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PERCEIVED STRESS AND PSYCHOLOGICAL WELL-BEING AMONG PATIENTS WITH BRAIN CANCER

Raeesa Tabassum[1], Ruqia Zafeer[2], Tehreem Zahra[3], Nisha Raza[4], Syeda Khola[5], Shaista Nasir[6], Rabia Tahir[7]

[1]Psychologist / Speech Language Pathologist, Pakistan Institute of Mental Health, Rawalpindi, Pakistan
Email: rtabbasum886@gmail.com
[2]Licensed Psychologist, CyMa Care Clinic, Malé, Maldives
Email: ruqiazafeer@gmail.com
[3]Associate Clinical Psychologist, Alumni of Lahore School of Behavioural Sciences, The University of Lahore, Lahore Campus, Pakistan
Email: tehreembaloch429@gmail.com
[4]MPhil Scholar, National Institute of Psychology, Quaid-i-Azam University Islamabad, Pakistan
Email: nisharaza13@gmail.com
[5]BS Scholar of Applied Psychology, Department of Psychology, Women University Mardan, Pakistan
Email: s.shehzadii123@gmail.com
[6]Consultant Psychologist at 11COACHES, Multan Office, Pakistan
Email: psychotherapistshaista@gmail.com
[7]MS Scholar of Clinical Psychology, Department of Psychology, Air University, Islamabad, Pakistan
Email: rabbiatahir393@gmail.com

Abstract

The present study aimed to investigate the relationship between perceived stress and psychological well-being among patients diagnosed with brain cancer in Pakistan. Brain cancer patients often face physical, emotional, and social challenges that contribute to elevated stress levels, which in turn may adversely affect their psychological well-being. A sample of 200 patients (both men and women), aged at 18 to 60, was selected from private and government hospitals across Pakistan using a purposive sampling technique. Standardized tools, including the Perceived Stress Scale (PSS) and the Psychological Well-Being Scale (PWB), were administered to measure stress and psychological wellbeing. Correlational analysis revealed a significant negative relationship between perceived stress and psychological wellbeing, indicating that higher levels of stress were associated with lower well-being. Furthermore, regression analysis confirmed that perceived stress significantly predicted psychological well-being, highlighting the detrimental impact of stress on mental health among brain cancer patients. These findings emphasize the urgent need for comprehensive psychosocial interventions, including stress management, counseling, and supportive care, to enhance the overall quality of life of patients coping with brain cancer.

Keywords: *Perceived Stress, Psychological Wellbeing, Patients, Brain Cancer.*

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Introduction

Brain cancer encompasses both primary tumors that originate within the brain and secondary (metastatic) tumors that spread from other parts of the body (Pichaivel et al., 2022). These tumors can be either benign (slow-growing and non-cancerous) or malignant (cancerous and invasive). Common symptoms include persistent headaches, seizures, motor weakness, personality or behavioral changes, and disturbances in vision or balance (Neff et al., 2023). Diagnosis typically involves neurological examinations and neuroimaging techniques such as magnetic resonance imaging (MRI), computed tomography (CT), positron emission tomography (PET), and single-photon emission computed tomography (SPECT) (Bonakdarpour & Takarabe, 2023; Dorbala et al., 2018).

Treatment strategies depend on the tumor's type, size, and genetic profile, and may involve surgical resection, chemotherapy, radiotherapy, or palliative interventions aimed at symptom management (Mustafa et al., 2018; Raghavapudi et al., 2021). A multidisciplinary healthcare team—comprising neurologists, neurosurgeons, oncologists, nurses, and allied health professionals—plays a vital role in coordinating care and enhancing patients' quality of life (Monje, 2020; Sampson et al., 2020).

Research indicates that patients with brain tumors often experience high levels of psychological distress, including elevated perceived stress and reduced psychological wellbeing. Perceived stress refers to an individual's subjective evaluation of stress exposure and their confidence in managing life challenges (Wang et al., 2022; Gamonal-Limcaoco et al., 2022). Psychological wellbeing, in contrast, involves the presence of positive emotional states and self-esteem, along with the absence of negative affect such as anxiety or depression (Xu et al., 2024; Zaninotto et al., 2025).

