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Effectiveness of Mindfulness-Based Cognitive Behavioral Therapy on Mental Health and Coping in Patients with Neurotraumatic Diseases: A Pre-Post Intervention Study

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Abstract
The present study explored the effectiveness of Mindfulness-Based Cognitive Behavioral Therapy (MCBT) in improving mental health outcomes among patients with neurotraumatic diseases. Utilizing an informal experimental pre-post design, 25 participants received structured MCBT sessions over a defined intervention period. The study aimed to assess changes in depression and anxiety levels, psychological adaptation (BASE), and coping skills (COPE) before and after the intervention. Quantitative analyses, including paired-samples t-tests, revealed statistically significant improvements across all three psychological domains. Depression and anxiety scores showed a substantial decrease from pre-test (M = 55.08, SD = 8.63) to post-test (M = 29.72, SD = 4.67), while adaptation scores (BASE) also significantly declined, indicating better psychological adjustment. In contrast, coping skills demonstrated a marked increase from pre-test (M = 51.98, SD = 6.86) to post-test (M = 112.93, SD = 3.66), suggesting enhanced resilience and stress management. Normality assumptions were met for all variables, confirming the suitability of parametric testing. These findings support the theoretical foundations of MCBT, which emphasize the role of mindfulness and cognitive restructuring in managing psychological distress. The results hold significant practical implications for integrating MCBT into routine mental health services for neurodegenerative patients. Recommendations include the formal adoption of MCBT in healthcare systems, training for practitioners, and the development of culturally adapted interventions. The study concludes that MCBT is a highly effective, non-pharmacological approach for enhancing mental health, coping capacity, and overall psychological well-being in patients facing the chronic challenges of neurodegenerative disease. Future research should expand on these findings through longitudinal and multicenter studies.

Keywords: *Mindfulness-Based Cognitive Behavioral Therapy, neurodegenerative diseases, depression, anxiety, coping, psychological well-being, intervention effectiveness.*

Introduction

Mental health plays a pivotal role in shaping individual well-being, influencing how people think, feel, behave, handle stress, maintain relationships, and make daily choices. It encompasses emotional, psychological, and social functioning and is vital at every stage of life. According to the World Health Organization (WHO, 2014), mental health is a state in which individuals recognize their abilities, cope with normal life stressors, work productively, and contribute to their communities. However, mental health disorders continue to rise globally, posing serious threats to individuals and societies. In 2019, nearly one in eight people worldwide, or approximately 970 million, were reported to be living with a mental disorder, with anxiety and depression being the most prevalent (GHDX, 2022). The COVID-19 pandemic further exacerbated these figures, with an estimated 26% and 28% increase in anxiety and major depressive disorders, respectively, in just one year (WHO, 2022).

Mental disorders are characterized by significant disturbances in an individual's cognition, emotional regulation, and behavior, often accompanied by distress and impairment in social, occupational, or other critical areas of functioning (American Psychiatric Association, 2013). These disorders include, but are not limited to, depression, anxiety, bipolar disorder, post-traumatic stress disorder (PTSD), and schizophrenia. They not only diminish quality of life but also contribute to higher morbidity, disability, and reduced economic productivity (Kessler et al., 2003). The stigma surrounding mental health and the lack of access to mental health care, particularly in low- and middle-income countries, further exacerbate the global mental health crisis (Patel et al., 2018).

Among the populations disproportionately affected by mental health issues are individuals suffering from neuro-traumatic disorders, such as traumatic brain injury (TBI), spinal cord injury (SCI), and other neurological impairments resulting from external trauma. These conditions often lead to persistent cognitive, behavioral, and emotional challenges, making psychological adaptation a significant concern (Corrigan et al., 2010). Following a neuro-traumatic injury, individuals may experience memory deficits, impaired executive functioning, emotional dysregulation, and personality changes. Such impairments not only increase the risk of developing depression and anxiety but also negatively impact coping mechanisms, social integration, and overall recovery (Ponsford et al., 2014).

The relationship between neuro-traumatic disorders and mental health challenges is complex and bidirectional. On one hand, neurological trauma can lead to structural and functional brain changes that predispose individuals to psychological disorders. On the other hand, pre-existing or post-injury mental health issues can hinder cognitive rehabilitation and neuroplasticity, further complicating the recovery process (Dikmen et al., 2003). Mental health disturbances in this population are also associated with increased healthcare utilization, caregiver burden, and higher suicide risk (Fann et al., 2011).

