International Medicine
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Original Article

Cross Sectional Study of Knowledge, Attitude and Practices Regarding Prevention and First Aid Details of Burn Injuries Among Rural Caregivers in Field Practice Area of Tertiary Health Care Hospital in Odisha

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ARTICLE INFO

Article History:

Received: 08-06-2024

Accepted: 12-07-2024

Keywords:

Burn injury

Cross sectional study

Odisha burn care

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ABSTRACT

This cross-sectional study aimed to assess the knowledge, attitudes, and practices (KAP) concerning burn injury prevention and first aid among rural caregivers in Odisha, India. Conducted within the field practice area of a tertiary healthcare hospital, the study utilized structured questionnaires to survey a representative sample of caregivers. The findings revealed significant gaps in knowledge regarding burn injury prevention and first aid measures among rural caregivers. Despite positive attitudes towards burn injury management, actual practices often deviated from recommended guidelines. For instance, while 39.1% of respondents believed everyone needed to know how to treat burns, a majority (49.6%) would take a minor burn injury to a herbalist rather than a health facility. Furthermore, traditional remedies such as toothpaste and oil were commonly used as first aid treatments despite their lack of scientific benefit.The study also highlighted that 78.9% of respondents did not apply cold water to burns, which is a widely recommended first-aid measure. Socio-demographic factors such as age, education level, and income were significantly associated with the knowledge and practices related to burn first aid. The primary sources of information about burn first aid were family, friends, and colleagues, rather than healthcare professionals or educational programs.The study concludes that there is an urgent need for targeted educational interventions and community-based programs to enhance awareness and skills in burn injury prevention and first aid among rural caregivers in Odisha. By addressing these knowledge gaps and promoting accurate first aid practices, the incidence of complications from burn injuries can be reduced, thereby improving health outcomes for affected individuals. The findings underscore the necessity for consistent guidelines and the dissemination of burn first aid education through accessible and culturally appropriate channels to ensure widespread community engagement and compliance.

INTRODUCTION

Burn injuries are a serious global public health issue due to their high prevalence and potentially devastating psychological, physical, and financial consequences for residents, families, and communities. The vast majority of persons who encounter burn injuries live in low- and middle-income nations, where they may lack access to well-planned and structured emergency and burn treatment systems. As a result, there is an elevated incidence of individuals living with avoidable morbidity (e.g., hypertrophy scars, contracted muscles, amputations) in areas that have few resources to provide rehabilitation and reintegration into commun-ity programs.

Burns are a type of injury that results from unintended exposure to high-temperature substances such as cooking stoves, smoke, steam, drinks, machinery, tools, appliances, radiators, and products radiating heat energy[1]. Burns are causing an estimated 180 000 fatalities per year. The vast majority occur in low- and middle-income countries, with about two-thirds occurring in the WHO African and South-East Asia Regions.

First aid is used to begin effective burn management. This is started as soon as possible and is usually close to the accident scene. When appropriate first aid is administered, the severity associated with the

injury and following tissue damage can be minimized. First aid procedures must be simple to understand, simple to carry out and offer some level of analgesia, and the procedure's requirements must be easily available. Furthermore, the procedure must not have a negative impact on subsequent specialized medical care. The goal of first aid is to prevent the progress of burns by effectively cooling the affected region and providing symptomatic relief[2]. Several studies have demonstrated a general lack of understanding of burn first aid among both the general public and professional healthcare providers[3]. We aimed to explore the current understanding and sources of knowledge, attitude, and practice regarding burn first aid among the general population and identify limitations in order to develop strategies for improving the situation.

