



Cross-sectional Study

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



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ABSTRACT

Background: Burn injuries are thought to be preventable but are still a prevalent global health problem, especially in low- and middle-income countries. It continues to remain a leading cause of morbidity and mortality in Ethiopia. Proper knowledge about burn first aid minimizes the overall impact of the injury.

Purpose: This study aimed to assess the knowledge, attitude, and practice toward burn first aid and its associated factors among caregivers attending burn units in Addis Ababa, Ethiopia, 2021/22.

Methods: A hospital-based cross-sectional study was conducted among caregivers of burn patients attending Yekatit 12 hospital medical college and Addis Ababa Burn Emergency and Trauma (AaBET) hospital burn units. A total of 305 caregivers were recruited by a simple random sampling method from both hospitals. Data was collected using a standard interviewer-administrated questionnaire, cleaned, coded, and entered into EPI data version 6, and then exported to SPSS version 26 for further analysis. The generated data were compiled by frequency tables, charts, and graphs. A logistic regression model was used to measure the association between independent versus outcome variables, considering the AOR, 95% CI, and $p < 0.05$ as significant for all the independent variables.

Result: A total of 305 participants responded to this study. Among these, the majority, 185(60.7%) of caregivers were females, while 120(39.3%) were Males. The main source of knowledge for those who had previous information on a burn and its first aid treatment were families, friends, colleagues, and guardians. A significant portion of 246(80.7%) respondents did not take any form of burn first aid training. The study indicates that 202 (66.2%) and 195(63.9%) of the study participants have poor knowledge and practice, respectively, despite the majority. 225(73.8%) of responders have a favorable attitude regarding burn first aid.

Conclusion and recommendation: This study showed an explicit knowledge and practice gap among caregivers towards burn first aid even though the majorities have a favorable attitude. Developing an effective nationwide burn prevention program and early burn first aid treatment in Ethiopia and promoting a consistent guideline for burn first aid.

1. Introduction

A burn is an injury to the skin or other organic tissue primarily caused by heat, radiation or radioactivity, electricity, friction, or contact with chemicals [1]. It is the fourth most common type of trauma worldwide and a major cause of mortality and disability in developing countries [2].

Burn injuries are a serious global public health issue affecting nearly

11 million people worldwide with approximately 300,000 deaths annually and contribute to morbidity, an increase of days in the hospital, and disability. In contrast, most of these occur in low- and middle-income countries, and almost two-thirds occur in the African and South-East Asia regions [3].

The Global macroeconomic burden of burn injuries remains significant. In 2019, 11.7 billion USD in South Asia and 6.1 billion USD in sub-Saharan Africa were lost due to burns [4].

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Table 1
Frequency distribution of Socio-Demographics characteristics of caregivers attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

Socio demographic characteristics	Category	Frequency (N = 305)	Percentage %
Sex	Male	120	39.3
	Female	185	60.7
Age	23-27	6	2
	28-32	25	8.2
	33-37	107	35.1
	38-42	75	24.6
	43 and above	92	30.2
Marital status	Single	57	18.7
	Married	186	61
	Widowed	36	11.8
	Divorced	14	4.6
	Separated	12	3.9
Relation of the caregivers to the burn patient	Parent/grandparent	204	66.9
	Family member	74	24.3
	Guardian	27	8.9
Educational status	No formal education/cannot read and write	48	15.7
	Primary school	106	34.8
	Secondary school	33	10.8
	College diploma	41	13.4
	University degree and above	77	25.2
	Occupation	Unemployed	6
Farmer		60	19.7
House wife		52	17
Labourer		49	16.1
Government employee		83	27.2
Non-government employee		27	8.9
Others		28	9.2
Monthly income	Less than 5000 ETB	191	62.6
	5000-10000 ETB	104	34.1
	10000-20000 ETB	10	3.3
Participated in burn first aid	Yes	59	19.3
	No	246	80.7
What was the cause of burn injury?	Thermal	209	68.5
	Electrical	70	23
	Chemical	26	8.5
How did the injury happen	Accidental	301	98.7
	Intentional	4	1.3

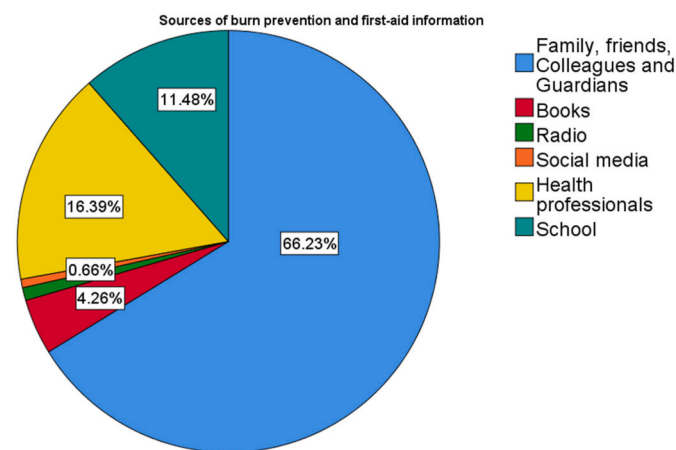


Fig. 1. A pie chart showing the Source of information about burn and its first aid among caregivers attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

Primary prevention is the best method to reduce the burden of this health issue in the community, as providing first aid for burns remains an essential part of the management of burns, especially as it reduces complications [5].

