



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3275631>
Available online at: <http://www.iajps.com>

Research Article

SOCIODEMOGRAPHIC DETERMINANTS OF BURN PATIENTS ADMITTED IN HOLY FAMILY HOSPITAL, RAWALPINDI

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Article Received: May 2019

Accepted: June 2019

Published: July 2019

Abstract:**Objective:** To determine the sociodemographic determinants of burn patients, admitted in burn unit of Holy Family, Hospital.**Materials & Methods:** A cross sectional study was carried out in burn unit of Holy Family Hospital, Rawalpindi in which a sample of 84 patients was taken through non-probability convenient sampling technique. The research was done for a period of 7 months i.e from July, 2018 to December, 2018. Data was collected using a structured questionnaire the questionnaire was pre-tested before adopting a final version. Informed consent was taken from all patients. Confidentiality of data was ensured. The completed questionnaires were entered into the computer using IBM SPSS version 23.0. Data were described in terms of frequencies and percentages for categorical variables. Continuous variables were described in terms of Mean \pm SD.**Sampling Selection:** Sample selection was done through inclusion and exclusion criteria.**Inclusion criteria:** Patient of either gender above the age of one year admitted with acute burn injury in burn unit of Holy family hospital, Rawalpindi.**Exclusion criteria:** Patients with old burn injury.**RESULTS:** Minimum age was 1 year. Maximum age was 65 years. Mean age was 16.82 \pm 14.902 years. Regarding gender distribution, 47(56.0%) were males and 37(44.0%) were females. Among the sample of 84, 56 (66.7%) were from rural area, 28 (33.3%) were from urban area. Regarding the cause of injury, 82 (97.6%) injuries were accidental, 2(2.4%) were homicidal. According to place distribution, 62(73.8%) received burn injuries in home. The maximum of 34(40.5%) were having flame burn.**CONCLUSIONS:** From our research, we conclude that maximum burn cases in burn unit of Holy family hospital were place wise domestic and were accidental in origin. The fire related burn injuries were more common. They were most commonly observed in uneducated, lower socioeconomic families and in younger population (of age less than 20 years).**Key Words:** Socio-demographic determinants, risk factors, burn injuries, educational status.**Corresponding author:****Dr. Amjad Irfan,**

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Please cite this article in press Amjad Irfan et al., *Sociodemographic Determinants Of Burn Patients Admitted In Holy Family Hospital, Rawalpindi.*, Indo Am. J. P. Sci, 2019; 07[07].

INTRODUCTION:

Burns are devastating injuries that disproportionately affect people in developing countries, including children. The problem of burn in developing countries like Pakistan is more due to various socio-cultural factors present in the country. The aim of our study was to determine sociodemographic determinants of burn patients that will help to the designing of preventive measures in order to decrease the incidence of burn injuries.

Burn is defined as an injury to the skin or other organic tissue which is mainly caused by heat or due to radiation, electricity, friction, and radioactivity or in contact with chemicals. Thermal burns occur when some or all of the cells in the skin or other tissues are damaged by hot liquids, hot solids, or flames.¹ There are four types of burn injuries based on how much skin's thickness is involved. First- degree burns which are limited to the top layer of skin only. It is also called as superficial burns. Second-degree burns are the injuries which cause blistering and involve deeper into the skin. It is also termed as a partial thickness burn injury. Third degree burns involve all the layers of skin, including the nerve innervations of skin. It is also called as full- thickness burns. Fourth- degree burns involve the underlying muscle beneath the skin.²

Burns are world public health problem. It accounts 265,000 deaths per annum worldwide. It happens mostly in low and middle-income countries. In India, it affect more than one million people each year.³ In developed countries like United States of America (USA) there are 450,000 cases per year, 3500 deaths per year and 45,000 peoples are admitted in hospitals per year due to burn injury.⁴

After traffic accidents, falls and social violence, burn injuries are the fourth most common form of injury all over the world. The patients of burn injuries die due to three main reasons; shock during the first few hours after injury, respiratory system failure in the next days and organ failures after few weeks especially common in pediatric patients. Children with forty-eight months of age cannot endure large thermal injuries. In case of burns of more than thirty percent of entire body surface, children younger than 48 months have a higher rate of mortality than adults.⁵