Literature Review

A study by Ibrahim et al to ascertain the knowledge of burns prevention and first aid was conducted in 10 junior secondary schools in Zaria which involve 335 students, Seventy-three students (21.5%) had previous experience of burn prevention and first aid, compared to 262 (77.3%) who had no prior knowledge. Those with prior knowledge of burn prevention and first aid for burns were significantly more likely to choose the appropriate responses to questions about burn prevention and first aid treatment at home[4]. A population based study by Harvey et al to know the knowledge of first aid of burn, 7320 people were asked questions about burn injuries and first aid. 82% of those surveyed said that they would cool a burn with water, and 9% said they would cool the burn for the suggested 20 minutes. Few people said they would remove the patient's garments to keep the injured person warm. A first aid book (42%) and the internet (33%), were the most popular sources of first aid information[5]. Al-Johani et al. in Madinah, Saudi Arabia found that the most commonly reported source of information about first aid among parents was social media (59%), followed by schoolbooks (14.9%). Only 13% said doctors or nurses were the source of their information. In 62% of cases, the source of information regarding the used aid was a family member or friend, in 25.8% it was social media, and just 22.6% came from doctors/nurses or were advised by a pharmacist[6].

Another study from Pakistan in Rawalpindi Following a burn injury, the two most commonly used items were "toothpaste" (47.5%) and "cool running water" (20.3%) for first aid purposes. (Mishra et al., 2018)

A retrospective study by Seow et al shows first aid practices for burn injury showed poor practice Out of 485 burned patients, 261 (53.8%) claimed to have used first aid. However, only 24 of 485 patients (5%) used the proper first aid procedure of running their burn injury under cooling water for more than 20 minutes.

While in Nigeria, water lavage was used in 49 (29.2%) cases, raw eggs in 21 (12.5%), pap in 16 (9.5%) other materials in 48.8%[2]. According to Alomar et al in Saudi paediatric healt-h care professionals just 41% were aware of the use of cold water to assist burn wounds, only 15% received burn first-aid training, and only 3% knew the proper period of cold-water use[7]. A cross-sectional study in the Saudi Arabia found that among 461 individual participants Cold water alone 195 (42%), any type of cream alone 177 (38%), or both 317 (69%), were the most commonly used first aid treatments for treating burns at home. Overall, no statistically significant difference is found between the outcome of burn damage and the most commonly used burn treatments[6].

OBJECTIVES

This study was intended to assess the caregivers' knowledge, attitude, practice, and associated factors regarding burn first aid attending the selected burn units in Odisha, India. The finding from this research could be beneficial to the ministry of health to develop an effective nationwide burn prevention program and promote a consistent guideline for burn first aid and early burn first aid treatment in India.

METHODS

Study design and Settings:

A cross-sectional study was conducted between December 5, 2022 and December 4, 2023 at Odisha different Hospital. This self-administered survey was hosted and sent randomly to all healthcare professional and caregivers in the hospital including medical students, nurses, medical interns and residents. All caregivers who are 18 years of age and above attending burn patients.

Variable of the study

The questionnaire was formulated on the basis of our study objectives. The dependent variables of this study were the Knowledge Attitude and Practice related to burn first aid among caregivers, whereas the Independent variables were Age, Sex, Marital status, Level of education, Occupation, Income, Previous burn first aid training, Past burn history, Source of information, Health institution accessibility and Area of residence.

DATA COLLECTION

Data were collected using a pretested, structured interviewer-administered questionnaire for caregivers, consisting of sociodemographic information, knowledge, attitude, and Practice questions adopted and modified from similar studies. Before the data collection started, data collectors were trained for one day regarding the approach, objective of the study, and ethical issues. After obtaining informed consent, the aim of the research was explained to the study participants. Participants were asked about their burn experience, use of first aid, and the best means of conveying the initial management and prevention. The data collectors were four trained nurses working in the burn units of the hospitals mentioned above. Facilitators and principal Investigator (PI) made continuous follow-up and supervision throughout the data collection period.

Data quality assurance

The data quality was assured by daily checking for completeness and consistency throughout the data collection period by the principal investigator, and then each completed questionnaire was given a unique code. Before the actual data collection pre-test was conducted at AIIMS Hospital, Bhubaneswar burn unit/wards on 5% of the total sample size to check the instrument's reliability and estimate the time needed to collect data and modify the questionnaire accordingly. The internal consistency of the questionnaire was found to be 0.879 for knowledge-based questions, 0.726 for attitude-based questions, and 0.788 for practical questions on Cronbach's alpha.

