Psychosocial Determinents of Burn Victims

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ABSTRACT

Burn incidents are one of the major causes of mortality and severe morbidity in the modern day world.
Objective: The study objectives were to study the relationship between the psychosocial factors and burn incidents in the population and to identify the most important predictors of burn incidents while controlling the other factors studied.
Design: A case-control study
Place and Duration of Study: The burn unit of Mayo Hospital Lahore .From July 2007 to Sept. 2007.
Subjects and Methods: A community based case-control study with 1:1 case to control ratio was conducted. The case was defined as any burn victim that was admitted in the burn unit of Mayo hospital Lahore and the controls were matched for age in years. Interviews were conducted by the members of group of 4th year MBBS KEMU through pre-tested and structured questionnaire.
Results: A total of 90 persons (45 cases and 45 controls) were recruited in the study. Overall 37% were males and 63% were females. In bivariate analysis the psychosocial factors found significantly related with the burn victims were tension with life partner (OR=6.143; CI=1.262 – 29.295) and improper sui gas installation (OR=4.164; CI=1.2392–13.996). However in multivariate analysis it was observed that after controlling for all the factors studied the strongest association was exhibited by tension in relationship with life partner. (OR= 26.291;CI=1.044 – 662.387)
Conclusion: Burn incidents in our society are not due to single factor. Different psychosocial factors are involved in the occurrence of such incidents.

Key words: Burn victims, case-control study, psychosocial.

INTRODUCTION

Burns are one of the major environmental factors responsible for significant mortality and morbidity in developing countries. In a country like Pakistan the incidence of burn injuries is quite high as compared to some of the developed countries of the world. Unfortunately most of such victims have no access to the proper facilities required for their proper cure and treatment.

According to reports the number of burn victims is quite high in Pakistan and due to lack of proper facilities most of these people are unable to recover and lead a normal life. Females are more commonly affected than males. Most common causes of burn injuries in the country are related to the wide use of LPG for cooking, house electricity, the use of chemicals in homes, the use of hot water geysers, large families with many children, the widespread social habit of preparing food at ground level, and the increasing standard of living. The short term and long term outcomes can be improved by the effectiveness of initial resuscitation, infection control and adequate surgical treatment. In Pakistan the burn victims are generally non-accidental cases and raising awareness of the issue and providing care for the patients is a basic human right issue. Most of the burn incidents occur in domestic settings because of house hold appliances, inflammable agents at home, and clothing burns and in some cases also self inflicted[1]. Majority of burn injures sustained by children occur at home as an accident[2]. First aid measures like wound cooling and removal of source of injury significantly improves out come, decreases morbidity and also health costs[3].

The factors that are responsible for burn incidents are multiple and some of them act synergistically. Certain measures can be taken to prevent the occurrence of such incidents in our society. These measures certainly will not eradicate such incidents but will help to improve the situation.

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MATERIAL AND METHODS

Background: Burns are one of the major determinants of mortality and morbidity, which are much higher in the developing countries as compared to developed world. Certain psychosocial factors and non-availability of proper control mechanisms are considered as the main factor underlying these incidents.
Study design: It was a case-control study to study the relationship between the psychosocial factors and burn incidents in the population in province Punjab.
Study population and Area: The burn unit is located in the Mayo hospital Lahore where burn victims from

all over the province come to seek treatment as it is the largest hospital of the country.

Sampling: A sample size of 45 cases with 45 controls was included in the study with ratio of 1:1.Through random sampling 45 cases were recruited in the study. For each case one control was selected and preference was given to the relatives of the cases as they come from the same background area and they match the cases for the exposure of different factors.

Case/control definitions: The case was defined as consecutive patient of any age with different types of burn injuries requiring admission in the burn unit. Only patients admitted in Mayo hospital was included. The control was defined as a person who had never got burn injuries. Patients with minor burns requiring only outdoor treatment were excluded.

Data collection: An interview schedule was designed to collect information from the burn victims admitted in Mayo hospital. A pre-tested, structured, self-administered questionnaire was used by the members of Group No.10 4th year MBBS KEMU for the interviews after taking permission from the in charge doctor and the respondents according to the sampling methodology described. The data collection process was closely supervised by the staff of Deptt. of Community Medicine King Edward Medical University Lahore by regular visits to the study area during the working hours and by reviewing the filled data collection questionnaires.

Data analysis: Analysis was done by using Epi-info[4] and SPSS[5,6] software. Appropriate tests of significance were used to assess the relationship between different exposure, confounding and outcome variables.

