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RESEARCH ARTICLE

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## Traditional cauterization among children in Bint Al-Huda Hospital in Al-Nasiriya City, Iraq

Abdullah Hmood Abdullah<sup>1</sup>, Raid Kareem Dehiol<sup>2</sup>

<sup>1</sup>Pediatrician, F.I.B.M.S, Al-Muthana Health Office, Iraq

<sup>2</sup>Assistant Professor F.I.B.M.S, Department of Pediatrics, College of Medicine, University of Thi-Qar, Nasiriyah, Iraq

**Corresponding authors:** Raid Kareem Dehiol, Pediatrician, F.I.B.M.S, Al-Muthana Health Office, Iraq. Email: [raid@utq.edu.iq](mailto:raid@utq.edu.iq); Abdullah Hmood Abdullah, Assistant Professor F.I.B.M.S, Department of Pediatrics, College of Medicine, University of Thi-Qar, Nasiriyah, Iraq. Email: [abdulla72288@yahoo.com](mailto:abdulla72288@yahoo.com)

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### ABSTRACT

Cutaneous cautery is a form of traditional medicine practiced in many countries. It was mentioned in the books of many ancient, pre-, and post-Islamic scholars. Patients may resort to traditional medicine (cauterization in particular) for many reasons. This study aims is to acquire more knowledge about the cautery practices and the reasons for practicing cautery in children together with other implications from adverse events of the cautery. This is a cross-sectional study in which 133 children were enrolled (77 males and 56 females with age ranged from 0.5 to 108 months) who had been admitted to Bint Al-Huda Maternity and Childhood Teaching Hospital in Nasiriya city, Thi-Qar Governorate, Southern Iraq, from December 1, 2019 to end of July 2020). The study found that >80% of cauterized children were below 1 year, (53.4%) of rural residency. Parents of the cauterized children were mainly of illiterate and primary education constituting the highest percentage (91.6%) of cauterized children were of low per capita monthly income. The grandmothers were advisors in more than half of the cauterized children, a vast majority of the advisors were either illiterate or had primary education, The person performing the cautery was a traditional healer (95.5%). Cauterization was done mostly in the head and abdomen, and a vast majority of it was done by a lighted cotton-tipped application (97%). The number of cauterization points ranged from 2 to 25 with a mean of 8.8 cautery marks. Approximately 59% of patients did not improve or worsened, whereas 30%

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showed partial improvement, and 11% improved. Complications were seen in 9% of the cases. There is a necessity to spread awareness regarding the dangers and complications of traditional cauterization in health care centers by health care providers. Improving the delivery of medical services to areas far from the city centers as well as spreading health awareness by use of multimedia together with eradicating illiteracy is needed.

**Keywords:** *Traditional cauterization; Children*

## INTRODUCTION

### *Traditional Medicine*

Traditional medicine constitutes the knowledge, skills and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in health maintenance and in the prevention, diagnosis, improvement or treatment of physical and mental illness.<sup>1</sup> It includes, for example, acupuncture and related techniques, chiropractic, osteopathy, manual therapies, qigong, tai chi, yoga, naturopathy, thermal medicine, and other physical, mental, spiritual and mind-body therapies.<sup>2</sup>

According to the WHO, which mentioned that approximately 70%–90% of the populations in Canada, France, Germany, and Italy have practiced complementary and/or traditional medicine in certain forms and that 110 of the 193 WHO member states reported having some type of policy in place regarding regulation and/or registration of traditional medications in 2007. Among children, cauterization constitutes 76.1% of the traditional methods.<sup>3</sup> The traditional medicine is also practiced by 80% of the population in the developing world.<sup>4</sup>

The source of traditional cauterization is controversial but it was first reported in “Surgical Papyrus” written in 1550 BC by ancient Egyptians.<sup>5,6</sup> Cauterization causes pain relief followed by severe pain as reported from patients who underwent cauterization and this may be explained by the fact that cauterization stimulates the release of endogenous opioids and other neurotransmitters that prevent the perception of pain.<sup>7</sup>

