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Investigating the Prevalence of Depression and Anxiety in Burnt Patients; A Cross-Sectional Study in Khyber Pakhtunkhwa Pakistan

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Abstract

Burn patients often experience significant mental health challenges, including depression and anxiety due to the traumatic nature of their injuries, physical pain, body image changes, and the psychological impact of the burn itself, which can lead to long-term mental health consequences even after the physical wounds heal. Therefore, the current study was conducted to investigate anxiety and depression in burn patients of Khyber Pakhtunkhwa, Pakistan. Based on Sample Size calculator, 100 burn patients including 60 females (n=60) and 40 males (n=40) from the burn units of different hospitals of Khyber Pakhtunkhwa were recruited. Data was collected through convenient sampling technique by applying Hamilton Anxiety rating scale (HARS), Hamilton Depression rating scale (HDRS) and the Satisfaction with Appearance scale (SWAP) in order to assess anxiety and depression in burn patients. The main objectives were to examine the level of anxiety and depression among male and female burn patients, to assess body image of burn patients and to find out psychological impact of burn injuries on marital status, and employment status of burn patients. The results showed non-significant differences on the variable of anxiety and depression between male and female burn patients also, male and female burn patients reported non-significant results on satisfaction with appearance scale. Additionally, Marital status showed significant differences in anxiety and depression scales among the samples while, the results were non-significant between employed and unemployed burn patients on anxiety and depression.

Keywords: Anxiety, Depression, Burn Patients

Introduction

Normal life is a blessing to every human being, while Burn injury is a devastating event, exposing survivors to extreme stressors that can have substantial physiological, aesthetic, and psychological consequences. After discharge, recovery can be limited by several factors, including new functional limitations, visible scarring or deformity, chronic pain, and traumatic stress related to the initial injury. Taken together, these stressors might have a detrimental impact on the mental health of burn survivors. Also, there is a huge body of literature on Burns worldwide, but very limited studies have been conducted in under privilege country like Pakistan where one thing normal living is challenged due to economic

challenges, and stressors while on the other hand burns is one of the high risked issue due limited resources and lack of preventing measures. Therefore, this study was conducted to investigate depression and anxiety symptoms in burnt patients of Khyber Pakhtunkhwa, Pakistan. Burns, either Thermal, Radiation, Chemical or Electrical while is often a seriously devastating injury which can effects a person not even bodily but also psychologically. It influences not only the burn sufferer; however, the whole family unit facing the aftereffects of that event which may cause distress and disabilities to the burned family member. Individuals with harsh burns injuries also living their entire life with a failure of some physical skills, as well as loss of limbs, mutilation, failure of moving from one place to another, scarring, and repetitive infection as a consequence of the damaged skin cause by burns has loss the immunity to fight infectivity. Additionally, severe burns will break through the inner skin layer, inflicting muscular injuries which will have an effect on almost all functions of the body (Amy et al., 2019). Another issue that burn's patients frequently mention and that is related to their suffering is anxiety. These individuals' pain worsens as their anxiety levels do, demonstrating the close connection between pain and anxiety (Devodabady et al., 2021; Park & Kim, 2013). Long-term worry can impede recovery by lowering the immune system and increasing infection susceptibility in patients. Benzodiazepines and other sedative pharmaceuticals are being used to manage pain and anxiety in burn patients instead of non-steroidal anti-inflammatory drugs (NSAIDs) (Cáceres-Jerez et al., 2018). Burns are a traumatic injury with a crucial emotional impact. In burn patients, bodily injury (pain, functional loss) is sort of invariably related to a group of psychic symptoms, partially associated with the traumatic injury/experience itself and partly made by the functional and aesthetic injury that provokes a gross modification in patients' self-image and social role. Burn patients should face exhausting and painful therapeutic and physical rehabilitative treatment that they need to figure through a troublesome method of mental elaboration so as to redefine their overall self-identity. There is a high incidence of delirium, cognitive disorders, anxiety, panic attacks, and depressive symptoms after some weeks following the traumatic experiences (Sideli et al., 2010). Burns that might lead to emotional issues including sadness, disturbed sleep, and recurrent thoughts about the traumatic occurrence. These emotional impact of a burn may be exacerbated by the loss of family members, a loved one, or possessions in a fireplace (Ashfaq et al., 2018). Research studies also reported Pain, anxiety, despair, post-traumatic stress disorder, fear of deformity, social isolation, and financial strain as a result of prolonged hospital stays among burn victims. Jain et al. (2017), states that these problems are not profoundly addressed; they may now be acute but can become chronic mental illnesses over time. Tabassum Alvi et al. (2009) find differences of anxiety & depression in burn patients based on gender, age, martial statues, education and employment. Bayuo et al. (2016) concluded mainly about the negative outcomes of acute burn injury and the associated issues including social and occupational adjustment, sexual behavior and fellow family members in burn survivors. Wiechman et al. (2001) dig out depression in burn patients and concluded high prevalence in female participants than males as well as significant correlation exist with the passage of time. An experimental study was conducted on anxiety of observing, distinctive sorts of images and burn injuries images. The result revealed considerable differences between trait anxiety and state anxiety in experimental group (Hulbert-Williams et al., 2008). Fauerbach et al. (2009) investigated post trauma distress (PTD) after acute burn injuries. Results of the study reveal that patients suffering with PTD had negative thoughts and opinions and also showed greater symptoms of depression along with elevated degree of body image dissatisfaction (BID). The comparison of SF-36 scores indicated that the PTD group indicated higher psychological distress which is associated with their burn injuries and disfigurements while the control group had not experienced such distress. Jain et al. (2017) reported that burn survivors experienced anxiety in which males were found to be the sufferer as compared to females. Although, a non-significant relationship was found between total body surface area (TBSA), depression, anxiety, self-esteem and facial burns. while severity and size of burn injuries were the leading predictors for depression and anxiety.