RESULTS

A) Socio-demographic factors: A total of 90 individuals (45 cases and 45 controls) were recruited in the study. Overall 33 (36.7%) of the total individuals were males and 57 (63.3%) were females (figure 1). 19 (21.1%) were less than 20 years of age while 71 (78.9%) were more than 20 years (figure 2). 23 (25.6%) were matriculation or above whereas 67 (74.4%) were below matriculation (figure 3).

Psychosocial Factors: Tension with life partner was found more in burn victims (22.2%) as compared to controls (4.44%). Individuals having tension with their life partners have 6.143 times more chance being burn victims (OR=6.143);. So there is significant relationship between tension with life partner and burn victims (CI=1.262 – 29.295). Improper sui gas installations were found more in burn accidents (28.88%) as compared to controls (8.88%). A significant association was found between burn incidents and improper sui gas installations. (OR=4.164; CI=1.2392 – 13.996) (Table 1).

Figure 1. Gender distribution of study group

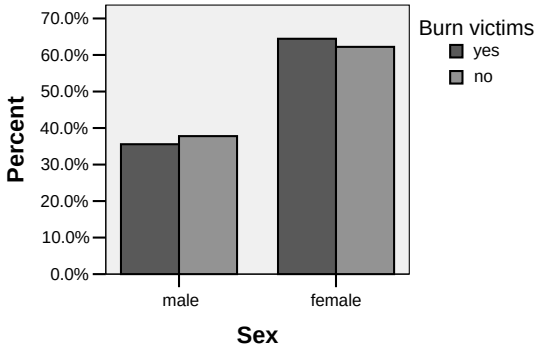


Figure 2. age distribution of study group

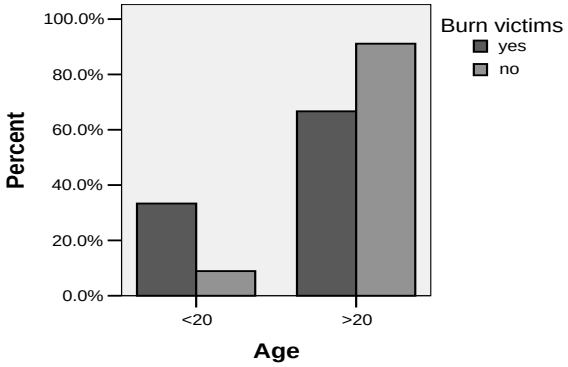
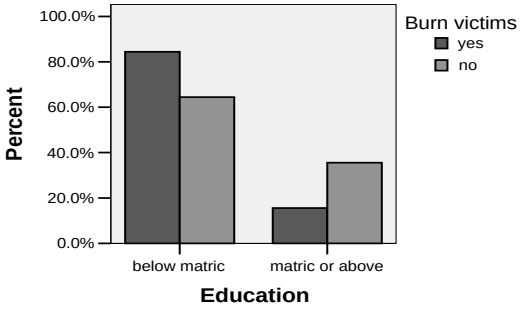


Figure 3. distribution of study group according to education



Tension in relations with in laws was found more in burn victims (17.77%) as compared to controls (15.5%). However no significant association was found between burn incidents and tension in relations with in laws (OR=1.174; CI= 0.387 – 3.564). A lower proportion of cases (6.66%) had dowry issues as compared with controls (13.33%). No significant association was found between dowry issues and burn incidents (OR= 0.464; CI= 0.109 – 1.985). The use of kerosene oil stoves found more in burn victims (20%) as compared to controls (15.55%). However no significant association was found between burn

incidents and use of kerosene oil stoves (OR=1.357; CI=0.457-4.028). A lower proportion of cases (6.66%) were workers of chemical factories as compared with controls (8.88%). No significant association was found between working in chemical factories and burn incidents (OR=0.732; CI=0.154–3.476). A lower proportion of cases (20%) were facing financial stress as compared with controls (26.66%). No significant association was found between financial stress and burn incidents (OR=0.688; CI=0.257–1.841). A previous history of mental illness was equal in cases (4.44%) and controls (4.44%). No significant association was found between previous history of mental illness and burn incidents (OR= 1.000; CI= 0.135–7.426).

Table 1: Relationship of psychosocial factors with burn victims.