According to the World Health Organization the incidence of burn injury in the world is 110 per 100,000 individuals per year but in Pakistan it is 1388 per 100,000 individuals per year. These number of cases make our country to be one with the maximum burn injuries. A local study that was conducted in

Peshawar reported that the occurrence of scald burn is 65.4 percent, flame burn is 25.7 percent, electrical burn is 4.6 percent, chemical burn is 1.7 percent and steam burn is 1.6 percent. Similar study was also done in Karachi in which the frequency reported of fire burn was 79%, electrical burn 7.7%, scald burn 5.2% and chemical burn 3%.⁶

Burn injuries are the main cause of morbidity and mortality in a world. In 2002 fire related burns alone resulted in an estimated 3, 22,000 people deaths globally. Fire related burn injuries account for 10 million disability adjusted life years lost worldwide every year.⁷

The occurrence of burn injuries is highly attributed to illiteracy, poverty and unawareness of safety measures. By taking preventive measures, we can prevent 90 percent of burn injuries.⁸ In community several risk factors can be identified which can lead to high risk burn injury. They are poverty, illiteracy and very high population density.⁹ We should create awareness among the peoples in order to control burn injuries.^{10,11}

SOCIODEMOGRAPHIC FACTORS:

Several risk factors can be identified in community. As a general rule high population density, illiteracy, poverty are the main sociodemographic factors associated with burn injuries.⁹

Age: In all ages group the most common site of burns is kitchen while in elderly population burn injuries are also reported in bathroom as well.¹² Those children are at high risk of burns and fatalities who are under 5 years of age because their physical abilities, reasoning and thinking are still developing.¹³ There is higher risk of contact burns in very young children or individuals whose ability to withdraw from heated and hot objects are being lost.⁹ The most common age group is 3 to 6 years.¹¹

Gender: The burn injuries occur in equal proportions both in men and women but in some instances, it is more common in women. Women account 47 percent of a worldwide burn deaths.¹⁴

Education: The more is an education in society the less will be the chance of burn injuries. The parents of burnt children are more likely with low education level or uneducated.¹⁵

Poverty: Poverty is a major risk factor not only for burn injuries but for other types of injuries as well. Children of families with low income are 8 times more

at risk of sustaining burn injuries as compared to children of higher income families.¹⁶

MANAGEMENT:

The management of burn injury depends on the type of burn, amount of tissue involved in burns and severity of burns. The treatment of burn includes fluids administration intravenously. The management of pain is also important. In third degree or fourth degree burns the dead tissues are removed surgically. In some cases, skin grafting is done. To avoid contracture in severe burns physical therapy is required.¹⁷ There is a constant background pain in acute burn injuries it is very important to control the long acting and short acting pain through proper medications. The post-traumatic stress like anxiety, depression and sleep disturbances should also be treated and managed.¹⁸

PREVENTION:

As most of the individuals die of burn injuries without getting benefit of the acute care units. Prevention is helpful for reducing the burden of disability and deaths due to injuries.⁹ There are two types of measures for prevention of burn injuries; active measures which include education requiring life style changes and passive measures, including environmental changes and regulations and legislation.¹⁹ The changes in environmental behaviors only occur when people became aware of its risk factors.²⁰

Prevention programmes should be coordinated with patience, persistence and accuracy.²¹ A proper regulation, check and balance is required on keeping, usage, sale, transportation and storage of highly inflammable materials including natural gas, crude petroleum, gun powder, dynamites, fireworks and fire crackers.¹⁹ The lighted cigarette or match should not be thrown anywhere.