Ancient Egyptian surgeons used cauterization to stop severe bleeding from wounds.<sup>8</sup> Agnikarma (thermal cauterization) is practiced for a set of medical illnesses regarding liver, stomach, abdomen, joints, spine, the sciatic nerve, and the back.<sup>9,10</sup> In Traditional Chinese Medicine, cauterization (Moxa cauterization [475–221 BC]) has been used in many diseases from ancient times.<sup>11</sup> The Arabic traditional medicine is categorized into three types: herbal, Kaiy (Arabic for cauterization), and cupping.<sup>12</sup> Abul Qasim Al Zahrawi (westernized as Albucasis, 936–1013 AD) recommended cauterization with hot metals or hot oils for stopping bleeding from vessels and treating many ailments like epilepsy, otalgia, headache, facial palsy, backache, eye diseases, oral fistula, toothache, depression, and hemorrhoids.<sup>13</sup>

Arabs use metal sticks or iron nails to perform cauterization, the metal sticks or nails are placed over hot charcoal until it becomes red hot, and then the practitioner or healer places it over a certain site on the skin for a few seconds.<sup>14</sup> The location of the cauterization is based on the site of illness, for example, cauterization scars were over the affected limbs in children with polio, in the midline of the spine or on the head in children with cerebral palsy whereas a round configuration around the umbilicus of the abdomen was found in many children in a study conducted in Saudi Arabia.<sup>15</sup> In Eastern communities, patients resort to cauterization therapy for various medical ailments including backache, paralysis, facial palsy, ascites, migraine headaches, sore throat, splenomegaly, lymphadenopathy, jaundice, and glaucoma.<sup>16</sup> It is mainly used to stop bleeding and to close blood vessels. The removal of growths such as viral warts and

growth of cancerous tissues or chronic eczema are other uses.<sup>17</sup> The newest endoscopic technique used a catheter-guided cauterization and this is similar to what is mentioned by AlRazi in his book (Al-Hawi) regarding the use of a catheter in the organs of the body that have a lumen, like the nose or anus.<sup>18</sup>

After cauterization, a wide variety of complications was reported including wound infection, delayed wound healing, abscess formation, septic shock, and deep skin burn. In the long term, branding procedures can cause disfigurement from contractures (especially over joint surfaces), scars, hair loss, keloids, orthokeratotic hyperkeratosis, acanthosis, and squamous cell carcinoma. Other medical complications include foreign body reactions, oral and tooth complications, aspiration and hypoxia, edema and swelling, infections and viral transmission including hepatitis and HIV.<sup>19</sup> Tetanus was one of the adverse effects of cautery in another study.<sup>20</sup>

#### ***Aims of the study***

- To acquire more knowledge regarding the practices of cautery in children in the Thi-Qar province.
- To highlight the reasons for practicing cautery in children together with other implications from adverse events resulting from the cautery.

## **SUBJECT AND METHODS**

#### ***Study design and sitting***

This descriptive cross-sectional study was performed in the Bint Al-Huda Maternity and Childhood Teaching Hospital in the Thi-Qar province, south of Iraq, and data were collected over an 8-month period (December 2019 to July 2020) from patients who are admitted to the Bint Alhuda Maternity and Childhood Teaching Hospital in Nasiriya city, and those who had recent cautery marks on their bodies (done for the treatment of the child illness). It included 133 children of different ages admitted to the hospital for various diseases.

#### ***Data collection***

A data collection questionnaire was designated for the purpose of the study and was filled in the hospital by face-to-face interaction with the child caregiver. It involved the personal characteristics and variables related to cautery practices, the questionnaire included the following information: name, sex, patient age classified into 5 groups; <6 months, 6 months–1 year, 1–2 years, 2–5 years, and >5 years.