Studies have shown that proper first aid measures reduce morbidity-

Table 2
Knowledge of caregivers towards burn first aid attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

No_	Knowledge based questions	Category	Frequency (N = 305)	Percentage %
1	Burn first aid is the immediate care given for a person who sustained burn injury before the victim arrive health institution.	Strongly disagree	4	1.3
		Disagree	116	38.0
		Neutral	80	26.2
		Agree	75	24.6
		Strongly Agree	30	9.8
2	Burn can lead to permanent injuries?	Strongly disagree	13	4.3
		Disagree	82	26.9
		Neutral	80	26.2
		Agree	130	42.6
		Strongly Agree	6	2
3	Children are the most vulnerable family members for burn?	Strongly disagree	6	2
		Disagree	207	67.9
		Neutral	19	6.2
		Agree	60	19.7
		Strongly Agree	13	4.3
4	Washing the burned area with room temperature water is the first correct step in case of burn injuries?	Strongly disagree	3	1
		Disagree	192	63
		Neutral	21	6.9
		Agree	64	21
		Strongly Agree	25	8.2
5	Applying first aid medicine at home over a burned area leads to a better outcome?	Disagree	129	42.3
		Neutral	19	6.2
		Agree	127	41.6
		Strongly Agree	30	9.8
		Agree	0	0
6	In case of burn injury, its beneficial to use antibiotics in management	Strongly disagree	0	0
		Disagree	44	14.4
		Neutral	94	30.8
		Agree	167	54.8
		Strongly Agree	0	0
7	In case of burn injury, covering the burned area with clean cloth before heading to the hospital can decrease the risk of infection	Neutral	58	19
		Agree	217	71.1
		Strongly Agree	30	9.8
		Agree	1	0.3
		Strongly disagree	1	0.3
8	All burn injuries must be treated in the hospital	Strongly disagree	1	0.3
		Disagree	95	31.1
		Neutral	37	12.1
		Agree	172	56.4
		Strongly Agree	8	2.6
9	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	8	2.6
		Disagree	177	58
		Neutral	31	10.2
		Agree	30	9.8
		Strongly Agree	59	19.3
10	In case of flame burn Stop, drop, and roll. Do not run	Strongly disagree	20	6.6
		Disagree	182	59.7
		Neutral	36	11.8
		Agree	67	22
		Agree	67	22

related costs, and tissue effects, resulting in a lower need for surgical intervention [6]. Performing first aid, stopping the burn process, and taking immediate measures like running cold tap water for at least 20 min, removing clothing and jewelry, and dressing the wound with a sterile dressing will help improve the outcomes of burns [7].

The Ethiopian Demographic and Health Survey report shows that burn injuries represent 8.7% of all significant injuries in Ethiopia. Inadequate public education regarding burn first aid, injury prevention, and control methods and a lack of resources in underfunded health

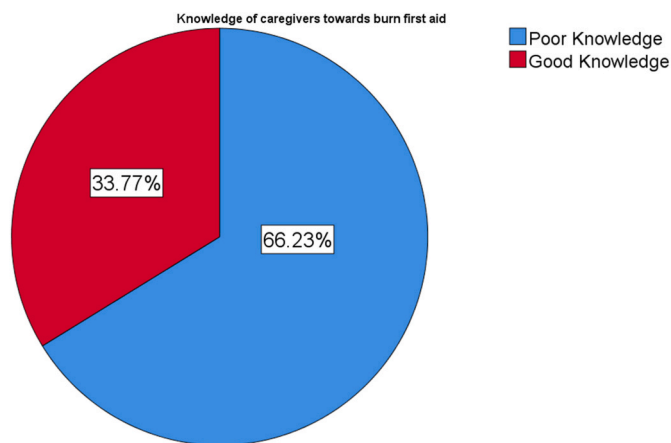


Fig. 2. A pie chart illustrating knowledge of caregivers attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

facilities contribute to the observed poor results.

In Ethiopia, there is a paucity of literature on community-level knowledge of pre-hospital burn management, so it is vital to expand our understanding in this area and determine any socio-demographic variations affecting it for better and more accurate targeting of insufficient knowledge. This study was intended to assess the caregivers' knowledge, attitude, practice, and associated factors regarding burn first aid attending the selected burn units in Addis Ababa, Ethiopia. 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 Ethiopia.

2. Methods

2.1. Study design and setting

A Hospital-based cross-sectional study was conducted from December 5, 2021 to January 4, 2022 at Yekatit 12 hospital medical college and Addis Ababa Burn Emergency and Trauma (AaBET) hospital.