Nwashindi et al. (2014) stated that females burn patients are more prone to be depressed and anxious as compared to males. Additionally, anxiety depression and other psychological disorders by female participants, marital status, and employment are strongly associated with facial injury/disfigurements. Considering the results of these studies and strong need in the area of interest provided a host for this research to scholarly study these variables among burnt patients of Khyber Pakhtunkhwa, Pakistan.

Rationale of the Study

Burn injuries have profound physical and psychological consequences, with emerging recognition of the significant psychological distress experienced by affected individuals (Jeschke et al., 2020). While the physical complications of burn injuries have been extensively documented (Amini-Nik, Yousuf, & Jeschke, 2018; Simons, Price, Kimble, & Tyack et al., 2016), the psychological aftermath, notably the prevalence of depression and anxiety, remains an area that warrants comprehensive investigation. This study seeks to delve into predicting the occurrence of both anxiety and depression among burnt patients in the Khyber Pakhtunkhwa province of Pakistan. Despite the escalating incidence of burn injuries and their associated psychological implications in Pakistan, there exists a critical gap in empirical research focusing on the prevalence of depression and anxiety specifically among burnt patients. This research gap is particularly pronounced in the context of KHYBERPAKHUNKHWA, where unique socio-cultural dynamics may intersect with the psychological responses to burn injuries. Thus, an examination of the prevalence of these mental health conditions among burnt patients in KHYBERPAKHUNKHWA is essential to address this dearth of knowledge and provide valuable insights into the mental health landscape of this region. Burn injuries often induce prolonged and agonizing treatment processes (Van Loey, 2020), physical disfigurement (Habib, Saddul & Kamran, 2021), and functional limitations (Deng et al., 2016). Such challenges can give rise to emotional distress, body image dissatisfaction, and diminished self-esteem, all of which are well-established triggers for the development of depression and anxiety. Therefore, an exploration of the prevalence of these mental health disorders in burnt patients within KHYBERPAKHUNKHWA would offer a clearer understanding of the magnitude of the psychological burden borne by these individuals. Furthermore, depression and anxiety can exert a detrimental impact on the rehabilitation and recovery process of burnt patients. These psychological conditions might impede adherence to treatment regimens, prolong hospital stays, and compromise overall treatment outcomes. By quantifying the prevalence of depression and anxiety in burnt patients, healthcare providers can tailor interventions to address these psychological challenges effectively, thereby enhancing the prospects of a more holistic recovery. The implications of this study extend beyond individual patient care. The prevalence figures of depression and anxiety among burnt patients in KHYBERPAKHUNKHWA can significantly inform public health policies and resource allocation. If a substantial prevalence is unveiled, this underscores the urgent need for the integration of mental health services within burn care units, thereby establishing a comprehensive approach to recovery that encompasses both physical and psychological well-being. Furthermore, this study has the potential to uncover specific risk factors associated with elevated rates of depression and anxiety among burnt patients in KHYBERPAKHUNKHWA. These factors may encompass elements such as injury severity, socio-economic status, healthcare accessibility, and strength of social support systems. Identification of such risk factors can guide the formulation of targeted preventive measures and early interventions, thus ameliorating the overall mental health landscape of burnt patients in the region. Moreover, this study could facilitate comparative analyses with similar research conducted in other regions or countries.