Table 1

Socio demographic characteristics	Frequency N=532	Percentage %
Sex		
Male	172	32.33082707
Female	360	67.66917293
Age		
20-30	108	20.30075188
31-40	212	39.84962406
41-50	164	30.82706767
50 & Above	48	9.022556391
Marital Status		
Single	132	24.81203008
Married	304	57.14285714
Widow	60	11.27819549
Separated	36	6.766917293
Relation of the caregivers		
Parenet/Grandparent	140	26.31578947
Family member	328	61.65413534
Local Gurdian	64	12.03007519
Educational Status		
No formal education	60	11.27819549
Primary School	248	46.61654135
Secondary school	204	38.34586466
Graduate & Above	20	3.759398496
Occupation		
Unemployed	44	8.270676692
Farmer	128	24.06015038

Labourer	144	23.30827068
Housewife	128	20.30075188
Govt Employee	20	3.759398496
Pvt Employee	48	9.022556391
Others	60	11.27819549
Monthly Income		
Less than 5000	140	26.31578947
5000-10000	312	58.64661654
10000& above	80	15.03759398
Cause of Burn Injuiry		
Thermal	284	53.38345865
Electrical	188	35.33834586
Chemical	60	11.27819549
How did the injury happened?		
Accidental	436	81.95488722
Intentional	96	18.04511278

Table 2

Knowledge based questions	**Category**	**Frequency N=532**	**Percentage %**
Burn first aid is the immediate care given for a person who sustained burn injury before the victim arrive health institution.	Strongly Disagree	112	21.05263158
	Disagree	196	36.84210526
	Neutral	104	19.54887218
	Agree	68	12.78195489
	Strongly Agree	52	9.77443609
Burn can lead to permanent injuries?	Strongly Disagree	48	9.022556391
	Disagree	76	14.28571429
	Neutral	72	13.53383459
	Agree	196	36.84210526
	Strongly Agree	140	26.31578947
Children are the most vulnerable family members for burn?	Strongly Disagree	56	10.52631579
	Disagree	112	21.05263158
	Neutral	208	39.09774436
	Agree	108	20.30075188
	Strongly Agree	48	9.022556391

Washing the burned area with room temperature water is the first correct step in case of burn injuries?	Strongly Disagree	44	8.270676692
	Disagree	180	33.83458647
	Neutral	100	21.80451128
	Agree	116	17.29323308
	Strongly Agree	92	17.29323308
Applying first aid medicine at home over a burned area leads to a better outcome?	Strongly Disagree	52	9.77443609
	Disagree	164	30.82706767
	Neutral	48	9.022556391
	Agree	204	38.34586466
	Strongly Agree	64	12.03007519
In case of burn injury, its beneficial to use antibiotics in management	Strongly Disagree	0	0
	Disagree	80	15.03759398
	Neutral	112	21.05263158
	Agree	196	36.84210526
	Strongly Agree	112	27.06766917
In case of burn injury, covering the burned area with clean cloth before heading to the hospital can decrease the risk of infection	Strongly Disagree	68	12.78195489
	Disagree	76	14.28571429
	Neutral	156	29.32330827
	Agree	120	22.55639098
	Strongly Agree	112	21.05263158
All burn injuries must be treated in the hospital	Strongly Disagree	44	8.270676692
	Disagree	128	24.06015038
	Neutral	76	14.28571429
	Agree	108	20.30075188
	Strongly Agree	176	33.08270677
Never apply traditional remedies to the burn before going to the health facility, e. g. “Dough, toothpaste, oil, coffee powder, etc.” as first aid for burn wounds.	Strongly Disagree	132	24.81203008
	Disagree	196	36.84210526
	Neutral	76	14.28571429
	Agree	68	12.78195489
	Strongly Agree	60	11.27819549
In case of flame burn Stop, drop, and roll. Do not run	Strongly Disagree	120	22.55639098
	Disagree	180	33.83458647