Variable		Case		Control		Odds Ratio	95% Confidence interval
		No.	%	No.	%		
Tension in relations with In laws.	Yes	8	17.77	7	15.5	1.174	0.387 – 3.564
	No	37	82.22	38	84.4		
Tension with life partner.	Yes	10	22.2	2	4.44	6.143	1.262 – 29.295
	No	35	77.8	43	95.56		
Dowry issues	Yes	3	6.66	6	13.33	0.464	0.109 – 1.985
	No	42	93.34	39	86.67		
Kerosene oil stoves	Yes	9	20	7	15.55	1.357	0.457 – 4.028
	No	36	80	38	84.45		
Improper sui gas installation	Yes	13	28.88	4	8.88	4.164	1.2392 – 13.996
	No	32	71.11	41	91.11		
Working in chemical factories	Yes	3	6.66	4	8.88	0.732	0.1542 – 3.476
	No	42	93.34	41	91.11		
Financial stress	Yes	9	20	12	26.66	0.688	0.2572 – 1.841
	No	36	80	33	73.33		
Previous history of mental illness	Yes	2	4.44	2	4.44	1.000	0.135 – 7.426
	No	43	95.56	43	95.56		
Any suicide attempt before	Yes	4	8.88	4	8.88	1.000	0.234 – 4.271
	No	41	91.11	41	91.11		
Inflammable material at workplace	Yes	7	15.55	11	24.44	0.569	0.198 – 1.635
	No	38	84.45	34	75.55		
Improper electrical installation	Yes	9	20	13	28.88	0.615	0.232 – 1.630
	No	36	80	32	71.11		
Improper ventilation system	Yes	1	2.22	6	13.33	0.148	0.017 – 1.282
	No	44	97.77	39	86.66		
Self immolation	Yes	1	2.22	3	6.66	0.318	0.032 – 3.181
	No	44	97.77	42	93.34		
Drug abuse	Yes	8	17.77	3	6.66	3.027	0.748 – 12.257
	No	37	82.22	42	93.34		
Improper fire extinguishing system	Yes	3	6.66	6	13.33	0.464	0.109 - 1.985
	No	42	93.34	39	86.66		
Use of corrosives at workplace	Yes	4	8.88	5	11.11	0.780	0.195 – 3.118
	No	41	91.11	40	88.88		
Any jealousy issues	Yes	9	20	7	15.55	1.357	0.457 – 4.028
	No	36	80	38	84.44		
Money or property disputes	Yes	10	22.22	8	17.77	1.321	0.468 – 3.732
	No	35	77.77	37	82.22		
Use of wood for cooking	Yes	6	13.33	5	11.11	1.231	0.347 – 4.366
	No	39	86.66	40	88.88		
Use of coal for cooking	Yes	2	4.44	6	13.33	0.302	0.058 – 1.587
	No	43	95.56	39	86.66		
Alcohol abuse	Yes	6	13.33	1	2.22	6.769	0.780 – 58.723
	No	39	86.66	44	97.77		

Table 2

Variable		Crude Odds Ratio	95% Confidence Interval	Odds Ratio	95% Confidence Interval	
					Lower bound	Upper bound
Tension in relations with In laws.	Yes	1.174	0.387 – 3.564	1.046	.139	7.865
	No					
Tension with life partner.	Yes	6.143	1.262 –29.295	19.461	1.008	375.586
	No					
Dowry issues	Yes	0.464	0.109 – 1.985	.034	.002	.719
	No					
Kerosene oil stoves	Yes	1.357	0.457 – 4.028	2.753	.506	14.979
	No					
Improper sui gas installation	Yes	4.164	1.2392 -13.996	3.383	.712	16.079
	No					
Working in chemical factories	Yes	.732	0.1542 –3.476	.995	.131	7.528
	No					
Financial stress	Yes	.688	0.2572 –1.841	1.304	.293	5.807
	No					
Previous history of mental illness	Yes	1.000	0.135 – 7.426	.496	.023	10.771
	No					
Any suicide attempt before	Yes	1.000	0.234 – 4.271	3.042	.248	37.335
	No					
Inflammable material at workplace	Yes	0.569	0.198 – 1.635	.422	.094	1.905
	No					
Improper electrical installation	Yes	0.615	0.232 – 1.630	.753	.208	2.731
	No					
Improper ventilation system	Yes	0.148	0.017 – 1.282	.051	.003	.915
	No					
Self immolation	Yes	0.318	0.032 – 3.181	.108	.005	2.598
	No					
Drug abuse	Yes	3.027	0.748 –12.257	2.764	.230	33.254
	No					
Improper fire extinguishing system	Yes	.464	0.109 - 1.985	.833	.133	5.226
	No					
Use of corrosives at workplace	Yes	0.780	0.195 – 3.118	2.142	.282	16.294
	No					
Any jealousy issues	Yes	1.357	0.457 – 4.028	.222	.026	1.897
	No					
Money or property disputes	Yes	1.321	0.468 – 3.732	.963	.134	6.913
	No					
Use of wood for cooking	Yes	1.231	0.347 – 4.366	3.659	.321	41.753
	No					
Use of coal for cooking	Yes	0.302	0.058 – 1.587	.062	.004	1.008
	No					
Alcohol abuse	Yes	6.769	0.780 –58.723	2.230	.053	93.950
	No					