Objectives of the Study

1. To examine level of anxiety and depression among male and female burn patients.
2. To assess body image of burn patients.

3. To find out psychological impact of burn injuries on marital status, and employment status of burn patients.

Hypotheses of the Study

H₀: Female burn injured patients will not be more anxious and depressed as compared to male burn patients.

H₁: Female burn injured patients will be more anxious and depressed as compared to male burn patients.

H₀: Unmarried burn patients will not score high on anxiety and depression scales as compared to married burn patients.

H₁: Unmarried burn patients will score high on anxiety and depression scales as compared to married burn patients.

H₀: Employed burn patients will score high on anxiety and depression scales as compared to unemployed burn patients.

H₁: Employed burn patients will score high on anxiety and depression scales as compared to unemployed burn patients.

Methodology

Research Design

The present study was quantitative in nature and adopted cross-sectional research design. Burnt patients from burn units of different hospitals of KHYBERPAKHUNKHWA were selected conveniently.

Samples and Sampling Technique

After taking proper permission and ethical approval from the heads of burn units of different hospitals of KHYBERPAKHUNKHWA including Lady reading hospital Peshawar, Hayatabad medical complex Peshawar, and Mardan medical complex Mardan. The total of 100 burn patients (n=100) in which 60 female (n=6) and 40 male (n=40) were selected through convenient sampling technique from in and outpatient units considering the age range between 15 to 55 years. The sample size was defined using sample size calculators for unknown population.

Inclusion criteria

The study inclusion criteria for the subjects are men and women with burns aged 15-55 years admitted or followed up in burn units in different hospitals, who agreed to participate in the study, were included in the following study, the participants only had burns on different parts of the body.

Exclusion criteria

Those patients who had any other injuries and disabilities were excluded from the study, and those patients diagnosed with anxiety, depression, or any other psychological disorder prior to burn-injury were not included in the study.

Research Instruments

Demographic Questionnaire

To collect relevant data regarding personal information of the participants a demographic questionnaire was administered on each of the participant to get information about their name, gender, age, marital status ethnicity, family system, race, religion, education level, occupational status.

Satisfaction with Appearance Scale (SWAP)

The SWAP is a fourteen-points scale initiated by Lawrence, et al (1998) to measure non-weight associated body mass index disappointment between victims of burns. Every point of the scale is counted on a seven-

item Likert scale (0=strongly disagree to 6=strongly agree). Individuals who scored higher on SWAP mean he/she is highly dissatisfied with their appearance. The lowest score can be someone scores on SWAP could be 0, and the highest would be no more than 84. Test-retest reliability for overall SWAP score between burn victims (Cronbach's alpha, $r = .87$) The SWAP has a 2-factor formation, with apparent social impression revealing social distress and personal disappointment express disappointment regarding different parts of the body. Elevated scores signify higher body mass index disappointment (Lawrence & Heinberg, 1998).

