



**PREDICTING ROLE OF COGNITIVE FUNCTIONING ON POST-
TRAUMATIC STRESS SYMPTOMS AMONG FEMALE BURN VICTIMS**

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ABSTRACT

The present study main objective was to examine the predicting role of cognitive functioning on post-traumatic stress symptoms among female burn victims. The burn damage often lead to substantial psychological suffering, with post-traumatic stress being one of the greatest emotional reactions followed by trauma. Whereas cognitive functioning may serve as a protecting reason that may reduce the post-traumatic stress responses in female burn victims. The study used a cross-sectional research design, where female burn victims were the sample of study selected by using purposive sampling technique. Standardized measures of cognitive functioning and post-traumatic stress symptoms were administered to measure the predictive relationship between variables. The results of regression analysis showed that cognitive functioning was the significant predictor of post-traumatic stress symptoms ($F(1,198) = 51.23, p < .001$). Further, the results exposed a significant negative predictive correlation between cognitive functioning and post-traumatic stress symptoms, confirming that worsen cognitive functioning increase the post-traumatic stress symptoms in female burn victims. The findings highlight the significance of promoting cognitive functioning in recovery programs to improve the emotional flexibility and reduce post-traumatic stress in female burn victims.

INTRODUCTION

The burn injury is classified as a damage that tear off person organic tissue or the skin. The damage or injury may be resulted by radiation, nuclear action, electrical conductivity and chemical reaction (World Health Organization, 2018). There was a study conducted to check the international patterns of burn injury from the year 1990-2021. It was estimated that about 12.99 million severe burn and 235.34 million mild burn cases reported worldwide. Literature further confirmed that severe burn rate was higher in females than males. The causes of burn damage was fire, heat and hot materials (Lee, et al., 2025).

Catastrophes can have harmful effects on people; however, burn harms cause predominantly severe misery for both the burn victims and families. In Pakistani culture, females are particularly exposed to burn trauma due to their major involvement in housekeeping activities. Pakistan National Emergency Department Surveillance data collected between November-2010 to March-2011 on 403 burn patients indicated that about half of victims were aged between 10 and 29 years, 21 deaths occurred at ages 40-49. Most burn incidence were unintentional and with scald burns. Further, most of the injuries primarily affecting the lower body and majority of victims were transported to hospitals on non-ambulance services (Siddiqui et al., 2015). Further, it was revealed that globally, about 95% of burn-related deaths occur in low- and middle-income countries (Peck & Pressman, 2013). Gender-based data show that females—especially those aged 15 to 29 are at higher risk of burns. Burns also cause noteworthy long-term disability, accounting for approximately 10 million disabilities worldwide each year (Mock et al., 2008).

The burn injury resulted into number of psychological problems. Along with physical trauma the burn injuries accompany the profound and enduring psychological impacts.

The medical care improved the survival rates but still the burn victims encounter many stress related problems, emotional problems, and self-image disturbances. These problems not only persist in burn victims but also in their caregivers (Dmitry, et al., 2025).

The burn injury bring personal and social life sufferings in female burn victims sometime disturbed the cognitive functions. Burn injury is referred to as a stressor that resulted in influencing cognitive functioning. Here, the current study was conducted to check the role of cognitive functioning in predicting post-traumatic stress symptoms among female burn victims. Human thinking and experiences were resulted from the cognitive processes. Cognition is defined as mental process that helps individual to recognize, interpret, organize, store, and apply information to comprehend and answer to the social and physical settings. These processes enable people to make sense of their environment, involve in social connections, carry out everyday responsibilities, and achieve occupational activities (Kielhofner, 2009).

According to American Psychological Association. (2018) cognitive functioning is defined as the ability of a person to perform different mental activities. The activities may include an individual's perception, learning, retention, insight, able to reason, make judgements, use intuition and employ language. The Diagnostic and Statistical Manual gives the 5 major domains of cognitive functioning. These include complex attention, executive function, learning and memory, language, perceptual-motor function and social cognition (American Psychiatric Association, 2013).

A research study identify the risk factors linked with cognitive dysfunction among older adults. The result confirmed that certain demographic factors like age, sex, educational background, socioeconomic class, self-rated health, stroke history, visionary problems, and

difficulties in daily and instrumental activities were considerably connected to cognitive functioning. Overall, the study underlined the significant role of social factors in the expansion of cognitive damage (Lyu, et al., 2014).