The residential address of the patients was obtained and classified as rural, urban, or semi-urban. Other variables in the questionnaire included parental education (illiterate; primary, intermediate, secondary school, or higher education), mother's employment, and monthly income per capita (<250,000, 250,000–500,000, and >500,000 Iraqi Dinar (ID)).

It also included information regarding the person who advised or performed cautery, together with the education of the advisor, whether the cautery was paid or free. During filling of the questionnaire, cautery site, size, shape, and total number of cautery marks was documented along with any complications.

#### ***Statistical analysis***

Statistical Package for Social Sciences (SPSS) version (25) was used for data analysis. Descriptive statistical frequencies, percentages, associations, tests of significance (Chi-square test or Fisher exact test) were used for analysis of categorical variables. Means and standard deviations were used to present data of continuous variables *t*, ANOVA had been used. Correlation analyses were performed to identify independent factors.

**Inclusion Criteria:** The children admitted to the Bint Alhuda Maternity and Childhood Teaching Hospital who had recent cautery marks on their bodies (cautery done to them in a period <1 month before admission to the hospital and taking the information for the study).

**Exclusion Criteria:** Children with cautery marks >1 month from the day of obtaining the information from the child.

**Ethical approval of the study:** The clinical protocol was approved by the Institutional Review Board for each participating hospital, and the Department of Health and Education. This study was conducted in conformity with the guiding principles for research involving humans. Written informed consent and assent were obtained from all parents.

### RESULTS

This study shows that the cautery was practiced on children in the Thi-Qar province for children even as early as the first month of their life.

Regarding the Sociodemographic characteristics of the study group, a total number of 133 cauterized children had been included in this descriptive cross-sectional study with a mean age of  $9.25 \pm 11.5$  months with male to female ratio 1:0.72.

The number of cauterization points ranged from 2 to 25 with a mean of 8.8 cautery marks. The mean time before cauterization was 3.8 days, whereas the mean time of duration before seeking medical care was 2.1 days, and more than half of the patients were male (57.9%).

The mothers' employment was seen in only 10% of cauterized patients, whereas >91% of cauterized children were from the low per capita monthly income group.

Most of the cauterized children were below 1 year (80, 4%) and 1–2 years (14.3%).

More than two-thirds of the cauterized children's parents were illiterate or had primary education.

Fever, excessive crying, and diarrhea were the main symptoms for which cautery were practiced.

The grandmother was the main advisor for cautery. Majority of the advisors for the cautery was illiterate or had primary education. The person performing the cautery was a traditional healer in 95.5% of the cases. In 73.7% of parents, they mentioned that they paid for the treatment.

Most of the cauterized patient were not improved or worsen their condition.

Complications seen in 9% of the cauterized patients had complication.

The main sites for cautery were the head followed by the abdomen and back.

The vast majority of the cautery was done by Lightened cotton tipped application (97%), and the circular shape of cautery was the commonest shape of cautery (63.9%).

### DISCUSSION

This study shows that cautery was practiced on children in the Thi-Qar province as early as in their first month of their life.

**TABLE 1.** Selected variables of cauterized patients Descriptive Statistics for quantitative determinants of cautery.

Variable	Median	Minimum	Maximum	Mean	S.D.
Age (months)	107.5	0.5	108	9.25	11.509
Duration of disease (days) before cautery	5	1	6	3.8	1.980
Duration of disease before seeking medical care (days)	5	1	6	2.1	1.336
Total number of cautery marks	23	2	25	8.8	3.804
<b>Sex</b>	<b>Number</b>		<b>Percentage</b>		
Male	77		57.9		
Female	56		42.1		
Total	133		100		