A previous history of suicide attempt was equal in cases (8.88%) and controls (8.88%). No significant association was found between previous history of suicide attempt and burn incidents (OR= 1.000; CI=0.234–4.271). A lower proportion of cases (15.55%) made use of inflammable material at workplace as compared with controls (24.44%). No significant association was found between inflammable material at workplace and burn incidents (OR=0.569; CI= 0.198–1.635). A lower proportion of cases (20%) had improper electrical installations as compared with controls (28.88%). No significant association was found between improper electrical installation and burn incidents (OR= 0.615; CI= 0.232–1.630). Improper ventilation system problem was less in cases (2.22%) as compared with controls (13.33%). No significant association was found between improper ventilation system and burn incidents (OR=0.148; CI=0.017–1.282).A lower proportion of cases (2.22%) had self immolation as compared with controls (6.66%). No significant association was found between self immolation and

burn incidents (OR=0.318; CI=0.032–3.181). Drug abuse was found more in burn victims (17.77%) as compared to controls (6.66%). However no significant association was found between burn incidents and drug abuse. (OR=3.027; CI=0.748 – 12.257).A lower proportion of cases (6.66%) had problems of improper fire extinguishing system as compared with controls (13.33%). No significant association was found between improper fire extinguishing system and burn incidents (OR= 0.464; CI= 0.109 – 1.985).A lower proportion of cases (8.88%) used corrosives at workplace as compared with controls (11.11%). No significant association was found between use of corrosives at workplace and burn incidents (OR= 0.780; CI= 0.195 – 3.118). Jealousy issues were found more in burn victims (20%) as compared to controls (15.55%). However no significant association was found between burn incidents and jealousy issues. (OR=1.357; CI=0.457 – 4.028).Money or property disputes were found more in burn victims (22.22) as compared to controls (17.77). However no significant association was found between burn incidents and money and property disputes. (OR=1.321; CI=0.4628 – 3.732).Use of wood for cooking purposes was found more common in burn victims (13.33%) as compared to controls (11.11%). However no significant association was found between burn incidents and use of wood for cooking. (OR=1.231; CI=0.347 – 4.366).A lower proportion of cases 4.44%) used coal for cooking as compared with controls (13.33%). No significant association was found between use of coal for cooking and burn incidents (OR= 0.302; CI= 0.058 – 1.587). Alcohol abuse was found more in burn victims (13.33%) as compared to controls (2.22%). However no significant association was found between burn incidents and alcohol abuse. (OR=6.769; CI=0.780 – 58.723). (Table 1)

In bivariate analysis, tension with life partner was found to be most significant factor (OR=6.143) followed by improper sui gas installation (OR=4.164). While the factors such as Tension in relations with In laws, Dowry issues, Kerosene oil stoves, Working in chemical factories, Financial stress, Previous history of mental illness, Any suicide attempt before, Inflammable material at workplace, Improper electrical installation, Improper ventilation system, Self immolation, Drug abuse, Improper fire extinguishing system, Use of corrosives at workplace, Any jealousy issues, Money or property disputes, Use of wood for cooking, Use of coal for cooking and Alcohol abuse were found to be non significant

Multivariate analysis

Multivariate logistic regression model was used to control for the possible confounding effect of these risk factors on each other and it was observed that there were some changes between the crude odds ratios and the adjusted odds ratios.

In multivariate analysis, tension with life partner was found to be most significant factor (OR=19.461) followed by improper sui gas installation. (OR=3.383)

DISCUSSION

Burn injuries and their related morbidity, disability and mortality represent a public health problem of increasing importance in developing countries. In a country like Pakistan the incidence of burn injuries is quite high as compared to some of the developed countries of the world. Unfortunately most of such victims have no access to the proper facilities required for their proper cure and treatment.

Age and sex are important epidemiological determinants for burn injuries. The present study revealed that more cases were aged above 20 years, while those aged below 20 years were less. The age distribution revealed by the present study is similar to that found in other studies carried out in Egypt and India[2,8].

