Effect of Burn Body Parts on the Cognitive and Post-traumatic Stress problems in Female Burn survivors

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ABSTRACT

Objective: To investigate the effect of Burn Body Parts on the Cognitive functioning and Post-traumatic stress problems in female Burn survivors.
Study Design: Cross sectional observational study.
Place and Duration: Department of Psychology, University of Gujrat from November 15th 2017 to July 25th 2018.
Methodology: The cognitive functioning and post-traumatic stress disorder was measured by using Montreal Cognitive Assessment scale, Post-Traumatic Stress Disorder Checklist and demographic form respectively.
Results: The 200 post burn survivor's data was tested using Structure Equation Modeling and the model fit was confirmed with the p-value of .012. It established the moderating effect of burn body parts role in cognitive and post-traumatic stress problems in female burn victims. While analyzing the relationship among the variables, the cognitive problems with post-traumatic stress shows the regression estimates of -1.956 (p-value, .000) which specifies that better cognitive functioning lower down the post-traumatic stress problems. Whereas role of burn body parts increase by 1 unit increase post-traumatic stress problem by .748 (p-value, .000). The findings indicated that more the burn body parts the more the post-traumatic stress problems in the survivors.
Conclusion: The effect of burn body parts plays a significant role on the cognitive and post-traumatic stress problems in female burn survivors.
Keywords: Burn Injury, Cognitive functioning, Post-Traumatic stress, Burn body parts, Structure equation modeling.

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INTRODUCTION

Cognitive functioning difficulty was the most apparent problem relating to burn trauma. It was evident from a study that burn injury triggered cognitive issues majorly before the rehabilitation services whereas after rehabilitation still the problem persists in the victims. This indicated that cognitive dysfunction was a common concern after burn injury[1]. The important cognitive abilities may include language, concentration, perception, recall and executive functioning[2]. The previous researches has established the fact that traumatic event alter cognitive reactions of victims like thought patterns, memory or recalling, attention and reasoning[3]. The prevalence of cognitive dysfunction is l%-2% in general population. However, if the individual age was above 85 years the rate is 14%. The prevalence of mild cognitive problems till 65 years is between 2% to 10% increased to 5% to 25% till the age of 85 years[4].

These cognitive dysfunctions may prompt the post-traumatic stress disorder in victims. Post-Traumatic Stress Disorder (PTSD) accompany different set of symptoms related to trauma exposure. The category of symptoms may include the re-experiencing the trauma incident, avoidance of trauma, cognitive, mood and restless. The PTSD developed after three months of trauma though, it may be evident after many years of trauma[5]. The prevalence rate of Post-Traumatic Stress in African, Asian, European and most of Latin American countries, are from 0.5 to 1.0 %.[4] Moreover, studies confirmed that PTSD was more evident in females[6].

There were various cognitive theories related to PTSD that confirmed the role of cognitive problems in generating the symptoms of PTSD[7]. The theories articulated that PTSD resulted

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when trauma victim experience emotional pressure that affects the cognitive abilities of survivors[8]. Further, study has given certain cognitive risk factors of PTSD that may be listed as problem in executive functioning and declarative memory. Moreover, low level of intelligence and attention deficit may also trigger PTSD symptoms in individual[9].

In the burn trauma various factors play role in worsening the psychological condition of victims. Among others body parts affected by burn also play important role. Research established the fact that burn individual had a prolonged hospital stay due to lower body burns. Further, among females the death rate was slightly higher in burning of upper body parts as compare to lower section[10].

All types of disasters always have a hazardous impact on humans, but burn injury brings a lot of sufferings not only for the victims but for all the stakeholders. In case of Pakistan it is very important to study burn incidence as it is not investigated fully and further, its importance cannot be denied[11]. Due to household activities females are at high risk of burn trauma. Female's burn issue in Pakistan is alarming. It is of great importance to identify the problems pertaining to burn trauma in Pakistan. A study on female burn injured patients in Pakistan explicated that the mean age of females was 32 years with majority get injured accidentally through flame burns. The total body surface area percentage ranged between 8- 70% with mixed, 2nd degree and 3rd degree burn. In- hospitalization timing was between 24 hours to 170 days[12].

These problematic finding related to the burn injury situation in Pakistan justify the current study that focus on identifying linkages among variables pertaining the female burn survivors. Therefore, the study objectives was to investigate the effect of burn body parts on the cognitive functioning and post-traumatic stress problems in female burn survivors.

