

# Prevalence of Psychiatric Disorders in Burn Patients in a Tertiary Care Hospital

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## ABSTRACT

**Background and Aim:** Burn injuries patients generally suffer from various psychological and mental disorders especially in lower socio-economic groups. It can adversely affect their wellbeing and health. Proper consultation and clinical diagnosis need to be carried out on burns injuries patients from the early critical phase to rehabilitation phase recovery. The current study's aim was to determine the prevalence of psychiatric disorders in burn patients in a tertiary care hospital.

**Materials and Methods:** This cross-sectional study was conducted on 82 attempted burn suicides, adult patients in Khattak Medical Center Peshawar, Khyber Teaching Hospital Peshawar and Divisional Headquarter hospital, Mirpur AJK for duration of six months from June 2020 to December 2020. All the patients admitted with suicides burns were of either gender and had ages above 15 years. The convenience technique was used for sampling. The patients' demographic details such as psychiatric illness, self-immolation act motivation, burn injury depth, burn total body surface area, inhalation injury, hospitalization duration, and mortality was recorded on pre-designed proforma. Data analysis was carried out with SPSS version 20.

**Results:** The mean age of all 82 patients was  $28.9 \pm 5.2$  with an age range of 14 to 55 years. Of the total, 66 (80.5%) were female while 16 (19.5%) were male. In this study, the most frequent suicidal attempt was made by the marital conflicted patients 50 (61%) followed by love affair failure 8 (9.7%). An overall mean of  $53.6 \pm 19.6$  was observed for total body surface area affected with a range of 15-100%. The hospital duration mean was  $8.2 \pm 5.9$  with a range of 1-38 days. Young, married, and rural area illiterate housewives were the most common self-inflicted/suicide burn injuries. The prime cause of such injuries was getting married. The mortality rate was found at 82.3%.

**Conclusion:** Our study concluded that patient's well-being and mental health could be severely affected by burn injuries. Prevalent depression was noted among severe burn injuries patients. Depression related to deformity could be prevented with early grafting, wound management, proper splinting, coping ability, intense physiotherapy, and long-term rehabilitation.

**Keywords:** Burn; Depressed mood, Psychiatric morbidity, Posttraumatic stress disorder

## INTRODUCTION

Living tissue is damaged by burn injuries especially skin in most cases due to electrical radiation, thermal, chemical energy, or their combination. The tissue properties are lost, the internal milieu exposed and the function of the barrier destroyed by threatening surrounding since the skin is severely damaged. In severe burn injuries, major organ system affected due to certain complications such as tissue bacterial contamination, electrolyte imbalance, skin destruction, fluid imbalance, and life-threatening situation, etc. The burn injuries severity mainly depends on both its characteristics and associated factors. Injuries location, age at injuries, associated injuries presence, total body surface area, injuries' depth and psychosocial problems such as low socio-economic state, psychiatric problem, poverty, substance abuse, and marital problems, etc. are the parameters/factors associated with individual [1, 2]. The burn injuries procedure could last for decades starting from the injury day. Initial treatment of burn injury focuses on wounds and their infections as a main part of the treatment. But in the early stage, scars and newly healed skin itching could be the major problem for patients affected by other recovery elements. Patients feel frustrated, tired, sleep interruption caused by itching, lack of tolerance and other rehabilitation pain [3]. The specialized intensive care and surgical procedures are carried out as burn injuries treatment when needed. During the care phase, the major challenges are management of pain, anxiety, and procedure for surgical treatment. Post-burn life adaption is a long journey that would begin as a priority in severe injuries. Patient's rehabilitation comprises injury day as a start and other specialized technological intensive care during the recovery phases to be undertaken. Functional capacity could be regained by wound and scars active treatment and continuous occupational and physiotherapy as active surgical treatment [4-7].