As regards sex distribution, the female preponderance in our study is similar to other reports from developing countries such as India[8] and Jordan[9] as well as some Egyptian studies[10,11] and might be explained by the involvement of females in domestic activities and also dowry deaths. Socio-cultural factors are among the major causes of different sex predisposition of burn injury in developing countries like Pakistan compared to other developed nations. This finding concurs with other reports from different countries[8,11,12,13,14,15]. However, figures from industrialized countries are clearly different than those reported from developing countries. This may be due to the relatively higher percentage of occupational and recreational burns or due to better home safety with safer cooking and heating devices in industrialized countries[19,20,21].

In the present study, most burns were found to be related to tension in relations with life partner. But different results have been reported from Egypt[11,16] and Jordan[22] which shows that tension in relation with life partner has got no role in burn incidents.

In this study it was found that improper sui gas installation is the other important cause of burn incidents. This result is similar to the picture reported from industrialized countries like Australia, where gas stoves were the found to be the most common source of flame burns[21,23]. But this factor was not found to be significant in a study conducted in Egypt in 1995[11].

In this study it was found that Tension in relations with In laws have no role in the causation of

burn incidents. Similar results were found in a study conducted in Australia[23]

As regards the source of flame, kerosene stoves were not found to be common source and were responsible for fewer cases in this study. This is against the findings of previous studies in developing countries like South Africa, India[17,18] as well as in Egypt[13,14] where these were found to be important cause of the burn victims

In our study less number of burn victims believed that inflammable liquids are the cause of burn injuries. The picture reported from industrialized countries like Australia differs, where flammable liquids were the most common source of flame burns[21,22].

In this study less number of burn victims believed dowry issues have a role in the causation of burn incidents. Different results were found in a study conducted in India[8] which showed dowry issues are important cause of burn victims in females.

Working in chemical factories was responsible for only small fraction of burn injuries in this sample. But they were found to be the most frequent agent of burn injuries in reports from Japan[24] and Nigeria[25]

In our study more burn victims believed that Use of corrosives at workplace has no role in the causation of burn incidents. Similarly in a study conducted in Bulgaria in 1991-95 it was found that industrial chemical burns constitute only a small fraction of all the chemical burns treated[29]

In this study more burn victims believed that financial stress has got non role in the causation of burn incidents. Similar results were reported in a study conducted in Egypt[11].

In this study less number of cases believed previous history of mental illness to be a cause of burns. But a study conducted in Brazil showed it to be an important factor[30].

In the present study a history of previous suicide attempt was considered a cause of burn incidents by less number of cases. But a study conducted in Europe showed that this factor was more prevalent in burn victims[31].

In this study it was found that improper electrical installation has no role in the causation of burn incidents. But this factor was thought to be an important cause in studies carried out in developed countries like Italy[30].

More burn victims believed that self immolation was not an important cause of burn incidents. But a study conducted at Akron Regional Burn Center showed it to be more prevalent in victims of burns[32].

In the present study drug abuse was not found more in the burn victims. But in previous studies conducted in Brazil and European countries it was found to be a more prevalent[30,31].

In this study use of wood and coal for cooking was not found more in burn victims. But in previous studies conducted in Brazil and European countries it was found to be more prevalent in burn victims[30,31].

Alcohol abuse was not found to be more in burn victims in our study. But it was prevalent in burn victims in studies conducted in Italy, Brazil and Australia[23,30,31].

In this study it was found that Money or property disputes have no role in the causation of burn incidents. This was found to be consistent with the studies done in India[7] and Egypt[11].

CONCLUSION

The psychosocial determinants of burn victims such as tension with life partner and improper sui gas installation were found to be important causes of burn incidents while the determinants such as Tension in relations with In laws, Dowry issues, Kerosene oil stoves, Working in chemical factories, Financial stress, Previous history of mental illness, Any suicide attempt before, Inflammable material at workplace, Improper electrical installation, Improper ventilation system, Self immolation, Drug abuse, Improper fire extinguishing system, Use of corrosives at workplace, Any jealousy issues, Money or property disputes, Use of wood for cooking, Use of coal for cooking and Alcohol abuse were not found to be cause of burn incidents.

RECOMMENDATIONS

The government should take following steps in order to decrease the occurrence of such events in Pakistan.

1. Awareness should be created among masses about the factors responsible for burn incidents.
2. All the places where an event of fire breakout can occur should be well equipped with proper fire extinguishing mechanisms.
3. The Fire Brigade and other relevant department should be well equipped to counter such happenings.
4. Proper health education of people is necessary so that they know what to do in such circumstances.
5. Factories with improper measures should be punished.
6. The level of education should be raised.

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