**TABLE 2.** Socioeconomic characters of the sample.

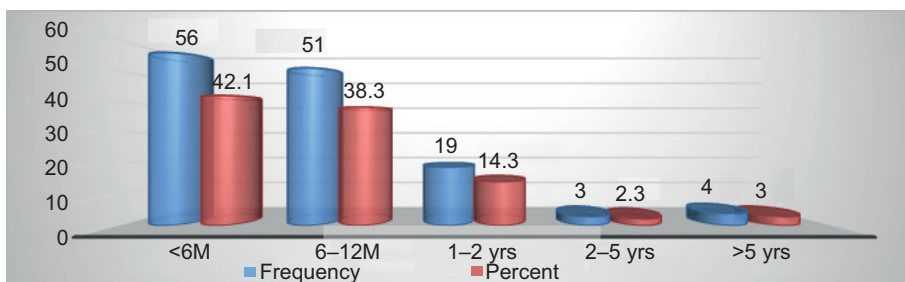
Variable	Number	Percent
Residence		
Rural	71	53.4
Urban	41	30.8
Semi-urban	21	15.8
Economic state (per capita monthly income) Iraqi Dinar		
<250,000	122	91.6
250,000-500,000	9	6.8
>50,0000	2	1.6
Mother's employment		
No	123	92.5
Yes	10	7.5
Total	133	100%

More than half of the cauterized children were of rural residency (53.4%).

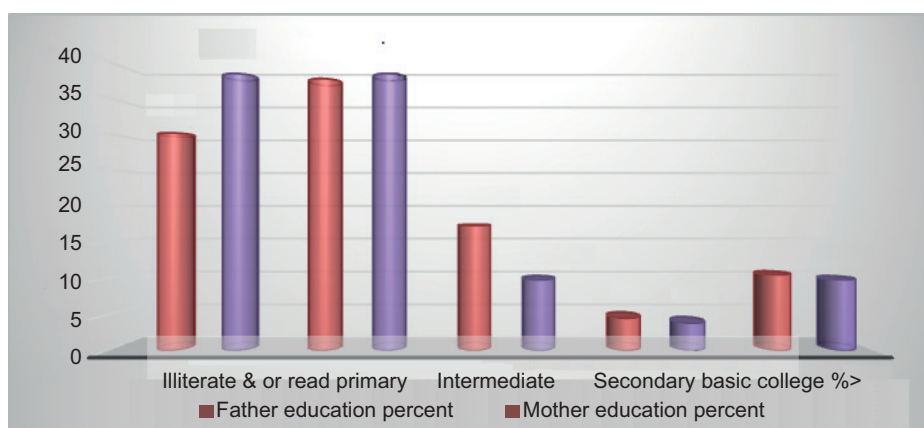
Regarding the sociodemographic characteristics of the study group, a total number of 133 cauterized children had been included in this descriptive cross sectional study with a mean age of  $9.25 \pm 11.5$  months with male to female ratio 1:0.72. This result was similar to another study conducted on infants in the Southwestern Area of Saudi Arabia by al bilani et al.<sup>21</sup> and shows no statistically significant differences between both control and cauterized groups regarding their age or sex as number of male children in both groups is higher than female children, as male to female ratio was 1:0.63 in both groups.

The number of cauterization points ranged from 2 to 25 with a mean of 8.8 cautery marks. The mean time before cauterization was 3.8 days, whereas the mean time of duration before seeking medical care was 2.1 days.

More than half of the cauterized children were of rural residency (53.4%), this may be explained



**FIGURE 1.** Distribution of patients according to age group.



**FIGURE 2.** Distribution of patients in relation to Parental education.

**TABLE 3.** The frequency of symptoms for which cauterization was done.

Variable	Single symptom		>1 symptom		Total percent	FE, P value
	Number	Percent	Number	Percent		
Fever	7	5.26	21	15.79	21.1	126.53, 0.026
Excessive crying	2	1.5	17	12.78	14.29	
Diarrhea	12	9	3	2.25	11.28	
Abdominal pain	0	0	8	6	6	
Vomiting	4	3.0	2	1.5	4.5	
Lethargy	1	0.75	3	2.26	3	
Respiratory symptoms	0	0	2	1.5	1.5	
Jaundice	1	0.75	0	0	0.75	
F.T.T	1	0.75	0	0	0.75	
dehydration	0	0	1	0.75	0.75	
Poor feeding	0	0	1	0.75	0.75	
Abdominal distension	0		1	0.75	0.75	
Multiple symptoms initially	0	0	46	34.6	34.6	
Total	28	21.05	105	78.95	133	