Compliance with rehabilitation measures and various treatments, severe morbidity caused by psychosocial and psychological issues needs to be identified and addressed. These

psychiatric conditions involve depression, mood disorders, substance use disorders, and posttraumatic stress disorders (PTSD) [8, 9]. Psychological disturbance, muscles strength changes and motion range restriction, appearance changes, environmental and social widespread dislocation are the potential late complications. Burn injury cases vary from Centre to Centre and country to country worldwide. In developed countries, suicidal burn injury accounts for less than 1% as compared to developing countries with alarming high figures. Burn suicide and suicides account for 40% and 70% in their locals of developing counties [10, 11]. In developing countries, about 95% of burn death shared across the globe with the disproportional rate of burn injuries burden [12]. Globally, burn suicide out of all burn cases or injury admission account for 2 to 37% [13]. The present study was conducted on the prevalence of psychiatric disorders in burn patients in a tertiary care hospital.

## MATERIALS AND METHODS

This cross-sectional study was conducted on 82 attempted burn suicides in Khattak Medical Center Peshawar, Khyber Teaching Hospital Peshawar and Divisional Headquarter hospital, Mirpur AJK for duration of six months from June 2020 to December 2020. All the patients admitted with suicides burns were of either gender and had ages above 15 years. The convenience technique was used for sampling. The patient's demographic details such as psychiatric illness, self-immolation act motivation, burn injury depth, burn total body surface area, inhalation injury, hospitalization duration, and mortality was recorded on pre-designed proforma. A convenience sampling technique was used for data collection. All those patients who refused to consent forms were excluded. Suicidal intension burn was defined as self-infliction. Declaration of Helsinki (1975) accordance was followed due to the observational cross-sectional nature of the study. Informed consent was taken with anonymity guaranteed from all the participants.

Ancillary investigations, proper history, and physical examination was carried out for initial diagnosis and assessment. Rule of nine was employed for the calculation of burn total body surface area. All the patients were admitted with the purpose of indoor management. Comprehensively designed proforma with all clinical variables and relevant epidemiology were recorded for data collection. Proforma recorded all the information such as demographic details (age, marital status, gender, employment and education status, urban and rural origin), any psychiatric illness, self-burning motivational factors, TBSA, injury location, and depth, hospital duration, and mortality. Self-inflicting dynamic circumstances and surroundings were ascertained through separate therapy along with patient and their attendant (parents, spouse, family member, siblings, and neighbors) interviews. Outcome measurement was hospital stay and mortality. Standard management protocols for burn injuries were followed accordingly. Data collection and analysis were carried out with SPSS version 20. Percentages, frequencies, means, and standard deviation was calculated as descriptive statistics. Age, TBSA burnt, and hospitalization stay was expressed as mean  $\pm$  standard deviation. Suicidal motive and associated risk factors like categorical variables were expressed as percentages and frequencies. P-value  $<0.05$  was considered significant.

**RESULTS**

The mean age of all 82 patients was  $28.9 \pm 5.2$  with an age range of 14 to 55 years. Of the total, 66 (80.5%) were female while 16 (19.5%) were male. In this study, the most frequent suicidal attempt was made by the marital conflicted patients 50 (61%) followed by love affair failure 8 (9.7%). An overall mean of  $53.6 \pm 19.6$  was observed for total body surface area affected with a range of 15-100%. The hospital duration mean was  $8.2 \pm 5.9$  with a range of 1-38 days. Young, married, and rural area illiterate housewives were the most common self-inflicted/suicide burn injuries. The prime cause of such injuries was getting married. The mortality rate was found at 82.3%. TBSA affected the overall mean was  $69.30 \pm 25.42\%$  with an age range of 15-100%. A higher TBSA amount ( $76.83 \pm 19.25\%$ ) was found compared to survival of suicidal attempts ( $26.78 \pm 7.75\%$ ). The mean duration for hospital stay was  $8.2 \pm 5.9$  with a range of 1-38 days. Significantly, shorter hospital stay was observed in dead patients ( $6.4 \pm 4.46$  days; range= 1-22 days) compared to survival ( $16.92 \pm 5.87$ ; range=11-38 days). The age and gender distribution as shown in Table 1 and Figure 1.