Empirical studies across various populations demonstrate significant emotional and psychological difficulties among brain tumor patients and survivors. In the United States, 61% of adult long-term brain tumor survivors reported elevated stress levels that were not significantly associated with demographic or clinical variables, suggesting that stress primarily stems from familial, emotional, and practical concerns (Keir et al., 2007). Similarly, research conducted in Hong Kong found that over 70% of pediatric brain tumor survivors experienced notable stress symptoms, lower self-esteem, and poorer quality of life compared to survivors of other cancers, indicating substantial psychological vulnerability in this group (Cheung et al., 2019). Likewise, a Japanese study examined perceived stress and psychological wellbeing among 239 participants, including 136 brain tumor patients and 103 family members. Results showed higher perceived stress and lower psychological wellbeing compared to the general population (Sato et al., 2025).

According to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1987), perceived stress occurs when individuals appraise an illness as threatening and believe their available coping resources are limited. Brain cancer is a particularly distressing diagnosis, as patients often perceive it as life-threatening. Factors such as symptom severity, treatment side effects, and financial hardship can heighten perceived stress. When effective coping mechanisms are lacking, this elevated stress negatively affects psychological wellbeing (Moniri et al., 2024).

The literature examining the relationship between perceived stress and psychological wellbeing among brain cancer patients remains limited in Pakistan. Therefore, the present study aims to address this gap by investigating the relationship between perceived stress and psychological wellbeing in patients with brain cancer, providing insights for developing supportive interventions to enhance their mental health and quality of life.

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Objectives

1.To assess the relationship between perceived stress and psychological wellbeing among patients with brain cancer in Pakistan.
2.To evaluate the predictive effect of perceived stress on psychological wellbeing among patients with brain cancer in Pakistan.

Hypotheses

H1: There is likely to be a negative and significant relationship between perceived stress and psychological wellbeing among patients with brain cancer in Pakistan.
H2: Perceived stress is likely to significantly and negatively predict psychological wellbeing among patients with brain cancer in Pakistan**.**

Method

This study employed a cross-sectional correlational research design to examine the relationship between perceived stress and psychological well-being among patients diagnosed with brain cancer. A total of 200 participants, aged between 18 and 60 years, were recruited through a purpose sampling technique from the neurology and oncology departments of selected private and public hospitals in Pakistan.

Inclusion criteria required participants to have a confirmed medical diagnosis of brain cancer and a minimum of an intermediate level of education to ensure adequate comprehension of the questionnaires. Exclusion criteria included patients with severe cognitive impairment, active psychosis, or critical illness that could interfere with participation.

Data were collected using two standardized instruments: the Perceived Stress Scale (PSS; Cohen, et al., 1994) and the Psychological Well-Being Scale (PWB; Ryff & Kayes, 1995). The PSS is a widely used 10-item self-report measure that assesses the degree to which individuals perceive situations in their lives as stressful. Each item is rated on a five-point Likert scale ranging from 0 (“never”) to 4 (“very often”), with higher scores indicating greater perceived stress. The PSS has demonstrated excellent reliability, with reported Cronbach’s alpha coefficients ranging from .78 to .91 across clinical populations.

The Psychological Well-Being Scale comprised 18-item short form was used in this study, with responses rated on a six-point Likert scale ranging from 1 (“strongly disagree”) to 6 (“strongly agree”). Higher total scores reflect greater psychological well-being, and the scale has shown high internal consistency, with Cronbach’s alpha values typically above .85 (Ryff & Kayes, 1995).

The study strictly adhered to APA 7 ethical code of conduct. Permission to use both standardized scales was secured from their respective authors. Informed consent was obtained from all participants after a detailed explanation of the study’s purpose, procedures, confidentiality, and voluntary nature, including the right to withdraw at any time. Data were collected individually in a private hospital setting, and each participant completed the questionnaires within approximately 10 to 15 minutes.

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Results

Table 1

Characteristics of the Participants

	Frequency	Percentage	M	SD
Types of Brain Cancer				
Benign	113	56.5		
Malignant	87	43.5		
Age			37.67	12.01
Gender				
Men	139	69.5		
Women	61	30.5		
Socioeconomic Status				
Lower Class	108	54		
Middle Class	57	28.5		
Upper Class	35	17.5		

Note. N=200, M= Mean, SD= Standard Deviation.

The results in Table 1 indicate that the participants had a mean age of 37.67 years (SD = 12.01). Most participants were men (69.5%), while women comprised 30.5% of the sample. Regarding tumor type, 56.5% had benign brain cancer and 43.5% had malignant brain cancer. In terms of socioeconomic status, 54% of participants were from the lower class, 28.5% from the middle class, and 17.5% from the upper class.