**TABLE 4.** Cautery adviser characters.

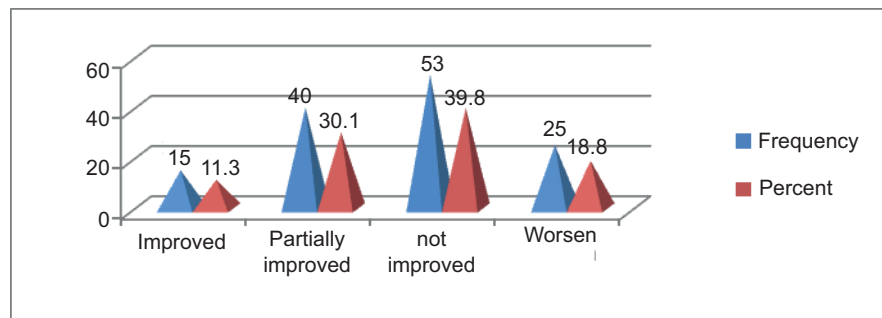
Variable	Number	Percent
Cautery adviser		
Grandmother	60	51.9
Grand father	6	4.5
Other family member	40	30.1
Other person	18	13.5
Education status of the adviser		
Illiterate	80	60.1
Primary	36	27.1
Intermediate	9	6.8
Secondary	5	3.8
College and above	3	2.2
Person who did cauterization		
Traditional healer	127	95.5
Family member	6	4.5
Cautery payment		
Yes	98	73.7
No	35	26.3
Total	133	100

partly by the low level of academic education in one hand and less accessibility to the health care systems in rural areas by other hand.

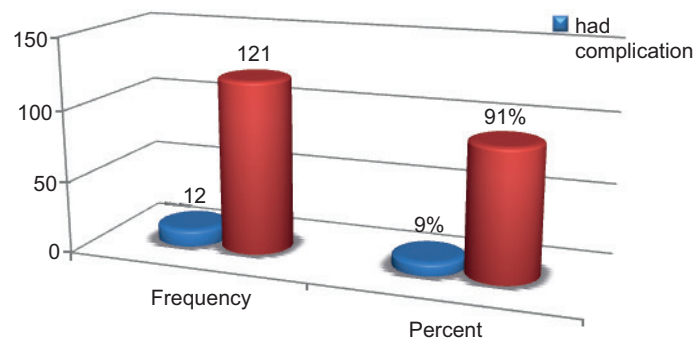
The mothers' employment was seen in only 10% of cauterized patients' mothers in our study and this also supports the results of the Al-Binali et al study, which revealed that mothers' employment was significantly associated with less practice of cauterization for infants.<sup>21</sup> More than 91% of cauterized children were from the low per capita monthly income group and this may be attributed to the mother's unemployment.

Most of the cauterized children were of age below 1 year (80.4%) and the rest 1–2 years (14.3%). In comparison with another study conducted in Saudi Arabia by Watts HG,<sup>15</sup> the mean age of the children who received cauterization was 10.0 years and this may be explained by the fact that because the cause of cauterization in our study is mostly due to fever, diarrhea, and vomiting, which is most common in the young age groups than in the others, the cauterization appears to be more in infants than in other age





**FIGURE 3.** Distribution according to outcome of cautery.



**FIGURE 4.** Distribution according to presence of complication.

groups, and this also explained that the higher percentage of cautery are in an age group where the symptoms or disease mostly occur.