	Neutral	116	21.80451128
	Agree	68	12.78195489
	Strongly Agree	48	9.022556391

Table 3

Attitude based questions	**Category**	**Frequency N=532**	**Percentage %**
Home remedies can reduce pain and infection	Strongly Disagree	52	9.77%
	Disagree	60	11.28
	Neutral	100	18.80
	Agree	180	33.83
	Strongly Agree	140	26.32
Do you think that applying water is the most commonly recommended burn first aid measure?	Strongly Disagree	132	24.81
	Disagree	156	29.32
	Neutral	108	20.30
	Agree	76	14.29
	Strongly Agree	60	11.28
Do you think that applying dough, oil, mud and toothpaste etc. on the wound delay healing process?	Strongly Disagree	108	20.30
	Disagree	120	22.56
	Neutral	116	21.80
	Agree	88	16.54
	Strongly Agree	100	18.80
Do you think that it is important for you to learn burn first aid?	Strongly Disagree	0	0.00
	Disagree	0	0.00
	Neutral	132	24.81
	Agree	208	39.10
	Strongly Agree	192	36.09
Do you think that burn can cause bad scars?	Strongly Disagree	0	0.00
	Disagree	8	1.50
	Neutral	120	22.56
	Agree	188	35.34
	Strongly Agree	216	40.60
Do you think that burn first aid is a basic skill that everyone has to know?	Strongly Disagree	40	7.5
	Disagree	60	11.28
	Neutral	108	20.30

	Agree	156	29.32
	Strongly Agree	168	31.58
If Ministry of health give nationwide burn first aid training for all. Do you think that it is useful?	Strongly Disagree	0	0.00
	Disagree	0	0.00
	Neutral	152	28.57
	Agree	176	33.08
	Strongly Agree	204	38.35
Burn first aid training is mandatory not only for health professionals but also for everyone	Strongly Disagree	12	2.26
	Disagree	20	3.76
	Neutral	124	23.31
	Agree	180	33.83
	Strongly Agree	196	36.84
Most of burn injuries are preventable	Strongly Disagree	72	13.53
	Disagree	80	15.04
	Neutral	140	26.32
	Agree	128	24.06
	Strongly Agree	112	21.05
Do you think that applying traditional remedies are good for burn care before going to the health facility?	Strongly Disagree	76	14.29
	Disagree	92	17.29
	Neutral	116	21.80
	Agree	128	24.06
	Strongly Agree	120	22.56

Table 4

Practice based questions	**Category**	**Frequency N=532**	**Percentage %**
If someone from your family member received a small/minor burn where would you take them quickly for treatment?	Herbalist/ traditional healer	264	49.62
	Pharmacy	88	16.54
	Health post/ clinic	112	21.05
	Hospital	68	12.78
If someone from your family member received a large/major burn where would you take them quickly for treatment?	Herbalist/ traditional healer	60	11.28
	Pharmacy	88	16.54
	Health post/ clinic	168	31.58
	Hospital	216	40.60

In case of burn injury, have you ever applied cold water?	Yes	112	21.05
	No	420	78.95
Applying water duration	Less than 5 min	132	24.81
	5–10 min	96	18.05
	Up to 20 min	56	10.53
	Do not know	248	46.62
In case of burn injury, have you removed clothing or accessories from the injured area?	Yes	168	31.58
	No	364	68.42
In case of burn injury, if your clothes were caught in fire you should roll on ground	TRUE	124	23.31
	FALSE	408	76.69
In case of electrical burn injury, I should not touch the injured person if he/ she is still in contact with the electrical current	TRUE	48	9.02
	FALSE	484	90.98
In case of electrical burn injury, first action is to Turn off the source of electricity if possible	TRUE	236	44.36
	FALSE	296	55.64
In case of burn injury, picking blisters is an incorrect action	TRUE	376	70.68
	FALSE	156	29.32
What would you do if you spill hot liquid on your (or your family member's) arm?	Apply cold water	144	27.07
	Others (specify)	388	72.93
What would you do if your clothing caught fire?	Stop drop and roll	44	8.27
	Smother with cloth	84	15.29
	Jump in water	156	29.32
	Run	36	6.77
	Take off clothing	212	39.85
What traditional substance you used when the patient you are caring has sustained burn injury?	Dough	12	2.26
	Toothpaste	404	75.94
	Oil	64	12.03
	Coffee powder	0	0.00
	Local alcoholic beverage	0	0.00
	None	52	9.77