AaBET hospital is the second top referral hospital in Addis Ababa, Ethiopia. It comprises an Emergency Medicine and Critical Care Department, Orthopedics and Traumatology Department, Neurosurgery Department, Plastic Surgery Unit, and General Surgery Unit since 2014 G C. The hospital's emergency department has 60 beds, 13 Intensive Care Unit (ICU) beds, and 300 inpatient beds. It has 19 beds reserved for burn patients (12 adults and 7pediatrics). The hospital serves more than 150000 people from Addis Ababa and out of Addis Ababa [8].

Whereas Yekatit 12 hospital medical college is one of the hospitals under the Addis Ababa city administration health bureau that has been giving routine health services for Addis Ababa and other referral cases from different regional states of Ethiopia. The hospital provides services for a population of approximately 4 million people. It has 9 departments and 6 units and has 265 beds. It has been the main referral hospital for treatment of severe burns for many years. The burn unit has 19 beds of which 7 of them are reserved for pediatric burn victims and 12 for adults [9]. This study is reported in line with STROCCS checklist [10] and registered at www.researchregistry.com with Research Registry UIN: researchregistry7937.

2.1.1. Study population

All caregivers who are 18 years of age and above attending burn patients at Yekatit 12 hospital medical college and Addis Ababa Burn Emergency and Trauma (AaBET) hospital during the study period.

Table 3

Attitude of caregivers towards burn first aid attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

No_	Attitude based questions	Category	Frequency (N = 305)	Percentage %
1	Home remedies can reduce pain and infection	Disagree	6	2
		Neutral	8	2.6
		Agree	291	95.4
2	Do you think that applying water is the most commonly recommended burn first aid measure?	Disagree	62	20.3
		Neutral	119	39
		Agree	71	23.3
		Strongly Agree	53	17.4
3	Do you think that applying dough, oil, mud and toothpaste etc. on the wound delay healing process?	Strongly disagree	62	20.3
		Disagree	74	24.3
		Neutral	29	9.5
		Agree	97	31.8
		Strongly Agree	43	14.1
4	Do you think that it is important for you to learn burn first aid?	Neutral	35	11.5
		Agree	221	72.5
		Strongly Agree	49	16.1
5	Do you think that burn can cause bad scars?	Strongly Disagree	7	2.3
		Disagree	57	18.7
		Neutral	19	6.2
		Agree	222	72.8
6	Do you think that burn first aid is a basic skill that everyone has to know?	Neutral	31	10.2
		Agree	221	72.5
		Strongly Agree	53	17.4
7	If Ministry of health give nationwide burn first aid training for all. Do you think that it is useful?	Neutral	19	6.2
		Agree	150	49.2
		Strongly Agree	136	44.6
8	Burn first aid training is mandatory not only for health professionals but also for everyone.	Strongly disagree	7	2.3
		Disagree	41	13.4
		Neutral	20	6.6
		Agree	195	63.9
		Strongly Agree	42	13.8
9	Most of burn injuries are preventable	Disagree	12	3.9
		Neutral	25	8.2
		Agree	254	83.3
		Strongly Agree	14	4.6
		Strongly disagree	45	14.8
10	Do you think that applying traditional remedies are good for burn care before going to the health facility?	Disagree	81	26.6
		Neutral	45	14.8
		Agree	123	40.3
		Strongly Agree	11	3.6

2.1.2. Inclusion criteria

All caregivers of burn patients aged 18 years and above were included.

2.1.3. Exclusion criteria

Caregivers who are health care workers were excluded from the study.

2.1.4. Variables of the study

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.

Attitude of Caregivers towards burn first aid

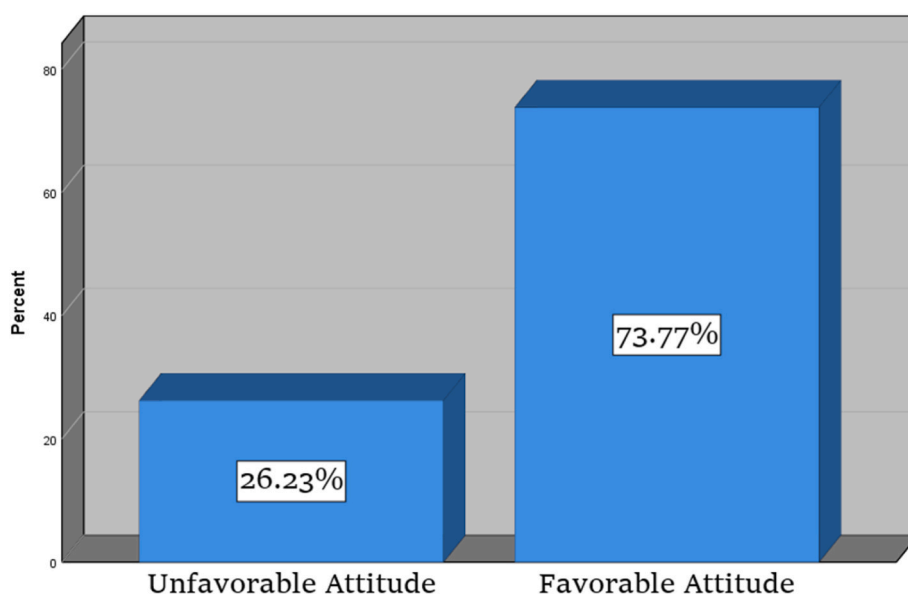


Fig. 3. A bar chart showing the attitude of caregivers attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