A study on burn-injured adults come to hospital between 2007-2013 measured cognitive domains of concentration, retention, and problem-solving. Patients' cognitions and communication capabilities were evaluated twice, at admission and at discharge. At hospital the cognitive functioning was examined and treated by speech clinicians to address their difficulties. The findings confirmed that most patients displayed cognitive deficiencies at admission and still after treatment about ¼ of the participants still faced cognitive difficulties at discharge (Hendricks et al., 2017). Further, another study confirmed that that person with burn injuries demonstrated low levels of cognitive working compared to other recovery groups (Purohit et al., 2014).

The cognitive functioning may trigger the post-traumatic stress symptoms in female burn victims. Let us consider the post-traumatic stress symptoms.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines post-traumatic stress as a mental condition that become evident after any traumatic events. This experience may involve direct trauma experience, or a person witnesses a traumatic event, or it may be encountered by some close family person or friend. It may also resulted from recurrent or extreme exposure to upsetting facts of a traumatic event (American Psychiatric Association, 2013).

The prevalence of post-traumatic stress in most European, Latin American, African, and Asian countries ranges between 0.5%-10% (American Psychiatric Association, 2013). Whereas, the lifelong prevalence of post-traumatic stress was 7.8% approximately in adults. Research on women explained that

women were at greater risk of experiencing post-traumatic stress as compared to men. It had confirmed that men were less likely to suspect the problem of traumatic stress (Kessler et al., 2005; Ditlevsen & Elklit, 2012).

The risk factors for developing post-traumatic stress are grouped into pre-trauma, peri-trauma, and post-trauma categories. Pre-trauma factors include low education, childhood adversity, prior mental health issues, female gender, being unmarried, and cognitive difficulties such as poor memory or attention (Iversen et al., 2008; Zhou et al., 2013). Peri-trauma factors involve experiences during the event, such as peritraumatic dissociation, intense fear, or perceived life threat, while deliberately caused injuries further increase risk (McCanlies et al., 2016; Zatzick et al., 2008). Post-trauma factors mainly relate to poor social or family support, ongoing fear, social withdrawal, and coexisting psychological problems, all of which contribute to the persistence of PTSD symptoms (Lauterbach & Koch, 2007; Trickey et al., 2012).

Now, studying the role of cognitive functioning in predicting post-traumatic stress will establish the objective of the study. A research findings revealed that cognitive issues enhanced the expansion or persistence of post-traumatic stress in mothers experiencing the trauma of stillbirth. The dysfunctional cognitive patterns studied here were rumination, negative self-view and world-view. These negative thinking patterns after trauma increase the ruthlessness and incidence of post-traumatic stress symptoms (Horsch, et al., 2015). Another study also reported that there was moderate to strong relation found between cognitive processes and post-traumatic stress (Hiller, et al., 2021) Burns can be profoundly psychologically traumatic, particularly in women because of social and domestic roles. Cognitive functioning, such as the ability to think,

remember, pay attention, and solve problems, is important for coping with trauma. Cognition may inform distress in recovery and potentially increase the chances of PTSD. However, studies are limited and only indirectly related to cognition and psychological recovery among women who are burn victims living in Pakistan. Therefore, this study seeks to explore the relationship between cognition and post-traumatic stress symptoms to inform approaches for early intervention and rehabilitation.

Objective

The main objective of the study was to predict the role of cognitive functioning and post-traumatic stress symptoms.

Methods

Design

The current study used a cross-sectional design to collect data from female burn victims.

Participants

A total of 200 female burn victims were recruited, all of whom met inclusion and exclusion criteria set forth by the researchers. Participants were women aged 19 years or older who sustained incidental burn injuries 6 months to 2 years prior to recruitment.

A list of exclusion criteria was established. The first exclusion criterion was to more confidently ascribe post-burn cognitive functioning to the experience of a burn rather than to co-occurring medical or mental health conditions. Therefore, participants with physical disability, diagnosed mental illness, or pre-existing physical illness were excluded from the research. In order to maintain a clear and consistent focus on women who experienced accidental, rather than intentional burn trauma (e.g., self-harm or unfortunate circumstances), cases with intentional burn injuries were excluded, as were male burn survivors. Lastly, to ensure that the sample represented adult experiences of psychopathology and psychosocial experiences that may vary in adolescents,

participants younger than 19 years old were excluded.