Hamilton Anxiety Rating Scale (HAM-A)

HAM-A was developed by Max Hamilton; (1959). The scale consists of 14 items designed to assess an individual's level of anxiety. Each of the 14 items contains numerous indications and each cluster of indications is rated on a scale of 0-4, where 4 indicates a higher level of anxiety. In total, all these 14 items reveal an individual's level of anxiety. A participant's total score can range from 0 to 56. A total of 17 or less indicates mild anxiety. Cronbach's alpha was .82 which shows good internal consistency.

Hamilton Depression Rating Scale (HAM-D)

Max Hamilton (1960) developed a scale to measure depressive symptoms in humans. The scale effectively measures the level of depression in patients in the initial phase, middle phase, and end phase of treatment for depressive symptoms. The response ranged from 0 to 4. The validity and reliability of the HAD-D scale is high from $\alpha = 0.91$ to 0.94 .

Data Analysis & Results

The current study aimed to find the prevalence of anxiety and depression among burnt patients of KHYBERPAKHUNKHWA. For this purpose, male and female burnt patients were selected from various hospitals and scales were administered. Data was analyzed by using SSPS-24.

Table. 1 Descriptive statistics

| Variables | Categories | f | % | |
|----------------------------|------------|--------|-------|-------|
| Age | 15-22 | Male | 27 | 67.5 |
| | | Female | 39 | 65 |
| | 23-55 | Male | 13 | 32.5 |
| | | Female | 21 | 35 |
| Marital Status | Married | 42 | 42.43 | |
| | Unmarried | 57 | 57.57 | |
| Family Structure | Nuclear | Male | 09 | 22.5 |
| | | Female | 19 | 31.66 |
| | Joint | Male | 31 | 77.5 |
| | | Female | 41 | 68.33 |
| Education | Literate | Male | 11 | 27.5 |
| | | Female | 15 | 25 |
| | Illiterate | Male | 29 | 72.5 |
| | | Female | 45 | 75 |
| Occupational Status | Employed | 37 | | |

| | | | | |
|-----------------------------|------------|--|----|-------|
| | Unemployed | | 62 | 56.52 |
| Socioeconomic Status | | | | |
| Lower | Male | | 22 | 55 |
| | Female | | 31 | 51.66 |
| Middle | Male | | 12 | 30 |
| | Female | | 19 | 31.66 |
| Upper | Male | | 06 | 15 |
| | Female | | 10 | 16.66 |
| Basic Residence | | | | |
| Rural | Male | | 29 | 72.5 |
| | Female | | 47 | 78.33 |
| Urban | Male | | 11 | 27.5 |
| | Female | | 13 | 21.66 |

Table 1 provides a comprehensive breakdown of data across several key variables. In terms of age distribution, the majority of males (67.5%) falling within the 15-22 age group is slightly higher than females (65%) in the same age bracket. Meanwhile, the 23-55 age group sees more females (35%) compared to males (32.5%). Marital status reveals a nearly balanced split, with 42.43% of the individuals being married and 57.57% unmarried. Family structure data suggests that a significant percentage of males (77.5%) reside in joint family setups, whereas more females (68.33%) are part of joint families as well. The contrast is evident with nuclear families, where fewer males (22.5%) and females (31.66%) are found. Education-wise, a higher proportion of females (75%) are illiterate compared to males (72.5%), and more females (25%) are literate compared to males (27.5%). In terms of occupational status, out of a total of 99 individuals, 37 are employed while 62 are unemployed, contributing to an overall unemployment rate of 56.52%. Socioeconomic status highlights a relatively balanced distribution across lower, middle, and upper categories for both genders. Lastly, the basic residence analysis unveils a higher percentage of rural living among both males (72.5%) and females (78.33%), with urban dwellings accounting for a lower but notable percentage of the population.