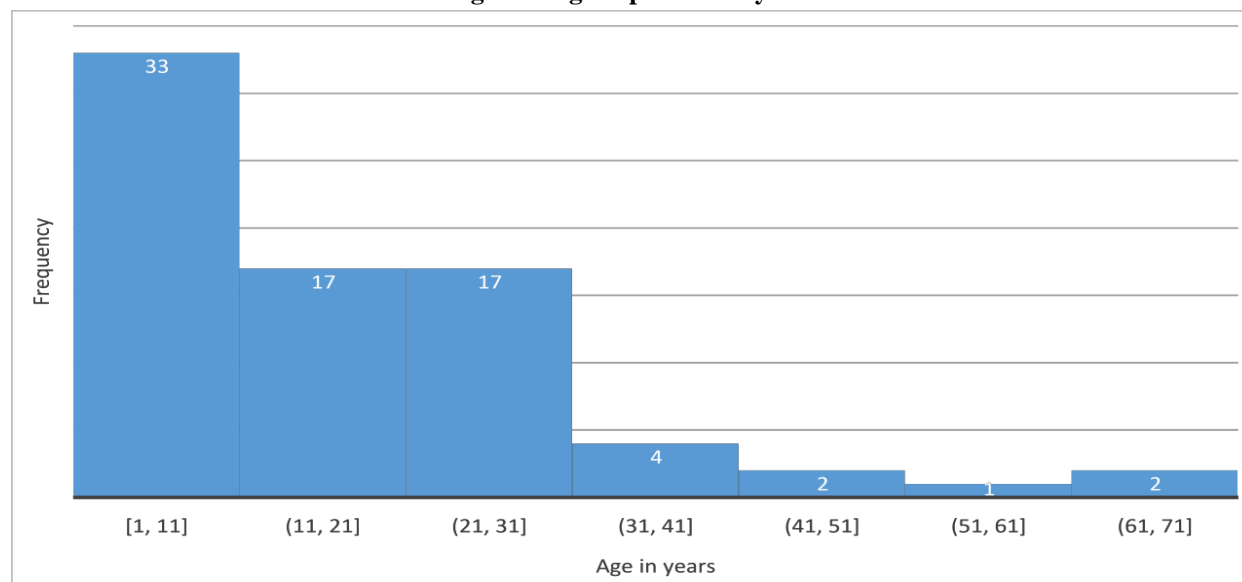
The children should be kept away from inflammable materials. The safety rules of electricity should be followed and do not touch the power lines.²

MATERIALS & METHODS:

A cross sectional study was carried out in burn unit of Holy family hospital, Rawalpindi in which a sample of 84 patients was taken through non probability convenient sampling technique. The research was done for a period of 7 months i.e from July, 2018 to December, 2018. Data was collected using a structured questionnaire. The questionnaire was pre tested before adopting a final version. Informed consent was taken from all patients. Confidentiality of data was ensured. The completed questionnaires were entered into the computer using IBM SPSS version 23.0. Data were described in terms of frequencies and percentages for categorical variables. Continuous variables were described in terms of Mean + SD.

RESULTS: We took a sample of 84 patients from burn unit of Holy family Hospital. Quantitative variables were described in terms of descriptive statistics and categorical variables were described as frequency and proportion.

Figure 1 Age of patients in years.



We interviewed 84 patients of various age. The above histogram shows age in years. Minimum age was 01 year. Maximum age was 65 years. Mean age was 16.82 ± 14.902 years.