Sampling technique

Purposive sampling, which is commonly used in psychological and medical studies where specific characteristics of participants are important for participants to meet specific requirements for the research objectives, was employed to select participants. Age, gender, and having accidental burn injuries were the predetermined inclusion criteria that purposefully informed the selection process. Only considered were participants who met those criteria and who were able to provide their informed consent. By selecting participants with similar experiences, the researcher maximized the functionality of the sample in reflecting the population of interest female burn victims. The researcher chose purposive sampling to ensure a demonstration of depth into rich, relevant, and significant data aligned to the objectives of the study, and to allow for thorough understanding of the psychological effects of the severity of burn injuries.

Measures

In order to gather information, the study employed the following instruments for data collection from the respondents. A sociodemographic data collection form was created. Age, education, marital status, family structure, employment status, type of residence, burn type, burn severity and affected body part, first aid, time since burn, length of hospital stay, health challenges, satisfaction with treatment, and person who brought patient into the hospital also were taken into consideration.

The Montreal Cognitive Assessment (MoCA; Habib, Evans & Raiz, 2010) was used to assess cognitive functioning in Urdu among women who survived burns. This brief screening measure, which takes approximately ten minutes to complete, examines a variety of cognitive capabilities such as executive functions, naming, attention,

language, abstraction, memory, orientation, and visuoconstructional abilities. A score of 26 or higher indicates normal cognition, with a maximum of 30. The measure has excellent sensitivity (87%) and reliability ($\alpha = .884$; test-retest = .966) in detecting mild cognitive impairment (Nasreddine et al., 2005). MoCA has been shown to have strong correlations with MMSE ($r = .867$) and intellect ($r = .822$) (Tu et al., 2013).

Symptoms of post-traumatic stress were assessed using the civilian version of the Post-Traumatic Stress Disorder scale (Lang et al., 2012). The scale measures a 5-point Likert scale and is a 6-item scale. The scale shows specificity and sensitivity of .72 and .92 respectively with the cutoff of 14. The reliability of the scale was .78. The scale was translated into Urdu for the current research with the permission of the author.

Procedure

The purposive sampling technique was utilized to select the study sample. The sample consisted of female subjects who sustained burns unintentionally. The injury must also have occurred between six months and two years of age. The minimum age for participation was nineteen. The sample was gathered from local communities and non-governmental organizations, as well as from many burn centers in Lahore, Gujrat, Islamabad, and Rawalpindi. For the purposes of gathering data, we provided the hospital and non-governmental organizations the scale brochure, written consent, and permission letter. After receiving official permission from the proper authorities, the researcher contacted the respondents. The researcher obtained their signed agreement, and guaranteed anonymity to the respondents, for example that their identity would remain unknown, in order to ensure that only volunteers participated in the study. The researcher established a rapport with the participants by identifying themselves and their connection to the organization, as well as

stating the purpose of the research, prior to distributing the scales. The respondents were encouraged to read the items carefully to choose the answer that fit their answers and state of mind. All scales used in this study were approved by the authors via email. The researcher thanked responders for their assistance in finishing the study after data collecting was finished.

Data Analysis

Descriptive statistics and multiple regression analysis were used to evaluate the data using SPSS (v-24).

Results

Table 1 Simple Regression Predicting Post-Traumatic Stress Symptoms from Cognitive Functioning.

Predictor	B	SE B	β	t	p
(Constant)	28.217	0.855	—	33.004	.000
Cognitive Functioning	-0.392	0.055	-0.453	-7.158	.000

Note: $R = .453$, $R^2 = .206$, Adjusted $R^2 = .202$, $F(1,198) = 51.23$, $p < .001$

Dependent Variable: Post-Traumatic Stress Symptoms

A simple regression analysis was conducted to study the predictive relationship of cognitive functioning and post-traumatic stress symptoms. The results indicated that cognitive functioning significantly predict post-traumatic stress symptoms $F(1,198) = 51.23$, $p < .001$.

Further, in terms of explained variance it was evident that there was 20.6% explained variance for predicting post-traumatic stress symptoms ($R^2 = .206$) by cognitive functioning.

Moreover, the findings also showed that cognitive functioning was a significant negative predictor of post-traumatic stress symptoms ($\beta = -0.453$, $t = -7.158$, $p < .001$). This proposes that worse cognitive functioning was connected with higher post-traumatic stress symptoms among female burn victims.