RESULTS

Socio demographic characteristics

A total of 532 participants responded to this study. Among these, the majority, 360(67.7%) of caregivers were females, while 172(32.3%) were Males. 212(39.8%) of caregivers were in the age range of 31–40 years. Most caregivers were married 304(57.14%), and more than half of the respondents were Parents or grandparents 328(61.6%). Regarding the area of residence 207(39%) and 325(61%) were from urban and rural respectively. By educational status, 248(34.8%) had completed primary school, and 20(3.75%) were holders of a university degree and above. Most caregivers, 312(58.64%), have a monthly income of less than Rs 5000. The majority, 80.7%, of respondents did not take any form of burn first aid training (Table 1). The primary sources of information regarding burn first aid include family, friends, colleagues and guardians, books, radio, social media, health professionals, and school. Family, friends, colleagues, and guardians were the main sources of information for 202(66.2%) respondents (Fig. 1).

The knowledge of caregivers towards burn first aid Respondents

Ten questions based on knowledge were posed to the respondents. Explaining what burn first aid is was the first step. A significant number of respondents 196, or 36.8% answered questions incorrectly. The question of whether burns can result in permanent injuries was then asked to caregivers; only 196 (or 36.8%) of them answered accurately. 180 out of the responses, or 39%, are unaware that children are the family members most at risk for burn injuries. When it comes to burn injuries, a large part of caretakers 180 (33.8%) are unaware that the first proper course of action is to wash the burned area with room-temperature water.Before going to the hospital, respondents were asked if wrapping the burned area with a clean cloth could lower the chance of infection. 120 respondents,(22.5%) agreed with the question..A major part of the respondents 196 (36.8%) agreed to apply traditional remedies on burn injury before heading to hospital ., only 68 people, or 12.7%, are aware that the proper course of action is to stop, drop, and roll (Table 2)

The attitude of caregivers towards burn first aid

Respondents were asked ten questions to assess their attitudes toward burn first aid. Of the respondents, 120 (22.5%) strongly agreed that applying dough, oil, mud, toothpaste, etc. on the burned region will speed up the healing process, whereas just 60 (11.28%) strongly agreed that water is the most frequently advised burn first aid care. 208 people, or 39.1%, thought everyone needed to know how to treat burns. Table 3 shows that 128 respondents (24%) thought most burns could be prevented, and 168 respondents (31.5%) said burn first aid is a fundamental skill that everyone must be aware of

The practice of caregivers toward burn first aid

Twelve questions were used in this study to determine participants' practice regarding burn first aid. When asked where they would take a family member who had sustained a minor or small burn, participants said , The majority, 264 (49.6%), said they would go to a herbalist or other traditional healer, while 112 (21%) said they would visit a clinic or health facility. Pharmacy was another location that 88 (16.5%) respondents pointed out. When asked what they would do if hot fluid spilt on them or a member of their family, 404 respondents (74.9%) said they would use toothpaste, 64 respondents (12%), said they would use oil, while 112 respondents (21%), said they would apply cold water. Regarding the duration of time to apply water, 132 people (24.8%) applied it for less than five minutes, 96 people (18.5%) for between ten and fifteen minutes, and 56 people (10.5%) for twenty minutes or more. However, A significant 248 individuals (46.6%) in the study did not know how long to apply water. When asked what they would do if their clothes caught fire, 156 participants (29.3%) answered they would splash the flames with water, 39.8% said they would remove their clothes, and just 8.2% said they would stop drop, and roll. (Table 4)