2.2. Sample size determination and sampling procedure

The sample size for this study was calculated using the single population proportion formula with the assumption of 25.3% ($p = 0.253$) [11]; the prevalence of applying cold water which is considered an appropriate pre-hospital intervention for a burn injury, with a 95% confidence interval and 5% margin of error.

$$n = (Z a/2)^2 p(1-p) / w^2$$

Where n is sample size.

Z a/2- with a 95% confidence interval equal to 1.96

P- Prevalence of applying cold water 25.3%

W –margin of error which is 1-confidence level = 1-0.95 = 0.05

$$\text{Then, } n = \frac{(1.96)^2(0.253)(1 - 0.253)}{0.05^2}$$

The calculated final sample size was 290 plus a non-response rate of 5% = 290 + 15 = 305.

2.3. Sampling technique and procedure

The rough monthly estimation of burn case flow in Yekatit 12 hospital and AaBET hospital is 224 and 113 respectively, so the total sample size was allocated to each hospital by probability proportional to size (PPS). Finally, the required numbers of individuals were enrolled in the study using simple random sampling.

2.3.1. Data collection tool and procedure

Data were collected using a pretested, structured interviewer-administered questionnaire for caregivers, consisting of socio-demographic information, knowledge, attitude, and Practice questions adopted and modified from similar studies [9–13].

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.

2.3.2. Operational definition

Caregivers: A person who gives care to people who need help taking care of themselves. According to this study, caregivers are those responsible family members, friends, colleagues, or guardians who spent most of the time with the burn patient overseeing the patient's care during the patient's admission.

Good knowledge: A knowledge score above or equal to the mean score was categorized as having good knowledge [16].

Poor knowledge: A knowledge score below the mean score was categorized as having poor knowledge [16].

Favorable attitude: An attitude score above or equal to the mean score was categorized as having a favorable attitude.

Unfavorable attitude: The attitude score below the mean score was categorized as unfavorable.

Good practice: A practice score above or equal to the mean score was categorized as having good practice.

Poor practice: A practice score below the mean score was categorized as having poor practice.

2.3.3. 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 pretest was conducted at Tikur Anbesa Specialized Hospital (TASH) 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 0.887 for knowledge-based questions, 0.716 for attitude-based questions, and 0.758 for practical questions on Cronbach's alpha.

Table 4
Practice of caregivers towards burn first aid attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

No.	Practice based questions	Category	Frequency (N = 305)	Percentage %
1	If someone from your family member received a small/minor burn where would you take them quickly for treatment?	Herbalist/traditional healer	79	25.9
		Pharmacy	8	2.6
		Health post/clinic	188	61.6
		Hospital	30	9.8
2	If someone from your family member received a large/major burn where would you take them quickly for treatment?	Herbalist/traditional healer	33	10.8
		Health post/clinic	161	52.8
3	In case of burn injury, have you ever applied cold water?	Hospital	111	36.4
		Yes	119	39
4	Applying water duration	No	186	61
		Less than 5 min	60	19.7
		5–10 min	30	9.8
		Up to 20 min	29	9.5
5	In case of burn injury, have you removed clothing or accessories from the injured area?	Do not know	186	61
		Yes	143	46.9
6	In case of burn injury, if your clothes were caught in fire you should roll on ground	No	162	53.1
		True	61	20
7	In case of electrical burn injury, I should not touch the injured person if he/she is still in contact with the electrical current	False	244	80
		True	266	87.2
8	In case of electrical burn injury, first action is to Turn off the source of electricity if possible	False	39	12.8
		True	119	39
9	In case of burn injury, picking blisters is an incorrect action	False	186	61
		True	123	40.3
10	What would you do if you spill hot liquid on your (or your family member's) arm?	False	182	59.7
		Apply cold water	119	39
		Others (specify)	186	61
11	What would you do if your clothing caught fire?	Stop drop and roll	58	19
		Smother with cloth	73	23.9
		Jump in water	65	21.3
		Run	9	3
		Take off clothing	100	32.8
12	What traditional substance you used when the patient you are caring has sustained burn injury?	Run	9	3
		Dough	97	31.8
		Toothpaste	2	0.7
		Oil	80	26.2
		Coffee powder	3	1
		Areke(Local alcoholic beverage)	4	1.3
		None	119	39

2.3.4. Data processing and analysis

Data were cleaned, coded, and entered into EPI data version 6 and then exported to SPSS version 26 (IBM Corporate) for further analysis. Frequency tables and charts compiled the generated data. Descriptive statistics and multiple logistic regression were used to analyze categorical variables, and significance is set at a P-value of <0.05.