More than two-thirds of parents of the cauterized children were mainly of illiterate or had primary education (this seen partly higher regarding mothers' education), and this result supports what was reported by a study in the Aseer region of Saudi Arabia in infants with cautery whose parents also had lower levels of education,<sup>21</sup> and also the same result in another study in Benghazi, Libya.<sup>22</sup>

The grandmother or other family members were the main advisors of cautery and this result supported what was obtained from a study in Libya where 90% of cauterized patients followed their parents' or relatives' advice for cautery.<sup>22</sup>

A vast majority of the advisors for the cautery was illiterate or had primary education. The person performing the cautery was a traditional

healer in 95.5% of the cases, whereas the remaining 4.5% were family members and this was about the same result that appeared in another study in Saudi Arabia where cautery was performed by a professional traditional healer (89.3%).<sup>21</sup>

In all, 73.7% of parents mentioned that they paid for the treatment, whereas the remaining were for free. In addition, some of the parents mentioned that the payment was not fixed and they paid what they wanted to or what they could afford. This result does not coincide with the results from another study in Saudi Arabia where 64% were for free.<sup>15</sup> This difference may be explained by the time and place where the study was conducted.

Most of the cauterized patients were not improved or their condition worsened (58.6%), whereas only 11% showed improvement, and this result coincides with the results from other studies like those done in Oman in which improvement was

**TABLE 5.** The frequency and percent of sites of cautery.

Site	Patients with single site		Patients with multiple sites		Total percent	FE, P
	Number	Percent	Number	Percent		
Head	21	15.79%	95	71.43%	87.22%	5.367 0.368
Abdomen	10	7.52%	98	73.68%	81.1%	
Back	0	0	46	34.59%	34.59%	
Upper limbs	0	0	5	3.76%	3.76%	
Chest	0	0	2	1.5%	1.5%	
Lower limbs	0	0	1	0.75%	0.75%	

**TABLE 6.** Cautery characterization.

Variable	Frequency	Percent
Method		
Lightened cotton tipped application	129	97%
Others	4	3.0%
Shape		
Circular	85	63.9%
Linear	2	1.5%
Other	34	25.6%
More than one shape	12	9%
Total	133	100

seen in only a small percentage, and also supported what has been found in studies from Libya and Sudan.<sup>3,22-4</sup> This small percentage of improvement after cautery may be attributed to the self-limited course of some diseases or the effect of the treatment, which was taken before the cautery.

Complications were seen in 9% of the cauterized patients (ulcerations 8.3% or infections 0.7% at the sites of cautery). The same complications were reported in different percentages in other studies like the one conducted in Saudi Arabia and Sudan. The difference in percentage of patients developing complications may be attributed to the method of cautery and also because the majority of the patients in our study were seeking medical care before cautery and within a 6-day period after cautery.<sup>25</sup>

The main sites for cautery were the head followed by the abdomen and back, whereas the upper and lower limbs and chest constitute a lower percentage. This differs from a result of a study from Saudi Arabia where the main percentage was the chest and abdomen.<sup>26,27</sup> This may be explained by the fact that the cautery site was usually on the site of symptoms, which were mostly diarrhea and vomiting in our study, whereas abdominal distension and prolonged cough in another study.

The vast majority of the cautery was done by a lighted cotton-tipped application (97%), and the circular shape of cautery was the commonest shape of cautery (63.9%). This is in contrast to a study done in Saudi Arabia where most parents described the cautery as being done with a hot metal or an iron rod, which had been placed in the fire.<sup>28</sup>

**Limitation of the study**

1-This study was performed during the COVID-19 pandemic and therefore includes pediatric patients admitted to the Bint Alhuda Maternity and Childhood Teaching Hospital only, and does not include patients who visited the hospital outpatient clinic or the patients who practice cautery and visit other primary health care centers or other hospitals.