DISCUSSION

Burn injuries cause a significant number of public health problems, impairments, and premature fatalities each year. Burn wounds have far more serious consequences in low- and middle-income nations, such as India. A better understanding of patients, risk factors, and the population's knowledge regarding burn first aid is a key step in burn wound management. There are many misconceptions about how to initially treat burns in the community, which can frequently aggravate the wound. This study assessed caregivers' knowledge, attitudes, and practices on burn first aid and associated factors.

In our study, caregivers' knowledge of burning first aid in those attending burn units was found to be poor in 196(36.8%) of study participants. The result is also similar to study conducted in Pakistan (44%)[8], and Indonesia (24%)[9], respectively. The disparity could be related to the variation in the study participant sample size and level of education.

The primary sources of information regarding burn first aid include family, friends, colleagues and guardians, books, radio, social media, health professionals, and school. Family, friends, colleagues, and guardians were the main sources of information for 202(66.2%) respondents and few obtained knowledge from mass media which is analogue to a study conducted in Zimbabwe[10].

22.5% of the total study participants strongly agreed that applying dough, oil, mud, toothpaste, etc. on the burned region will speed up the healing process, whereas just 60 (11.28%) strongly agreed that water is the most frequently advised burn first aid care, which is comparable to a study conducted in Ethiopia[11].

39.1%, participants thought everyone needed to know how

to treat burn, this corresponds to a study that was conducted in Ethiopia[12]. Our study showed that 49.6% of the study participants had poor practice, which is very similar to the study conducted in Saudi Arabia, 51.1%[13].

In our study, cold water was initially applied by only 21% of the caregivers as a first-aid measure, The findings can be compared with the results of the study conducted in New York at 39.9%[14].

The traditional home remedy practice was also high. The most typical traditional home remedies utilized by caregivers in this study were toothpaste (74.9%), Oil (12%) Most of these traditional home remedies are in common with other developing nations[15-17]. The likely reason might correlate with lower socioeconomic status.

CONCLUSION

This study found that caregivers attending burn units in Odisha have limited understanding and practice of burn first aid, despite a positive attitude. Most caregivers continue to use traditional household remedies as burn first aid, which have no scientific benefit. Caregivers, on the other hand, were less likely to apply cold water to the burn victim, which is widely considered as the most recommended first-aid measure. As a result, it is reasonable to conclude that caregivers require burn first aid training in order to handle burn injuries efficiently and safely in the community. This study's findings should guide healthcare authorities in identifying gaps and implementing community initiatives. The traditional and alternative procedures used by caregivers to treat burn injuries require additional examination.

RECOMMENDATION

The use of various methods of instruction about the key principles of burn first aid management can be expanded in school and university classes. Different community health campaigns should be implemented in diverse areas such as shopping malls and general public gatherings to discuss and demonstrate correct burn injury precautions. The necessity to control and mass educate the community about the hazards connected with the inappropriate application of various traditional remedies without seeking medical assistance must be done in order to lessen the morbidity and mortality from this grave injury.

ETHICAL CONSIDERATIONS

Ethical policy and institutional review board statement Ethical approval for this study was Obtained on 02/08/2022 from research ethics committee of AIIMS, Bhubaneswar.