3. Results

3.1. Socio-demographic characteristics

A total of 305 participants responded to this study. Among these, the majority, 185(60.7%) of caregivers were females, while 120(39.3%) were Males. 107(35.1%) of caregivers were in the age range of 33–37 years. Most caregivers were married 186(61%), and more than half of the respondents were Parents or grandparents 204(66.9%). Regarding the area of residence 119(39%) and 186(61%) were from urban and rural respectively. By educational status, 106(34.8%) had completed primary school, and 77(25.2%) were holders of a university degree and above. Most caregivers, 191(62.4%), have a monthly income of less than 5000 ETB. 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).

3.2. The knowledge of caregivers towards burn first aid

Respondents were asked ten knowledge-based questions. The first of which was to state the definition of burn first aid. A significant portion of respondents, i.e., 200(65.6%), responded incorrectly. Subsequently, caregivers were asked to state if burn can lead to permanent injuries; only 130(42.6%) responded correctly. The majority of the respondents, 232(76.1%), do not know that children are the most vulnerable family members to burn injury. A significant portion of caregivers 216(70.8%) do not know that washing the burned area with room temperature water is the first correct step in case of burn injuries. Respondents were asked to state that covering the burned area with a clean cloth before heading to the hospital can decrease the risk of infection. Most of the respondents 247(81%) answered correctly. Only 67(22%) know that stopping, dropping, and rolling is the correct step in case of flame burn (Table 2).

Then the overall mean score of knowledge among participants was 3.049. According to the result, 202(66.2%) of the responders were found to have poor knowledge of proper burn first aid (Fig. 2).

3.3. The attitude of caregivers towards burn first aid

Ten questions were conducted for respondents to assess their attitude towards burn first aid. Of the respondents, only 124(40.7%) agreed or strongly agreed that water is the most commonly recommended burn first aid measure; the majority of the respondents, 165(54.1%), believed that applying dough, oil, mud, toothpaste, etc ... on the burned area would enhance the healing process. 270(88.6%) believed that it is important for everyone to learn burn first aid. 64(21%) disagreed or strongly disagreed that burns can cause bad scars. 268(87.9%) believed that most burns are preventable, and 274(89.9%) mentioned that burn first aid is a basic skill that everyone must know (Table 3).

Then the overall mean score of attitude among participants was 3.82. The majority, 225(73.8%) of the responders, were found to have a favorable attitude toward burn first aid (Fig. 3).

3.4. The practice of caregivers toward burn first aid

This study used 12 questions to measure the practice of study participants regarding burn first aid. Participants were asked where they would take someone from their family who received a small/minor burn. The majority, 188(61.6%) said they would take them to a health post/clinic, but a significant amount, 79(25.9%), also stated that they would take them to an herbalist/traditional healer.

Another place mentioned by the respondents was pharmacy 8(2.6%). When respondents were asked what they would do if they split hot liquid

Level of practice of caregivers on burn first aid

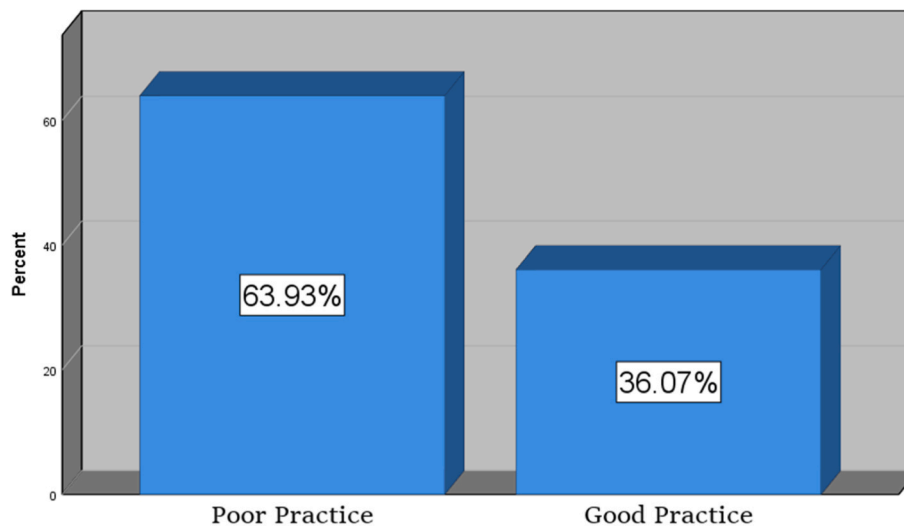


Fig. 4. A bar chart depicting the level of practice of caregivers on burn first aid attending burn units in Addis Ababa, Ethiopia, 2021/22 (N = 305).