METHODOLOGY

This observational cross-sectional study was conducted at Department of Psychology, University of Gujrat from 15th Nov 2017 to 25th July 2018. The data was collected from the burn survivor females focusing on the inclusion criteria of age above 18 years old. Further, the extent of burn was from 6 months to 2 years and burn injury was unintended in its nature. The exclusion was made for the females on the base of physical and psychological disorder. Along it, males, below 18 years and planned burn injury were also excluded from the study. By using purposive sampling technique, 200 burn survivor women were taken from Rawalpindi, Lahore, Islamabad, Gujrat and from various Burn Centers and NGOs. The purposive sampling technique was used to collect the data as the sample characteristics was fixed on burn injury, females only and the duration after injury must be in between 6 months to two years. Before going for the collection of data, procedures and objectives of research were studied and allowed by the Departmental Research Review Committee, Department of Psychology, University of Gujrat, Pakistan.

The cognitive problems were measured by using Montreal Cognitive Assessment Urdu version,[13] and it assesses different parameters of cognitive domains of executive functions, visuo-constructional skills, naming, attention, language, abstraction, memory/delayed recall and orientation. Post-traumatic stress problem was measured by using the abbreviated Post-Traumatic Stress Disorder (PTSD) Checklist Civilian Version (Urdu version) and demographic form were used for data collection[14]. The researcher approached to participant after taking the approval from the authorities of NGOs, community and burn centers. After taking the consent, the information about the study was given to the burn survivors females. The data was collected through face to face interview. The respondents were enticed to attend the items sensibly and give their responses that truly express their feelings. Responses given by the respondents were noted on questionnaire. Privacy, identity and ethical consideration of the respondents were kept confidential.

Data Analysis: Data Analysis was done by using multivariate analysis of Structure Equation Modeling (SEM) and descriptive statistics which was done by using Analysis of a Moment Structures (AMOS) (version 21) and Statistical Package for Social Sciences (SPSS) (version 21). The interaction effect of role of burn body parts in cognitive and post-traumatic stress problems in female burn victims at the same time by using Structure Equation Modeling (SEM).

RESULTS

The 200 women burn victims were studied with age ranges from 19 to 65 with the average age of 30.95.

Table-I: Frequency of Affected Body Parts from Burn Injury (N=200)

Number of Burn Body Parts	Frequency (%)
1	41(20.5%)
2	75(37.5%)
3	62(31%)
4	7(3.5%)
6	15(7.5%)
Total	**200 (100%)**

Table-I shows that among 200 females burn survivors, the majority of the women's two body parts (37.5%, n=75) were affected by burn incidence followed by three body parts (31%, n=62).

20.5% (n=41) of the victims one body part was affected whereas 7.5% (n=15) survivors acquired burn on six parts. 20.5%, (n=41). Only a minor number of survivors (3.5%, n=7) four parts affected.

Table-II shows the model fit summary with the p-value is .012. The p-value less than .05 showed the significant model that specified that there was role of burn body parts in cognitive and post-traumatic stress problems in female burn victims. The model fit indices of chi-square/df (1.734), Goodness of Fit Index (.954); Adjusted Goodness of Fit Index (.921); Comparative Fit Index (.939); and Root Mean Square Error of Approximation (.061) values were in the significant levels to approve the model.

Furthermore, the regression weights estimates were analyzed. The estimates were used to establish the amount of change in dependent variable due to independent variables.

Table-II: Model Fit Summary of Confirmatory Factor Analysis (N=200)

P Value	Chi-Squre/df	Goodness of Fit Index	Adjusted Goodness of Fit Index	Comparative Fit Index	Root Mean Square Error of Approximation
.012	1.734	.954	.921	.939	.061

The Table-III shows that the cognitive functioning predicting post-traumatic stress problem regression estimate was -1.956 (p-value, .000). It established the fact that if cognitive functioning goes up by 1, post-traumatic stress problem goes down by 1.956. This specify that better cognitive functioning lessen the post-traumatic stress problem in survivors. The result also shows that when role of burn body parts goes up by 1, the post-traumatic stress problem goes up by 0.748 (p-value, .000) and the prediction is significant.