Table 1: Gender distribution of 82 patients

Age (years)	Frequency n (%)	Male n (%)	Female n (%)
14-20	12 (14.6)	2 (16.7)	10 (83.3)
21-30	37 (45.1)	3 (8.1)	34 (91.9)
31-40	23 (28.11)	9 (39.13)	14 (60.87)
41-55	10 (12.19)	2 (16.7)	8 (83.3)

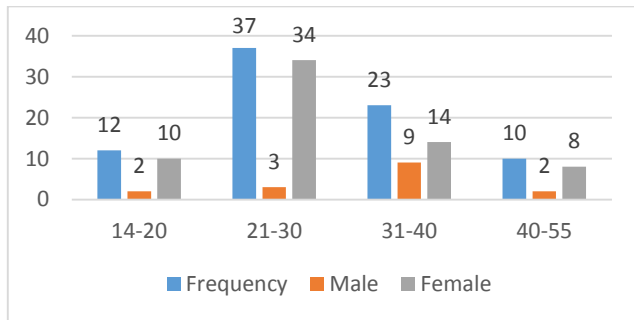


Figure 1: Gender distribution

The highest cases of suicidal burns were recorded in the age range of 20 to 40 years of life accounting for approximately 73.2% of total burn cases. In this age range, social and marital problems

are most common. Suicidal burns are significantly influenced by marital status, about 83% were married burn injuries among total as shown in Figure 2 and Table 2.

Table 2: Incidence of marital status among 82 cases

Marital Status	Frequency (n)	Percentage (%)
Married	68	82.93
Unmarried	14	17.07

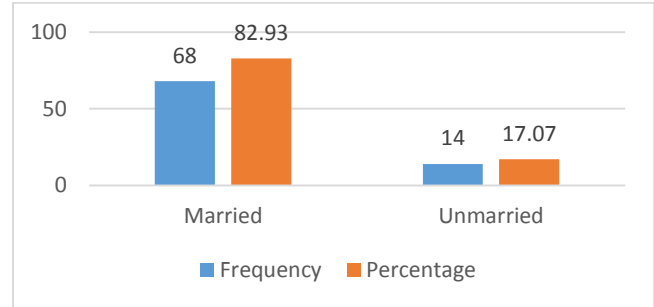


Figure 2: Prevalence of marital status

Table 3 summarized injury characteristics and socio-demographic parameters while Figure 3 demonstrates frequency of various parameters for suicidal burns injuries.

Table 3: Injury characteristics and socio-demographic parameters

Parameters	Frequency (%)	P-value
Depth of Burn Injury		$<0.001$
Deep	75 (91.5)	
Superficial	7 (8.5)	
TBSA burnt		$<0.001$
$>50$	66 (80.5)	
$<50$	17 (19.5)	
Inhalation Injury		$<0.05$
Present	57 (69.5)	
Absent	25 (30.5)	
Educational Status		$<0.001$
Illiterate	69 (84.1)	
Literate/educated	13 (15.9)	
Employment Status		$<0.001$
Housewife	61 (74.3)	
Others	21 (25.7)	
Place of Living		$<0.001$
Rural	77 (93.9)	
Urban	5 (6.1)	

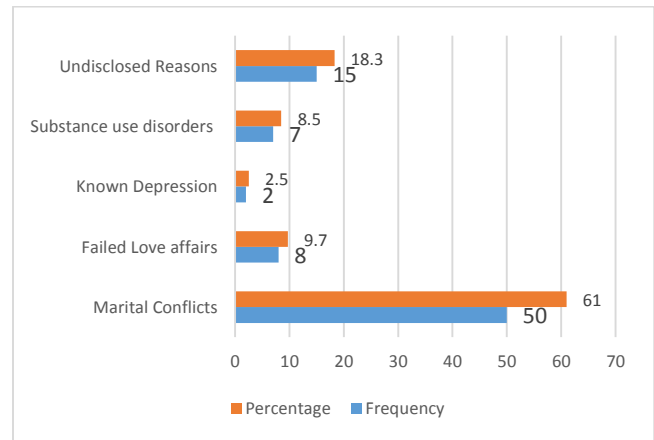


Figure 3: Frequency of various parameters of suicidal burn injuries

**DISCUSSION**

In Pakistan, the prevalence of suicidal burn and self-inflicted burn is high. Most studies carried out in local settings for general burns