Table 5

Bivariate and multivariable analysis of factors associated with caregiver’s knowledge towards burn first aid in Addis Ababa, Addis Ababa Ethiopia, 2021/22.

Variable	Knowledge		COR(95% CI)	P-value	AOR(95% CI)	P-value
	Good	Poor				
Age of participant						
23–27 years	5	1	1		1	
28–32 years	19	6	0.63(0.061,0.654)	0.101	0.11(0.05, 1.25)	0.21
33–37 years	45	62	0.15(0.016,0.189)	0.077	0.47(0.15, 1.51)	0.62
38–42 years	5	70	0.014(0.01,0.15)	0.01	0.54(0.45,9.2)	0.45
43 and above	30	62	0.10(0.011,0.87)	0.037	0.45(0.25, 0.84)	0.32
Marital status						
Single	28	29	1		1	
Married	53	133	0.413(0.224–0.759)	0.004	0.77(0.36–1.65)	0.58
Widowed	8	28	0.296(0.115–0.759)	0.011	0.66(0.21–2.10)	0.48
Divorced	7	7	1.036(0.322–0.335)	0.153	0.57(0.17–1.91)	0.36
Separated	7	5	1.45(0.41–0.511)	0.063	1.26(1.08–3.89)	0.31
Sex						
Male	73	47	1		1	
Female	31	154	7.71(4.5–13.14)	0.000	4.41(1.2–9.4)	0.04*
Residence						
Rural	19	167	0.047(0.026–0.088)	0.000	0.39(0.013–0.19)	0.02*
Urban	85	34	1		1	
Occupation						
Unemployed	5	8				
Farmer	5	55	0.145(0.034–0.617)	0.009	0.039(0.0.02,0.41)	0.22
House wife	5	43	0.186(0.044–0.79)	0.023	0.044(0.003,0.56)	0.35
Laborer	6	43	0.223(0.055–0.911)	0.037	0.05(0.02,1.68)	0.09
Government employee	57	23	3.965(1.17–13.4)	0.027	1.1(0.12,5.4)	0.44
Non-government employee	14	13	1.723(0.44–0.664)	0.129	0.42(0.04,3.22)	0.58
Others	11	17	1.035(0.268–0.399)	0.06	0.24(0.06,2.58)	0.32

* = Significant association, AOR: Adjusted odd ratio, COR, crude odd ratio CI: Confidence interval.

on themselves, or on their family members, 80(26.2%) said that they would apply oil; 97(31.8%) said that they would put the dough on it and only 39% said they would apply cold water. When it came to the duration of water application 69(19.7%) applied water for less than 5 min, 30(9.8%) for 10–15 min, and 29(9.5%) for more than 15 min, while a significant study participant 186 (60%) however did not know the duration of application.

Other methods were also mentioned, such as Areke (A local alcoholic beverage), coffee powder, toothpaste, or soil. The participants were also asked what they would do if their clothing caught fire. 21.3% stated that they would pour water on the flames, 32.8% said they would take off their clothing, and 19% expressed they would stop, drop and roll

(Table 4).

The overall mean score of practice among participants was 1.47. The majority, 195(63.9%) of the respondents, had poor practice (Fig. 4).

3.5. Factors associated with caregiver’s knowledge of burn first aid

In binary logistic regression, the participants’ age, marital status, sex, residence, and occupation of the caregivers were significantly associated with care giver’s knowledge of burn first aid at a p-value less than 0.25. In addition, those variables significantly associated with care giver’s knowledge of burn first aid at a p-value less than 0.25 were candidates for multivariable logistic regression analysis (Table 5).

Table 6

Bivariate and multivariable analysis of factors associated with caregiver's attitude towards burn first aid in Addis Ababa, Addis Ababa Ethiopia, 2021/22.

Variable	Attitude		COR(95% CI)	P-value	AOR(95% CI)	P -value
	Favorable	Unfavorable				
Sex						
Male	93	27	1		1	
Female	127	58	1.57(0.093,0.267)	0.001	0.88(0.43,1.96)	0.75
Residence						
Urban	96	23	1		1	
Rural	123	62	2.13(1.23,0.368)	0.012	0.41(0.046,3.58)	0.42
Educational status						
No formal education	29	19	1		1	
Primary school	72	34	1.39(0.068,0.282)	0.011	1.4(0.68,2.89)	0.21
Secondary school	24	9	1.75(0.067,0.456)	0.24	1.64(0.61,4.45)	0.44
College diploma	34	7	3.18(1.17,8.64)	0.12	2.64(0.33,21.2)	0.36
University degree and above	61	16	2.5(1.12,5.55)	0.154	2.48(0.28,21.87)	0.28
Knowledge						
Poor	131	71	1		1	
Good	94	9	5.661(2.7,11.89)	0.000	5.8(2.85,11.2)	0.001*

* = Significant association, AOR: Adjusted odd ratio, COR, crude odd ratio CI: Confidence interval.