Table. 2 Mean, Standard deviation and t- value for male and female burnt patients on depression and anxiety (n=99)

| Variables | Male(n=40) | | Female(n=59) | | t | p | 95% CI | | Cohen's d |
|-----------|------------|------|--------------|------|--------|------|--------|------|-----------|
| | M | SD | M | SD | | | LL | UL | |
| HAM-D | 30.53 | 4.01 | 28.63 | 9.02 | 1.24 | .215 | -1.12 | 4.92 | .27 |
| HAM-A | 31.78 | 3.91 | 32.83 | 4.6 | -1.173 | .244 | -2.84 | .729 | .24 |

Note. M = Mean, SD = Standard Deviation, HAM-D= Hamilton Depression Rating Scale, HAM-A= Hamilton Anxiety Rating Scale, LL= Lower Limit, UL= Upper Limit

Table 4.2 shows that there are no significant differences between male and female burn patient's level of anxiety and depression. Therefore, our hypothesis "Female burn patients will be more anxious and depressed as compared to male burn patients" is rejected.

Table. 3 Mean, Standard deviation and t- value for married and unmarried burnt patients on depression and anxiety (n=99)

| Variables | Married(n=42) | | Unmarried(n=57) | | t | p | 95% CI | | Cohen's d |
|-----------|---------------|------|-----------------|------|-------|-------|--------|-------|-----------|
| | M | SD | M | SD | | | LL | UL | |
| HAM-D | 29.4 | 8.36 | 29.3 | 6.70 | .021 | .984 | -3.63 | .7 | .013 |
| HAM-A | 31.45 | 3.98 | 33.8 | 4.85 | -2.28 | 0.026 | -4.5 | -0.30 | 0.52 |

Note. M = Mean, SD = Standard Deviation, HAM-D= Hamilton Depression Rating Scale, HAM-A= Hamilton Anxiety Rating Scale, LL= Lower Limit, UL= Upper Limit

The results shown in table 4.3 demonstrate significant differences between married and unmarried burn patient's level of anxiety and depression. Therefore, our hypothesis "Unmarried burn patient will score higher on anxiety and depression scales as compared to married burn patients" is significant and accepted.

Table. 4 Mean, Standard deviation and t- value for employed and unemployed burnt patients on depression and anxiety (n=99)

| Variables | Employed (n=37) | | Unemployed (n=62) | | t | p | 95% CI | | Cohen's d |
|-----------|-----------------|------|-------------------|------|------|-------|--------|-------|-----------|
| | M | SD | M | SD | | | LL | UL | |
| HAM-D | 28 | 8.8 | 30.9 | 5.02 | -.92 | .364 | -9.4 | -3.6 | 0.40 |
| HAM-A | 32.6 | 5.03 | 30.4 | 3.27 | 1.24 | 0.226 | -1.5 | -6.11 | 0.5 |

Note. M = Mean, SD = Standard Deviation, HAM-D= Hamilton Depression Rating Scale, HAM-A= Hamilton Anxiety Rating Scale, LL= Lower Limit, UL= Upper Limit

The results of table No. 4 reveal that there are no significant differences between the levels of anxiety and depression of employed and unemployed burn patients. Therefore, our hypothesis "Employed burn patients will score higher on anxiety and depression scales as compared to unemployed burn patients" is rejected.

Discussion

In the under developing countries such as Pakistan burns or burn injuries are a foremost public health problem because of its elevated morbidity, disability and mortality rates. In all societies/cultures, which consist of those in the developed or in the developing countries, burns not only cause physical and mental problems but can cause severe financial and social outcomes on the patient's family and also on society. Age and sex are the important epidemiological factors for burn injuries. The aim of the current study is to examine the presence of pervasive mental and emotional problems such as anxiety, depression and body image satisfaction/dissatisfaction in burn patients and to recognize the various burn related variables that affect the mental and emotional health of burn survivors such as marital status, gender differences, and employment status. The first hypothesis of the study stated that female burn patients will score higher on anxiety and depression as compared to male burn patients. Results in (Table 1) indicates non-significant differences between male and female burn patients in terms of anxiety and depression related to their burn injuries. Therefore, the hypothesis of the research is rejected and non-significant which is supported by Tedstone et al. (1997). The study was conducted at the Department of Clinical Psychology Mansfield, United Kingdom in which 45 patients with burn injuries participated in order to examine the pervasiveness of mental health issues. The findings state that patients have the same level of anxiety, intrusions and