Table 2

Relationship between Study Variables

Variables	1	2
1.Perceived Stress	-	-.14*
2.Psychological Wellbeing		-

Note. N=200, **p<.05*

The results in Table 2 show a significant negative correlation between perceived stress and psychological well-being ($r = –.14$, $p < .05$). This indicates that higher levels of perceived stress are associated with lower levels of psychological well-being among patients with brain cancer in Pakistan.

Table 3

Predicting Psychological Wellbeing from Perceived Stress

Variable	*B*	*SE*	β	*p*	R^2	*F*	*CI 95% (LL-UL)*
					.02	4.42	
Constant	68.37	3.60		<.001			61.27-75.48
Perceived Stress	-.42	.20	-.14	.03			-.82- -.02

Note. N=200, ****p<.001, *p<.05*

The results in Table 3 indicate that perceived stress significantly predicted psychological well-being among patients with brain cancer (β = –.14, $p = .03$). The model explained 2% of the variance in psychological well-being ($R^2 = .02$), and the overall regression was significant (F(1,

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198) = 4.42, $p < .05$). This suggests that higher levels of perceived stress are associated with lower psychological well-being among brain cancer patients in Pakistan.

Discussion

The aim of the study was to evaluate the relationship between perceived stress and psychological wellbeing among patients with brain cancer in Pakistan to fill the existing research gap and provide practical implications.

The proposed hypothesis of the study was supported, as the correlational analysis revealed a significant negative relationship between perceived stress and psychological wellbeing among brain cancer patients in Pakistan. This means that as perceived stress increases, the psychological wellbeing of patients with brain cancer decreases. The findings are consistent with a previous study conducted in China among 227 hematological cancer inpatients, which found that perceived stress was positively associated with depressive symptoms, indicating lower psychological wellbeing. Moreover, mental adjustment significantly mediated this relationship, suggesting that positive coping styles may protect against stress-related psychological distress (Li et al., 2015).These results may be due to the overwhelming psychological burden and uncertainty associated with the disease's prognosis, treatment outcomes, and possible recurrence. Such uncertainty can heighten anxiety and a sense of loss of control, reducing emotional stability and psychological wellbeing. Additionally, limited coping resources and social support may further contribute to lower wellbeing among patients.

The regression analysis of the present study confirmed the second hypothesis, indicating that perceived stress significantly and negatively predicted psychological wellbeing among patients with brain cancer in Pakistan. This finding aligns with a similar study involving 316 cancer patients, which revealed that higher perceived stress predicted lower psychological wellbeing (Okwuosa et al., 2024). This outcome could be explained by the chronic nature of stress in cancer patients, which impairs emotional regulation and resilience. Furthermore, prolonged exposure to stress hormones may disrupt cognitive and affective functioning, thereby reducing overall psychological wellbeing.

Limitations and Recommendations

The present study has certain limitations that should be acknowledged. Its cross-sectional design restricts the ability to establish causality between perceived stress and psychological wellbeing, and the regionally confined sample limits the generalizability of the findings across Pakistan. Additionally, reliance on self-report measures may have introduced response biases such as social desirability or underreporting. The study also did not account for potential moderating factors, including treatment phase, disease severity, or previous psychiatric history, which may influence the observed relationship. Future research should address these limitations by employing longitudinal designs to establish causal links and expanding the sample to include diverse geographic regions for broader applicability. Moreover, integrating mental health professionals within oncology care teams can facilitate early psychological assessment, counseling, and personalized interventions for brain cancer patients. Finally, nationwide awareness and destigmatization initiatives are recommended to create supportive environments that enhance the psychological wellbeing of individuals coping with cancer.

Implications

The study highlights the urgent need to integrate mental health screening and interventions into oncology care for brain cancer patients in Pakistan. Mental health professionals can play a crucial role in providing psychoeducation, early identification of psychological symptoms, and therapeutic interventions for affected individuals. There is also a strong need to raise awareness about mental health within both healthcare systems and the general public, with mental health professionals leading community-based awareness initiatives. Moreover, the involvement of government bodies, healthcare institutions, and media outlets is essential in developing and promoting mental health support systems while reducing stigma surrounding mental illness among cancer patients.

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