epidemiology focused on burn injuries management with some particular aspects [14-17]. Hence, the socio-demographic outcome and pattern of burn and suicidal burns have been focused on in our study. It is difficult to estimate exact suicidal injuries due to the lack of registry in our country. In our investigation, the overwhelming majority of burn and suicidal burns were female. Number of studies conducted in other countries such as India, Iran, Uzbekistan, and Afghanistan reported a similar prevalence of female suicidal burn injuries [18-21]. In contrast to these studies, Europe and Australia reported male involvement in higher prevalence than females regarding suicidal burns injuries [22, 23]. Patients with an age range of second or third decades had a higher number of suicidal burn injuries as reported in our study. However, few other studies reported a higher prevalence of burn injuries and suicidal burn injuries among the age group of 43-47 years [24, 25]. Married women contributed the most suicide burn injuries cases in our case, a similar observation was found in other published research [26-28]. The most frequent suicidal burn cases were a failure in love affair 8 (9.7%) and marital status 50 (61%) in our study. Others studies matched our observation in compliance to these two factors. The triggering parameters for self-inflicting cases reported in Iran were oppression forms, marital conflict, and violence against women, and intrapersonal conflicts. Higher illiteracy among women, spouse unemployment, and low income of family contributes the most in this domestic spousal disharmony. Another study identified quarrels with family members such as husband, husband family, and victims own family members as the major cause for suicidal burn participation among young age women. These young lads find this as a self-humiliating act as they are mentally, physically, and emotionally tortured [29].

Another study reported domestic violence against women is a major contributing factor for suicidal burn injuries [30]. In contrast to Pakistan, Indian women commit suicidal burns due to dowry pressure and dispute on young women for marriages. Furthermore, the young bride has to perform all the household chores irrespective of her choice. Literacy rates play a vital role in suicidal burn injuries cases. As most of the patients were illiterate in our study and this observation was confirmed by many researchers [31, 32]. Family dynamics, understanding of daily life situations, and individual personality could be improved with education. Also, it can prevent suicidal activities in the possibilities of indulgence and self-defeating behavior [33]. Place of living is another important parameter. The rural population suffered from suicide most of the time compared to the urban population as seen in our study. Another study also confirm this observation [33]. TBSA burnt over 50% also constituted in self-inflicting burn cases.

In short, common burn patients were young, illiterate, married, rural background housewives. Marital conflict was the major contributing factor besides failed love affairs. Prolong hospitalization could cause morbidity and mortality among injuries carrying patients while young might fit and rehabilitate. The national perspective needs to be addressed to resolve these suicidal burn injuries issues. While our study highlighted the most triggering factors for suicidal burn injuries. Our study has strengths in some parameters but also some limitations. This is the first study that determines the prevalence of psychiatric disorders in burn patients. It is limited to the single-center admitted patients of burn injuries cases but does not measure all the local population suffers from suicidal burns injuries. Our study did not include the follow-up procedure as the suicidal burn cases need to be referred to psychiatric. Further studies need to be conducted with large sample size and long-term follow-up procedures.

## CONCLUSION

Our study concluded that patient's well-being and mental health could be severely affected by burn injuries. Prevalent depression was noted among severe burn injuries patients. Depression related to deformity could be prevented with early grafting, wound

management, proper splinting, coping ability, intense physiotherapy, and long-term rehabilitation.

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