avoidance was the same while a level of depression was increased by the time of burn injuries (Tedstone et al., 1997). Bras et al. (2007) investigated the association among surviving planning, anxiety and depression amounts and injuries of burns components in the beginning of the treatment in burn victims. 70 burn survivors with ultimate burn injuries were assessed and their surviving planning was examined by the Coping with Burns Questionnaire (CBQ). Anxiety and depression amounts were examined with the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI). The results demonstrated that considerable numerous burn survivors suffer from depressive symptoms, anxiety and disappointments are experienced by the patient's severe stage later than burn injuries. Depressive indications were denied by a huge size of burn patients which may cause probably the beginning stage of the treatment. In this study, we did not find any gender differences in surviving planning. Another study supporting the hypothesis of the present research which is conducted by Patterson; et al. (2003) investigated the existence of mental illness in burn survivors has been there to have an influence on burn victim's treatment and long-lasting modification. This research examined the amount of prior psychological disorders indications. Researchers selected 199 hospitalized burn survivors. The Rand Inventory questionnaire was administered to the participants to answer the questions regarding their psychological performance. Comparison of the scores with a state normative sample on the same scale showed the elevated scores regarding mental illness, depression, anxiety and other domains of behavioral and emotional health. In a similar study conducted in Brazil by Eneas et al. (2008), on 115 burn victim's interpersonal relationships, body mass index and the effects of burns were greatly related to self-esteem, and also Depression was highly correlated with the effects of burns, body mass index, and with personal relations. Robinson et al. (1996) stated that there women scored elevated degrees of depression as compared to men. The Second hypothesis stated that unmarried burn patients would have higher scores on the Hamilton Anxiety Rating Scale (HARS) and Hamilton Depression Rating Scale (HDRS) compared to married burn patients. Results in the table (3) show significant differences between unmarried and married burn patients in terms of anxiety and depression related to their burns. Therefore, the research hypothesis is accepted, and the null hypothesis is rejected. Which is supported by the findings of Ramachandran; et al. (2017). This study aimed to see the penetration rate and clinical diagnosis of mental disorders and psychosocial problems as a predisposing factor to burns and squealing to burns in the burn population, the research included 114 patients admitted with suicidal burns over the age of 15, the participants were mostly married women in 3rd decade of life. The results of the study show that depression and anxiety related to deformity were more common in the study population after recovery. A similar study was investigated by Nasir Malik et al. (2009) concluded that depression and anxiety were higher among women, married, less educated and unemployed burn patients. The third hypothesis of the present study stated that employed burn patients will score higher on anxiety and depression as compared to unemployed burn patients. Results in table (3) indicate significant differences between unmarried and married burn patients regarding anxiety and depression related to their burn injuries. Therefore, the research hypothesis is accepted, and null hypothesis is rejected, which is supported by Saheeb et al. (2014). The study was to find out Depression and Anxiety between adult victims with facial injury in a Nigerian Teaching Hospital. A total number of 121 outpatients were participated in the study (75 were men and 46 women). Data was gathered for the study by administering The Hospital Anxiety and Depression Scale (HADS), and a self- assessment questionnaire. Findings of the research reveal that unmarried and working individuals were more anxious and depressed as compared to married and unemployed participants of the study. Another study conducted in University, Uppsala, Sweden by Kildal et al. (2007) to investigate injury due to burns and personality associated predictors of returning to work and assess fitness related quality of life and health effects in employed versus unemployed participants. 48 past/discharged burn victims with pre-burn employment were included in the research some data were gathered from hospital files and the rest of the data were gathered by a questionnaire. Findings revealed unemployed participants scored low on various psychological constructs and physical health.

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