patients to a facility where they can receive definitive care. By administering immediate first aid and early treatment, the severity of burn injuries can be significantly diminished, enhancing the likelihood of survival [17, 19, 20].

Based on this study, more than 75% of the respondents lacked awareness that cold water is the most efficient method of administering first aid for burns. In contrast to a survey conducted by Lam et al. among 674 at-risk workers, this finding contradicted the result that 86.1% of respondents had a good understanding of using cold water as first aid for burns. However, less than half of the respondents answered correctly about how long to apply the water [17]. In contrast to the survey conducted by Harvey et al., which reported that 82% of 7320 respondents used cold water as a first aid method for burns, the results of this study show a different outcome [21]. Caregivers are critical in providing fast and effective burn first aid, but their knowledge and practices are frequently insufficient. Many caregivers use non-scientific and ineffective home treatments for burns [22].

In this study, fewer than half of the respondents used a clean cloth to cover the burned areas on their bodies. This result aligns with Fadeyibi et al., who also found that covering wounds with a bandage or clean cloth effectively prevented infection [23]. In Lam et al.'s study, it was discovered that a majority of the respondents (64%) were unaware of the proper use of a clean cloth to cover burn-affected body parts [17]. Most respondents had completed junior high school and high school, contributing to their limited understanding of first aid for burns. In previous research by Wijaya et al., most respondents who had last education at the high school level with less knowledge of respondents [24]. Education is necessary to learn about factors contributing to improving one's quality of life and promoting good health [25].

Most respondents have an elementary education level, meaning that knowledge about first aid for burns is not taught explicitly in elementary schools [26]. Hence, there is a lack of understanding in this area. It cannot be assumed that as individuals age, their thinking process will become more mature when considering knowledge levels. Knowledge can also be influenced by external factors such as the surrounding environment and socio-cultural influences. According to Davies et al. [20], prior studies have indicated that individuals display conscientiousness in their actions, particularly when engaging in behaviors influenced by their parental upbringing. Another reason is that respondents frequently rely on information obtained through word of mouth, which may not be verified, thereby influencing the accuracy of the knowledge acquired by respondents.

First aid involves taking immediate action to assist the victim in preventing their condition from deteriorating before professional medical help arrives. The findings of this research demonstrate that common causes of burns in the home setting of Awu Village, Central Sulawesi Indonesia include contact with hot oil and scalding hot water [27]. Cox et al. [14] found that the causes of burns are often scalding with hot water and exposure to hot oil. Peck also mentioned that burns in the home environment account for 80% of cases, while burns in the workplace make up 20% [6]. According to Biswas et al., wound healing depends on the initial treatment provided to the victim. If the treatment is correct, it will reduce the severity of the wound or speed up the healing process. Conversely, if the treatment is not done correctly, it will harm wound healing [2]. The results showed that more than half of the respondents used toothpaste in first aid for burns. In the study of Wijaya et al., the results showed that 64.9% of respondents in the survey used toothpaste as a first aid for burns, which is consistent with the results of the current study [24].

The findings in this current study do not follow the guidelines issued by the ACI Statewide Burns Injury Service — Clinical Practice Guidelines, which states that burns are cooled with running water [28]. The respondents believed that utilizing cold water would exacerbate the burn injury. Both studies from Chirongoma et al. in Zimbabwe and Griffin et al. also found that water is applied to burns for

20 minutes; chemicals cause the burns, then continue cooling for 1–2 hours while paying attention to the victim's body temperature so that hypothermia does not occur [26, 29]. Furthermore, they believed that employing home remedies to alleviate pain and prevent infection would improve wound healing and a more favorable scar appearance. In this research, 25% of respondents utilized regular cold water as a first aid treatment for burns and administered it for 5–10 minutes.

Improving burn wound management is critical for wound care nurses in determining suitable treatments. Early burn therapy necessitates nursing-intensive care that focuses on delaying the burning process, preserving homeostasis, and replenishing lost fluids and electrolytes [30]. To achieve proper wound care therapy, the wound care team, which includes clinicians, charge nurses, and wound care technicians, must communicate and coordinate.

CONCLUSIONS

The study of first aid for burns has implications for both community and emergency areas. Education and training are critical to overcoming issues related to personal opinion and resource allocation, notably in the prevention of burn injuries and first aid. Consequently, it is crucial to implement an educational and training initiative to enhance awareness and skills in providing first aid for burn injuries in rural regions. Future research on first aid for burn injuries should concentrate on increasing knowledge and awareness among the community. Furthermore, research should seek to clarify and standardize burn wound cooling suggestions, such as the ideal temperature, manner, duration, and timing of therapy.

Article information and declarations

Data availability statement

The findings of this study are not openly accessible because of the need to protect respondent confidentiality. However, they can be obtained from the corresponding author upon a reasonable request.

Ethics statement

This research has been declared ethically feasible by the Health Research Ethics Committee of the University of Muhammadiyah Malang (KEPK UMM) with Number E.5.a/121/KEPK-UMM/V/2020.

Author contributions

Conceptualization: IDP. Data curation: IDP, RH. Formal analysis: IDP, RH. Methodology: IDP, RH, IW. Project administration: IDP, FFA. Visualization: IDP, RH. Writing – original draft: IDP, FFA. Writing – review & editing: IDP, RH, INW.

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Conflict of interest

The authors declare no conflicts of interest.

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