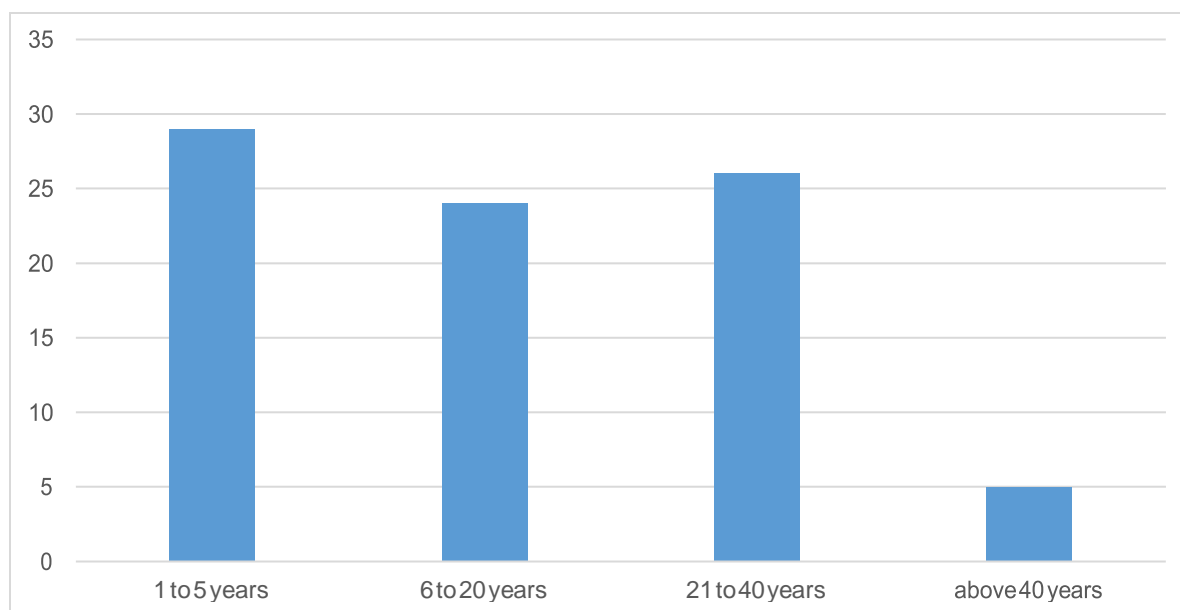


Figure 2 Age Groups.

The figure of age groups shows that among 84 patients the frequency of burn was highest 29(34.5%) in age group of 1 to 5 years, followed by 26(31%) among the age group of 21 to 40 years, 24(28.6%) were found in 6 to 20 years old while the least 5(6%) was in above 40 years old patients.

Table 1 Gender of the patients.

Gender	Frequency	Percent
Male	47	56.0
Female	37	44.0
Total	84	100.0

The above table of gender of the patients shows that in a sample of 84 patients, 47(56.0%) were males and 37(44.0%) were females.

Table 2 Education of the patients.

Educational status	Frequency	Percent
Educated	35	41.7
Uneducated	49	58.3
Total	84	100

The above table shows that in a sample of 84 patients, 35 (41.7%) were educated and 49 (58.3%) were uneducated.

Table 3 Marital status of the patients.

Marital status	Frequency	Percent
Married	30	35.7
Unmarried	54	64.3
Total	84	100.0

The above table shows that in a sample of 84 patients, 30 (35.7%) were married, 54 (64.3%) were unmarried

Table 4 Area of Residence of the patients.

Residence	Frequency	Percent
Rural	56	66.7
Urban	28	33.3
Total	84	100.0

The above table shows that in a sample of 84 patients, 56 (66.7%) were from rural area, 28 (33.3%) were from urban area.

Table 5 Socioeconomic status of the patients.

Socioeconomic status	Frequency	Percent
Upper class	11	13.1
Middle class	30	35.7
Lower class	43	51.2
Total	84	100.0

The above table of shows that in a sample of 84 patients, 11 (13.1%) were from upper class, 30 (35.7%) were from middle class, 43 (51.2%) were from lower class.

Table 6 Source of injury.

Source of injury	Frequency	Percent
Fire	34	40.5
Electricity	17	20.2
Scalding	26	31.0
Chemicals	3	3.6
Others	4	4.8
Total	84	100.0

The above table shows that in a sample of 84 patients, 34(40.5%) were having flame burn, 17(20.2%) were having electrical burn, 26(31.0%) were having hot water burn, 3(3.6%) were having Chemical burn, and other 4(4.8%) were having various rare types of burns.

Table 7 Aim of injury.

Aim of injury	Frequency	Percent
Accidental	82	97.6
Homicidal	2	2.4
Total	84	100.0

The above table shows that in a sample of 84 patients, 82 (97.6%) injuries were accidental, 2(2.4%) were homicidal.

Table 8 Association of Gender with source of injury

Gender		Source of Injury					Total	P value
Male	Count	Fire	Electricity	Scalding	Chemicals	Others	47	
	% within gender	38.3%	27.7%	21.3%	6.4%	6.4%	100.0%	0.06
Female	Count	16	4	16	0	1	37	
	% within gender	43.2%	10.8%	43.2%	0.0%	2.7%	100.0%	
Total	Count	34	17	26	3	4	84	
	% within gender	40.5%	20.2%	31.0%	3.6%	4.8%	100.0%	

In the above table we have shown the relationship between the gender of burnt patients with the source of burn injury, we conclude that the frequency of the burns was highest among the males than females from the fire related burns, this is totally different in case of burns related to electricity as we see a substantial difference of 16.9% with males dominating the

females in the above mentioned category, there is almost a two times increase in source of burn injury from scalds injury in females relative to males. So we can easily say that gender of patient is the risk factor of burn injury as the P. value 0.06 which show that gender of patient is statistically significant risk factor to have burn injury.