Table 7

Bivariate and multivariable analysis of factors associated with caregiver's level of practice towards burn first aid in Addis Ababa, Addis Ababa Ethiopia,2021/22.

Variable	Practice		COR(95% CI)	P-value	AOR(95% CI)	P -value
	Good	Poor				
Sex						
Female	20	165	0.044(0.014,0.078)	0.000	0.41(0.11–1.68)	0.11
Male	94	26	1		1	
Residence						
Urban	105	14	1		1	
Rural	5	181	0.004(0.001,0.011)	0.000	0.02(0.013,1.19)	0.1
Attitude						
Favorable	96	124	2.88(1.61,5.17)	0.004	2.43(1.42,4.52)	0.03*
Unfavorable	18	67	1		1	
Previous burn first aid training						
Yes	50	9	1		1	
No	60	186	0.58(0.027, 0.125)	0.000	0.48(0.08,0.286)	0.001*

* = Significant association, AOR: Adjusted odd ratio, COR, crude odd ratio CI: Confidence interval.

The multivariable logistic regression model showed that the sex of the respondents and residence of the participant were significantly associated with care giver's knowledge of burn first aid with a p-value less than 0.05 and a 95% confidence interval (Table 5).

The sex of the respondent was significantly associated with care giver's knowledge of burn first aid. Female caregivers were almost 4 (AOR = 4.41(95% CI: 1.2, 8.1)) times more likely to have good knowledge of first aid burn as compared to their counterparts (Table 5).

The respondent's residence was significantly associated with care giver's knowledge of burn first aid. Caregivers who lived in rural areas were almost 61% (AOR = 0.39(95% CI: 0.013, 0.19)) less likely to have good knowledge of first aid burn as compared to their counterparts (Table 5).

3.6. Factors associated with caregiver's attitude towards burn first aid

In binary logistic regression showed that sex of the respondent, residence, educational status, and caregiver knowledge was significantly associated with care giver's attitude toward burn first aid at a p-value less than 0.25. In addition, those variables significantly associated with care giver's attitude toward burn first aid at a p-value less than 0.25 were candidates for multivariable logistic regression analysis (Table 6).

The multivariable logistic regression model showed that only care giver's knowledge was significantly associated with care giver's attitude toward burn first aid with a p-value less than 0.05 and a 95% confidence interval (Table 6). A caregiver who had good knowledge was almost 6 (AOR = 5.8(95%CI: 2.85, 11.2)) times more likely to have a favorable attitude toward first aid burn as compared to their counterparts

(Table 6).

3.7. Factors associated with caregiver's level of practice towards burn first aid

In binary logistic regression, the sex of the study participant, residence, previous burn first aid training, and attitude of caregivers were significantly associated with caregiver's practice for burn first aid at a p-value less than 0.25. In addition, those variables significantly associated with care giver's practice for burn first aid at a p-value less than 0.25 were candidates for multivariable logistic regression analysis (Table 7).

The multivariable logistic regression model showed that only previous burn first aid training and the attitude of the caregivers were significantly associated with caregiver's practice for burn first aid with a p-value less than 0.05 and a 95% confidence interval (Table 7).

The attitude of caregivers was significantly associated with the caregiver's practice for burn first aid. A caregiver who had a favorable attitude was almost 2 (AOR = 2.43(95%CI: 1.42, 4.52)) times more likely to have good practice for first aid burn as compared to their counterparts (Table 7).

Previous burn first aid training was also found to be significantly associated with the caregiver's level of practice towards first aid for a burn. Caregivers who did not have previous burn first aid training were almost 52% (AOR = 0.48(95% CI: 0.08,0.286)) less likelihood of having good practice for burn first aid as compared to their counterparts (Table 7).

4. Discussion

This study provided general information about the caregivers' level of knowledge, attitude, and practice toward burn first aid and its associated factors.

Caregivers' knowledge of first aid is fundamental, as it is widely established that appropriate initial first aid can significantly improve burn outcomes and reduce associated pain. In our study, caregivers' knowledge of burning first aid in those attending burn units was found to be poor in 202(66.2%) of study participants. This finding is consistent with findings from Indonesia 66% [17]. The likely reason for the consistency might be the similarity of the study area; both were conducted at burn units among caregivers. The result is also higher than a similar study conducted in Palestine, Pakistan, and Ghana, 43%, 44%, and 24%, respectively [13,16,17]. The discrepancy may be attributed to the difference in the study population sample size and level of education.

The multivariable logistic regression was done, and the result showed that the sex of the respondent was significantly associated with care giver's knowledge of burn first aid. This finding is comparable with similar studies conducted in Saudi Arabia [12,18]. The likely similarity might be due to the study area and population similarity.

Furthermore, the respondent's area of residence was significantly associated with care giver's knowledge of burn first aid. This finding agrees with the study conducted in rural Ghana [21]. The likely reason might be a socio-demographic similarity.