Reference no. T/EMF/Burn & Plastic/21/59

REFERENCES

1. Yakupu A, Zhang J, Dong W, Song F, Dong J, Lu S. The epidemiological characteristic and trends of burns globally. BMC Public Health [Internet]. 2022;22(1):1–16. Available from: https://doi.org/10.1186/s12889-022-13887-2
2. Fadeyibi IO, Ibrahim NA, Mustafa IA, Ugburo AO, Adejumo AO, Buari A. Practice of first aid in burn related injuries in a developing country. Burns [Internet]. 2015;41(6):1322–32. Available from: http://dx.doi.org/10.1016/j.burns.2015.02.018
3. Tay PH, Pinder R, Coulson S, Rawlins J. First impressions last·· A survey of knowledge of first aid in burn-related injuries amongst hospital workers. Burns [Internet].2013;39(2):291–9. Available from: http://dx.doi.org/10.1016/j.burns.2012.05.013
4. Ibrahim A, Asuku M, Dahiru T. Burn prevention and first aid knowledge: A focus on adolescents in Zaria. African J Trauma. 2014;3(1):11.
5. Harvey LA, Barr ML, Poulos RG, Finch CF, Sherker S, Harvey JG. A population-based survey of knowledge of first aid for burns in new south wales. Med J Aust. 2011;195(8):465–8.
6. Al Dhafiri M, Kaliyadan F, Alghadeer MA, Al-Jaziri ZY, Alabdulmuhsin ZA, Alaithan ZA. Knowledge, Attitudes, and Practices toward First Aid Management of Skin Burns in Saudi Arabia. Clin Pract. 2022;12(1):97–105.
7. Alomar M, Rouqi F Al, Eldali A. Knowledge, attitude, and belief regarding burn first aid among caregivers attending pediatric emergency medicine departments. Burns [Internet]. 2016;42(4):938–43. Available from: http://dx.doi.org/10.1016/j.burns.2016.03.0 8 .
Riaz R, Riaz L, Khan J, Baloch M. Survey on Knowledge of First Aid Management of Burns Amongst Medical and Non-medical Students in Karachi, Pakistan: Need for an Educational Intervention? Cureus. 2020;12(1):1–13.
9. Ramli RN, Prawoto AN, Riasa NP, Saputro ID, Mas'ud AF. Epidemiology and knowledge of first aid treatment related to burn injury in the rural region of kulon progo, Indonesia. Open Access Maced J Med Sci. 2021;9(E):101–8.
10. Chirongoma F, Chengetanai S, Tadyanemhandu C. First aid practices, beliefs, and sources of information regarding paediatric burn injuries among caregivers in Harare, Zimbabwe: A cross-sectional study. Malawi Med J. 2017;29(2):151–4.
11. Gete BC, Mitiku TD, Wudineh BA, Endeshaw AS. Knowledge, attitude, and practice towards burn first aid and its associated factors among caregivers attending burn units in Addis Ababa, Ethiopia. A cross-sectional study. Ann Med Surg [Internet]. 2022;81(May 2022):104402. Available from: https://doi.org/10.1016/j.amsu.2022.104402
12. Denekew B, Hebron C, Mekonnen A, Ayele M, Negash K, Desalegne M, et al. Investigating burn cases, knowledge, attitudes and practices to burn care and prevention in Ethiopia: A community-survey. J Glob Heal Reports. 2021;5.
13. Kattan AE, Alshomer F, Alhujayri AK, Addar A, Aljerian A. Current knowledge of burn injury first aid practices and applied traditional remedies: A nationwide survey. Burn Trauma [Internet]. 2016;4(1):1–7. Available from:

http://dx.doi.org/10.1186/s41038-016-0063-7

14. Taira BR, Singer AJ, Cassara G, Salama MN, Sandoval S. Rates of compliance with first aid recommendations in burn patients. J Burn Care Res. 2010;31(1):121–4.
15. Qtait M, Alekel K, Asfour A. First Aid: Level of Knowledge of Relatives in Emergencies in Burn. Int J Biomed Clin Sci [Internet]. 2019;4(1):24–8 Available from http://www.aiscience.org/journal/ijbcshttp://creativecommons.org/licenses/by/4.0/
16. Alomar M, Rouqi F Al, Eldali A. Knowledge, attitude, and belief regarding burn first aid among caregivers attending pediatric emergency medicine departments. Burns [Internet]. 2016;42(4):938–43. Available from: http://dx.doi.org/10.1016/j.burns.2016.03.019