Table 9 Association of age group with source of injury.

Age groups		Source of Injury					Total	P value
		Fire	Electricity	Scalding	Chemicals	Others		
1 to 5 years	Count	7	3	18	0	1	29	0.018
	% within source	20.6%	17.6%	69.2%	0.0%	25.0%	34.5%	
6 to 20 years	Count	11	6	5	1	1	24	
	% within source	32.4%	35.3%	19.2%	33.3%	25.0%	28.6%	
21 to 40 years	Count	12	7	3	2	2	26	
	% within source	35.3%	41.2%	11.5%	66.7%	50.0%	31.0%	
above 40 years	Count	4	1	0	0	0	5	
	% within source	11.8%	5.9%	0.0%	0.0%	0.0%	6.0%	
Total	Count	34	17	26	3	4	84	
	% within source	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

This table displays an association between age groups and source of burn injury. It is clearly evident from table that the scalding was the most common source of injury in the patients of 1 to 5 years with 69% while the least source is due to chemicals. As this ages group is basically children so they are most commonly affected by scalding. The older one from 6 to 20 mostly suffered from electricity and chemical as they are exposed mostly to these factors. This is also statistically significant showed by P. value of **0.018**. We can say that there is strong association between age of patients to source of burn injury.

DISCUSSION:

In our sample of 84 patients, 47(56.0%) were males and 37(44.0%) were females. In our study, the ratio of males and females were almost same which is consistent with study done in South africa.¹⁴

When we asked the patients about their education status, Out of 84 patients, 35 (41.7%) were educated and 49 (58.3%) were uneducated. Burns are more

common in illiterate people because illiteracy is usually associated with ignorance, low socio-economic status and lack of knowledge about preventive measures. Our study is consistent with study done in Solapur, India.²² Children that came with burn injuries usually have uneducated parents.¹⁵

When we asked the patients about their socioeconomic status then in a sample of 84 patients, 11 (13.1%) were from upper class, 30 (35.7%) were from middle class, 43 (51.2%) were from lower class. Most of the patients in our study belonged to Low Socioeconomic status similar results were observed in a study done in Indore, India by Jaiswal *et al.*²³

When patients were asked about their burn event, it was noted that 82 (97.6%) injuries were accidental, 2(2.4%) were homicidal.

When we assessed the frequency among age groups, the frequency of burns was highest 29(34.5%) under the age of 5 years, followed by 26(31%) among the

age group of 21 to 40 years, 24(28.6%) were found in 6 to 20 years old while the least 5(6%) was in above 40 years old. Those children are at high risk of burn and fatalities who are under 5 years of age because their physical abilities, reasoning and thinking are still developing. Our study is consistent with study done by Edelman.¹³

In the causes of burn injury, flame burn was the most common with 34(40.5%) of occurrence, 17(20.2%) were having electrical burn, 26(31.0%) were having hot water burn, 3(3.6%) were having chemical burn, and other 4(4.8%) were having various rare types of burn. In another study it is shown that fire burns accounted for 86.6% of all cases which is consistent with our study. In our study fire burn injuries were high as like in this study.³⁶ Area of Residence of the patients shows that in a sample of 84 patients, 56 (66.7%) were from rural area, 28 (33.3%) were from urban area. Our study results are similar to the study done by Bariar *et al.*²⁴ who found that out of 400, 222 (55.5%) were from rural and 178 (44.5%) were from urban area. Rural patients outnumber urban patients, may be because of style of living and low socio – economic status. Use of burner, kerosene pressure

stove etc. for cooking is more seen in rural area than in urban areas.

As it is not possible to control all the burn injuries simultaneously, but we should focus our attention on specific targets that will at least minimize the burden of burn injuries. We should create awareness among the peoples in order to control burn injuries.^{10,11}

But if an outcome is drawn out of the whole effort, so my research study shows that maximum burn cases in burn unit of Holy family Hospital are place wise domestic, accidental (during cooking or playing) flame burns most commonly observed in illiterates and in younger population (of age less than 20 years).

CONCLUSION:

From our research, we conclude that maximum burn cases in burn unit of Holy family Hospital were place wise domestic and were accidental in origin. The fire related burn injuries were more common. They were most commonly observed in uneducated, lower socioeconomic families and in younger population (of age less than 20 years).

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