Table-III: Regression Estimates of Cognitive Dysfunction and Post-Traumatic Stress Disorder in Burn Injured (N=200)

Factors	Estimate	P
PTSD<---Cognitive Dysfunction	-1.956	.000
PTSD <---Burn Body Parts	.748	.000

DISCUSSION

The study linked to post burn women which evaluate the effect of burn body parts on cognitive and post-traumatic stress problems in female burn survivors. The prediction was measured with structure equation modelling where the model fit summary displayed a p-value of 0.012 that is less than .05. It indicates that cognitive problems predict post-traumatic stress with the effect of burn body parts. Further, the model fit indices of chi-square/df was 1.734 and literature showed that this value must not exceed 3 for a model fit[15]. The Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) indices were .954 and .921 respectively whereas the confirmed limit indicated that the value must be above .90[16]. The Comparative Fit Index (CFI) indices were 0.921 and research established the it's appropriate limit above .90[17]. The Root Mean Square Error of Approximation (RMSEA) was .061 and if the value of RMSEA is less than .08 than it may be considered appropriate for supporting the model[18]. The findings concluded that the role of burn body parts in cognitive and post-traumatic stress problems in female burn victims.

Most of the female burn survivors had 2 burn body parts (37.5%). After that the 2nd majority of the respondents had 3 burn body parts (31%) whereas 1 burn body parts was evident in 20.5% victims. Further, 7.5% of the survivors attained 6 burn body parts and only a small percentage of 3.5 survivors had 4 affected burn parts.

Further, by using regression estimates the finding confirmed that there is inverse relationship between cognitive functioning and post-traumatic stress problem (-1.956= p-value, .000).

There was various international literature available that support the objective of the study. The literature had confirmed that there was a significant role of cognitive functioning in predicting the post-traumatic stress disorder in the trauma victims[7-9]. Further, a study results had concluded that burn injured individual had poorer cognitive functioning compared to other rehabilitation groups[19]. Further, another study finding established the fact that majority of the patients had problems in their cognitive functioning especially concentration level at admission time. As during their stay in hospital cognitive rehabilitation experts treated their symptoms, but one-fourth of a patient still reported the cognitive dysfunction. Further, researcher reported some risk factors that hinder cognitive recovery among them having poorer cognitive functioning at the time of admission, being old, unmarried and social support were some important risk factors. It was concluded that if patients received life partner or family support their cognitive ability can be kept intact.[1] The burn patient may also have encountered cognitive deficits in speed processing, memory or recalling, learning and problem in executive dysfunction[20]. Language impairment was viewed in the trauma affected people due to non-expression in the victims. A number of explanations can be identified in language deficits in traumatized people. Since, the terrifying nature of trauma puts the survivors in a difficult situation to express the trauma into words. This can lead to language difficulties in trauma victims[21]. There was research that investigated and confirmed that trauma brings problem in paying attention on things[22]. Further, it has proven that 3%–58% of burns injury victims develop PTSD symptoms[23]. A number of studies have shown Post-Traumatic Stress Disorder (PTSD) as the ultimate result of a burn injury[24].

While establishing a link between cognitive and post-traumatic stress problems its was identified that cognitive dysfunction developed post-traumatic symptoms[7]. The emotional compression in the trauma victims directly disturbs the cognitive functioning[8]. Among other there was major cognition threatening factors that engaged in the post-traumatic stress disorder as for example deficits in the executive functioning, declarative memory, worsen intelligence and lack of attention[9]. Moreover, burn body parts predicts post-traumatic stress problem (0.748= p-value, .000). It was witnessed that if number of burn body parts increases it aggravates post-traumatic stress problems in women burn victims. Research established the fact that the body affected from burn determined different problems in the victims and it was evident in females[10]. Furthermore, international literature articulated that the burn to the lower body parts bring long lasting problems in the affected population.[25]

These problems faced by women burn injured required all the stakeholders to develop and provide facilities of measurement and therapeutic intervention at the correct time. Further, stakeholders must develop strategies or guidelines to avoid or reduce the burn injury incidence. For future recommendation, these constructs can be viewed in men and children as well. Qualitative study may be conducted to investigate the in depth experience of women burn injured.

CONCLUSION

The effect of burn body parts plays a significant role on the cognitive and post-traumatic stress problems in female burn survivors.

AUTHOR'S CONTRIBUTION

Naz I: Conceived idea, Data collection, Manuscript writing, Literature search, Statistical analysis
Bano Z: Designed methodology, Literature search, Manuscript writing, Statistical analysis, Data collection,

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