In our study, participants' main sources of information about first aid were family, friends, colleagues, and guardians followed by health professionals and school. A few of them obtained information from mass media, which is analogous to a study done in Zimbabwe [22]. The observed similarity may be that both studies were conducted in burn units with the same study population.

In our study, there was no significant relationship between the level of knowledge and level of education or age, which can be compared with a similar study in Malaysia [23].

In this study, The majority of the study participants had a favorable attitude towards burn first aid. The result is relatively higher than the studies done in Iran, 45.2% [24]. The likely reason for this difference might be due to the difference in the study setting and sample size. The data indicate that participants may have inaccurate perceptions of burn injuries, given that 54.1% recorded that they believed that applying dough, oil, mud, toothpaste, etc ... to the burned area would enhance the healing process. Only 40.7% agreed or strongly agreed that applying cold water is the most commonly recommended burn first aid measure, and 21% disagreed or strongly disagreed that burns can cause bad scars. At the same time, almost 87.9% believe that burn injuries are preventable, and 88.6% believe that it is essential for everyone to learn to burn first aid, which is comparable with one study conducted in Ethiopia [11]; suggesting that they may be open to prevention and awareness-raising interventions.

A multivariable logistic regression model showed that the caregiver's knowledge was significantly associated with care giver's attitude toward burn first aid.

This study showed that 62.6% of the study participants had poor practice, which was higher than the study conducted in Saudi Arabia, 51.1% [14]. The likely reason for the difference might be our study was done at a tertiary level hospital, and their study was done in a nationwide survey.

In our study, cold water was initially applied by only 39% of the caregivers as a first-aid measure. The finding aligns with the study conducted in New York at 39.9% [25]. 19.7% of the respondents applied water for less than 5 min, while a significant study participant, 60%, did not know the duration of the application. The traditional home remedy practice was also high. The most typical traditional home remedies utilized by caregivers in this study were Dough (31.8%), Oil (26.2%), Areke (Local alcoholic beverage) (1.3%), Coffee powder (1%), and Toothpaste (0.7%). Most of these traditional home remedies are in

common with other developing nations [10,14,19,20,24]. The likely reason might correlate with lower socioeconomic status.

In this study, a favorable attitude was found to be significantly associated with good practice. The finding aligns with a study conducted in China [27].

One of the most significant findings of our study was the impact of previous burn first aid training on the mean practice scores of the study participants. Caregivers who received some form of burn first aid training obtained higher mean practice scores. This finding is also comparable to other studies revealing similar findings in Pakistan [16].

5. Conclusion

The results of this study have indicated a significant limitation of knowledge and practice regarding burn first aid among caregivers those attended burn units in Addis Ababa, Ethiopia even though the majority have a favorable attitude. Most caregivers are still using traditional home remedies as a burn first aid, which has no scientific value. In contrast, the application of cold water to the burn victim globally accepted as the most recommended first-aid measure was low among caregivers. As a result, it is fair to conclude that there is a need to burn first aid education for caregivers, to teach them how to manage burn injuries effectively and safely within the community.

The results of this study should be taken into serious consideration by the different healthcare agencies responsible for shedding light on deficiencies and starting widespread community incentives. The traditional ways and alternative methods by caregivers to treat burn injuries require further investigation.

Strengths

One of the most important strengths of this study was applying an analytical cross-sectional study design, which enabled us to find out the association between the KAP of caregivers and associated factors.

Limitations

There was a shortage of domestic works of literature done in the related study area, and the qualitative study design was not hired. The practice assessment part was based on what the study participant told us without observing the actual practice during burn injury.

Availability of data and materials

Data and materials will be shared upon reasonable request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

Ethical permission was obtained from St. Paul hospital millennium medical college Institutional review board (IRB). The permission was taken from Addis Ababa burn, emergency and trauma (AaBET), and Yekatit 12 hospital medical college.

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Author contribution

All authors contributed equally on conception and design of the study, acquisition of data, analysis and interpretation of data, drafting

the article or revising data content, and approval of the final the version.

Registration of research study

Name of the registry: [researchregistry.com](https://www.researchregistry.com).

Unique Identifying number or registration ID: reviewregistry7937.

Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-the-registry#home/>

Guarantor

Birhanu Chekol Gete: Corresponding author.

Consent

Informed consent was secured from all study participants after telling them the aim, benefits, and risks of participating in the study. The anonymity of the patient's information was kept confidential.

Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104402>.

Abbreviations/acronym

AaBET	Addis Ababa Burn, Emergency and Trauma
ETB	Ethiopian Birr
ICU	Intensive Care Unit
IRB	Institutional Review Board;
KAP	Knowledge, Attitude, Practice;
LMIC	Low and Middle-Income Country
MOH	Ministry of Health
P.I	Principal Investigator
PPS	Probability Proportion to Size;
SPHMMC	St. Paul's Hospital Millennium Medical College
SPSS	Statistical Package for the Social Sciences

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