Discussion

Research has significantly established the fact that burns was the most considerable reason for morbidity and mortality among the victims in developing countries. Female encounter the major incidence of burn injury. Females had more fire burns injury at home, while electrical burn injury was evident in men (Golshan, et al., 2013). The same finding also reported that females were at greater risk of burn injury (Wasiak et al., 2017). It is important to study their psychological issues prevalent in female burn victims. Among other the current study focus cognitive functioning. A research on adults encounter burn incidence have revealed poorer scores on cognitive operations (Purohit et al., 2014). Further, the current study foresee the role of cognitive functioning on post-traumatic stress symptoms. Research on burn effective person reported 38.1% of post-traumatic stress disorder symptoms (Cakir, et al., 2015). Another, study reported 13-45% post-traumatic stress symptoms (Van Loey & Van Son, 2003).

The regression analysis conducted to study the predictive role of cognitive functioning on post-traumatic stress symptoms. The results confirmed a that cognitive functioning significantly predict post-traumatic stress symptoms $F(1,198) = 51.23, p < .001$. Further, change in post-traumatic stress symptoms due to cognitive functioning was 20.6% (explained variance). Moreover, the findings also revealed that cognitive functioning was a significant negative predictor of post-traumatic stress symptoms ($\beta = -0.453, t = -7.158, p < .001$). It entails that worse cognitive functioning leads to higher post-traumatic stress symptoms among female burn victims. While confirming the relationship of cognitive functioning and post-traumatic stress symptoms research has confirmed that impaired orientation was present in traumatic population that face severe loss, or prolonged trauma (Holman &

Silver, 1998). There were other studies also established the role of cognitive functioning in aggravating the post-trauma stress symptoms in burn victims (Horsch, et al., 2015; Hiller, et al., 2021).

Conclusion

It was concluded that cognitive functioning predict post-traumatic stress symptoms and worsen cognitive functioning leads to higher post-traumatic stress symptoms.

Reference

1. World Health Organization. (2018). Violence and Injury Prevention and Disability: Burns. Retrieved from http://www.who.int/violence_injury_prevention/other_injury/burns/en/
2. Holman, E.A., & Silver, R.C. (1998). Getting 'stuck' in the past: Temporal orientation and coping with trauma. *Journal of Personality and Social Psychology*, 74, 1146-1163.
3. Golshan, A., Patel, C., & Hyder, A.A. (2013). A systematic review of the epidemiology of unintentional burn injuries in South Asia. *Journal of Public Health*, 35(3), 384-396.
4. Wasiak, J., Lee, S.J., Paul, E., Shen, A., Tan, H., Cleland, H., & Gabbe, B. (2017). Female patients display poorer burn-specific quality of life 12 months after a burn injury. *Injury*, 48(1), 87-93.
5. Purohit, M., Goldstein, R., Nadler, D., Mathews, K., Slocum, C., Gerrard, P., ... Schneider, J.C. (2014). Cognition in patients with burn injury in the inpatient rehabilitation population. *Archives of Physical Medicine and Rehabilitation*, 95(7), 1342-9.
6. Cakir, U., Terzi, R., Abaci, F., & Aker, T. (2015) The prevalence of post-traumatic stress disorder in patients with burn injuries, and their quality of life, *International Journal of Psychiatry in Clinical Practice*, 19(1), 56-59.
7. Van Loey, N, E., & Van Son, M.J. (2003). Psychopathology and psychological problems in patients with burn scars:

- epidemiology and management. *American Journal of Clinical Dermatology*, 4(4), 245-72.
8. Lee, N., Bae, Y., Jang, S., Lee, D. W., & Lee, S. W. (2025). Global, Regional, and National Burden of Burn Injury by Total Body Surface Area (TBSA) Involvement from 1990 to 2021, with Projections of Prevalence to 2050. In *Healthcare* (Vol. 13, No. 16, p. 2077). Multidisciplinary Digital Publishing Institute.
 9. Dmitry, B., Kornhaber, R., & Cleary, M. (2025). Psychosocial concerns in burn survivors and their families: A narrative review. *Injury*, 112626.
 10. American Psychological Association. (2018). Cognitive functioning. In *APA Dictionary of Psychology*. <https://dictionary.apa.org/cognitive-functioning>
 11. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (6th ed.). Washington, D.C: American Psychiatric Association.
 12. Lyu, J., Lee, C.M., & Dugan, E. (2014). Risk Factors Related to Cognitive Functioning: A Cross-National Comparison of U.S. and Korean Older Adults. *International Journal of Aging and Human Development*, 79 (1), 81-101.
 13. Hendricks, C.T., Camara, K., Boole, K.V., Napoli, M.F., Goldstein, R., Ryan, C.M., Schneider, J.C. (2017) Burn injuries and their impact on cognitive-communication skills in the inpatient rehabilitation setting. *Journal of Burn Care and Research*, 8(1), e359-e369.
 14. Siddiqui, E., Zia, N., Feroze, A., Awan, S., Ali, A. L., Razzak, J. A., ... Latif, A. (2015). Burn injury characteristics: findings from Pakistan National Emergency Department Surveillance Study. *BMC Emergency Medicine*, 15(5), S2-S5
 15. Peck, M., & Pressman, M. A. (2013). The correlation between burn mortality rates from fire and flame and economic status of countries. *Burns*, 39(6), 1054-1059.
 16. Mock C, Peck M, Peden M, & Krug E, eds. (2008). *A WHO plan for burn prevention and care*. Geneva, World Health Organization.
 17. Iversen, A.C., Fear, N.T., Ehlers, A., Hacker Hughes, J., Hull, L., Earnshaw, M., ... Hotopf, M. (2008). Risk factors for post-traumatic stress disorder among UK Armed Forces personnel. *Psychological Medicine*, 38, 511-522.
 18. Zhou, X., Kang, L., Sun, X., Song, H., & Mao, W., Huang, X., ... Li, L. (2013). Prevalence and risk factors of post-traumatic stress disorder among adult survivors six months after the Wenchuan earthquake. *Comprehensive Psychiatry*, 54(5), 493-499.
 19. McCanlies, E. C., Sarkisian, K., Andrew, M. E., Burchfiel, C. M., & Violanti, J. M. (2016). Association of Peritraumatic Dissociation with Symptoms of Depression and Posttraumatic Stress Disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 9(4), 479-484.
 20. Zatzick, D., Jurkovich, G.J., Rivara, F.P., Wang, J., Fan, M.Y., Joesch, J., & Mackenzie, E. (2008). A national US study of posttraumatic stress disorder, depression, and work and functional outcomes after hospitalization for traumatic injury. *Annals of Surgery*, 248(3), 429-437.
 21. Lauterbach, D., & Koch, E.I. (2007). The relationship between childhood support and later emergence of PTSD. *Journal of Traumatic Stress*, 20, 857-867.
 22. Trickey, D., Siddaway, A.P., Meiser Stedman, R., Serpell, L., & Field, A.P. (2012). A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review*, 32 (2), 122-138.
 23. Kielhofner, G. (2009). *Conceptual foundation of occupational therapy practice* [Google Books version]. Retrieved from https://books.google.com.pk/books?id=WWX2AAAAQBAJ&pg=PA78&source=gbs_selected_pages&cad=2#v=onepage&q&f=false

24. Horsch, A., Jacobs, I., & McKenzie-McHarg, K. (2015). Cognitive predictors and risk factors of PTSD following stillbirth: a short-term longitudinal study. *Journal of traumatic stress*, 28(2), 110–117. <https://doi.org/10.1002/jts.21997>
25. Hiller, R. M., Meiser-Stedman, R., Elliott, E., Banting, R., & Halligan, S. L. (2021). A longitudinal study of cognitive predictors of (complex) post-traumatic stress in young people in out-of-home care. *Journal of child psychology and psychiatry, and allied disciplines*, 62(1), 48–57. <https://doi.org/10.1111/jcpp.13232>
26. Nasreddine, Z.S., Phillips, N.A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., ... Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53(4), 695-699.
27. Habib, F., Evans, J.J., & Raiz, M.N. (2010). Montreal Cognitive Assessment- Test Urdu. Retrieved from <http://www.mocatest.org/wp-content/uploads/2015/03/MoCA-Test-Urdu.pdf>
28. Tu, Q., Jin, H., Ding, B., Yang, X., Lei, Z., Bai, S., ... Tang, X. (2013). Reliability, Validity, and Optimal Cutoff Score of the Montreal Cognitive Assessment (Changsha Version) in Ischemic Cerebrovascular Disease Patients of Hunan Province, China. *Dementia and Geriatric Cognitive Disorders EXTRA*, 3(1), 25-36.
29. Lang, A. J., Wilkins, K., Roy-Byrne, P. P., Golinelli, D., Chavira, D., Sherbourne, C., ... Stein, M. B. (2012). Abbreviated PTSD Checklist (PCL) as a Guide to Clinical Response. *General Hospital Psychiatry*, 34, 332-338
30. .