**CONCLUSION**

Low level of education in parents, low socioeconomic status, residence in rural areas, and cultural



**TABLE 7.** Outcome of cauterization in relation to selected criteria of cauterization.

Improved		Outcome				Total P. value	X2 or FE	
		Partially improved	Not improved	Worsen				
Sex	Male	5	23	31	18	77	5.763a 0.128b	
		6.5%	29.9%	40.3%	23.4%	100.0%		
Female	Female	10	17	22	7	56		
		17.9%	30.4%	39.3%	12.5%	100.0%		
Residence	Rural	7	24	28	12	71	2.719a 0.851	
		9.9%	33.8%	39.4%	16.9%	100.0%		
	Urban	6	9	18	8	41		
		14.6%	22.0%	43.9%	19.5%	100.0%		
Semi urban	Semi urban	2	7	7	5	21		
		9.5%	33.3%	33.3%	23.8%	100.0%		
Person performing the cauterization	Family member	1	3	1	1	6	7.642 0.139	
		16.6%	50%	16.6%	16.6%	100%		
	Traditional practitioner	Traditional practitioner	14	36	53	24		127
11%			28.3%	41.7%	18.9%	100%		
Indication	Diarrhea	0	3	6	3	12	54.209 0.056	
		0.0%	25.0%	50.0%	25.0%	100.0%		
	vomiting	vomiting	0	1	1	2		4
				25%	25.0%	25.0%		100%
	Abdominal pain	Abdominal pain	11	19	28	13		71
			(15.5)	(26.8)	(39.4)	(18.3)		(100)
	Excessive crying	Excessive crying	1	3	5	0		9
(11.1)			(33.3)	(55.6)	(0)	(100)		
Mixed	Mixed	3	17	18	10	48		
		(6.25)	(35.4)	(37.5)	(20.8)	(100)		
Site	Head	3	8	4	4	19	24.12 0.501	
		(15.8)	(42.1)	(21.1)	(21.1)	(100)		
	abdomen	abdomen	0	0	1	0		1
			(0)	(0)	(100)	(0)		(100)
	Upper limb	Upper limb	1	2	6	0		9
			(11.1)	(22.2)	(66.7)	(0)		(100)
Multiple	Multiple	11	26	33	19	89		
		(12.4)	(29.2)	(37.1)	(21.3)	(100)		
<b>Total</b>		15	40	53	25	133		
		11.3%	30.1%	39.8%	18.8%	100%		

**TABLE 8.** Correlation regression analysis of the determinants of the cauterization outcome.

		Outcome
Age	Pearson Correlation	-.081-
	Sig. (2-tailed)	.353
Duration Of Disease	Pearson Correlation	-.131-
	Sig. (2-tailed)	.134
Total number of cautery	Pearson Correlation	-.128-
	Sig. (2-tailed)	.148
Duration of disease before seeking medical care	Pearson Correlation	-.296-*
	Sig. (2-tailed)	.001

familiarity of traditional cautery are the main reasons behind the continued resort to traditional medical healers with subsequent impact on the health of the population partly from the delay in medical consultation and the delay in treatment of the disease on the one hand and cautery adverse events on the other hand.

#### ETHICAL APPROVAL:

The manuscript is written in original and all the data, results pertaining to this manuscript are original according to the research performed. The authors followed academic integrity and have not copied any content/results from another source.

#### FUNDING DETAILS (In case of Funding):

The authors of this manuscript did not receive any funding to perform the present research

#### CONFLICTS OF INTEREST

The authors of the study do not have any conflicts of interest

#### INFORMED CONSENT:

The authors of the manuscript agree to publish this research in the journal if it is considerable by the

editors of the journal. The authors provide full consent for reviewing and publishing this manuscript.

V. All the authors of this study contributed equally in terms of performing the research as well as in preparing the manuscript. All the authors of the study followed the guidelines of the corresponding author. Any query/suggestion related to the manuscript can be reached to the corresponding author

#### RECOMMENDATIONS

1. There is a need to spread awareness regarding the dangers and complications of traditional cauterization in health care centers and by health care providers from all degrees to restrict resorting and practicing this tradition.
2. Improving the delivery of medical services to areas far from city centers where the practices of traditional medicine is frequently practiced as a source of treatment.
3. Spreading health awareness via multimedia is indicated together with the eradication of illiteracy.

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