Coping with neuro-traumatic conditions necessitates the use of effective strategies that help individuals manage stress, adapt to new realities, and maintain a sense of agency and purpose. Coping is broadly defined as the cognitive and behavioral efforts employed to manage internal and external demands perceived as taxing or exceeding an individual's resources (Lazarus & Folkman, 1984). Coping strategies are typically categorized into problem-focused coping (e.g.,

planning, problem-solving), emotion-focused coping (e.g., seeking emotional support, acceptance), and avoidance coping (e.g., denial, substance use). Research suggests that adaptive coping strategies, particularly problem-focused coping, are associated with better psychological and functional outcomes in individuals with neurological disorders (Anson & Ponsford, 2006).

However, individuals with mental health issues such as depression and anxiety often resort to maladaptive coping styles, including avoidance and emotional disengagement, which can exacerbate psychological distress and hinder recovery (Moore et al., 2006). This highlights the importance of targeted psychotherapeutic interventions aimed at enhancing adaptive coping skills in this population. Among the most effective interventions in this regard is Cognitive Behavioral Therapy (CBT), a structured, time-limited, and evidence-based approach that focuses on identifying and modifying dysfunctional thoughts, behaviors, and emotional responses (Beck, 2011). CBT has been extensively validated for the treatment of depression, anxiety, PTSD, and other mental health disorders, and its application in neuro-rehabilitation settings is gaining momentum (Ponsford et al., 2006).

CBT helps patients understand the relationship between their thoughts, emotions, and behaviors, thereby promoting cognitive restructuring, behavioral activation, and problem-solving skills. When applied to patients with neuro-traumatic disorders, CBT can address negative appraisals, promote acceptance, and foster a sense of control over one's condition (Hofmann et al., 2010). Moreover, CBT has been shown to reduce emotional reactivity, improve coping self-efficacy, and enhance quality of life in patients with TBI and SCI (Bombardier et al., 2010).

Complementing CBT, mindfulness-based therapies offer an additional layer of support by training individuals to cultivate present-moment awareness, non-judgmental acceptance, and emotional regulation. Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) are two well-established approaches that have demonstrated effectiveness in reducing stress, anxiety, and depression in clinical populations (Kabat-Zinn, 1990; Segal et al., 2002). Mindfulness helps patients observe their thoughts and feelings without getting entangled in them, thus reducing cognitive reactivity and rumination—two common features in individuals with neurological trauma.

Integrating CBT and mindfulness-based approaches creates a comprehensive psychotherapeutic model that targets both cognitive distortions and emotional dysregulation. This integration is particularly beneficial for patients with neuro-traumatic disorders, who often struggle with both cognitive deficits and heightened emotional sensitivity. While CBT provides the tools to challenge maladaptive thoughts and develop adaptive behaviors, mindfulness enhances emotional resilience and acceptance. Together, these approaches empower patients to engage in more constructive coping strategies and foster psychological flexibility (Hayes et al., 2006).

Emerging research supports the efficacy of combined CBT and mindfulness interventions in improving mental health outcomes among individuals with neurological conditions. For instance, studies have shown that mindfulness-enhanced CBT leads to greater reductions in depression, anxiety, and PTSD symptoms compared to either approach alone (Chiesa & Serretti, 2011). Furthermore, this integrative model aligns with the biopsychosocial framework, which emphasizes the interaction of biological, psychological, and social factors in health and illness (Engel, 1977). By addressing both the cognitive and affective dimensions of mental health, this

approach offers a holistic solution to the psychological challenges faced by neuro-trauma patients.

In conclusion, the growing prevalence of mental health issues globally—and their profound impact on individuals with neuro-traumatic disorders—necessitates the development and implementation of integrative therapeutic models. Combining Cognitive Behavioral Therapy with Mindfulness-Based Therapy provides a promising avenue for enhancing coping styles, improving mental health outcomes, and facilitating recovery in this population. As mental health continues to gain recognition as a critical component of overall well-being, such multidimensional interventions hold the potential to transform neuro-rehabilitation and promote sustainable psychological resilience in patients navigating the complex aftermath of neurological trauma.

Theoretical Frame work

The current study integrates multiple theoretical perspectives to understand the complex interplay between mental health issues, coping styles, and the role of Cognitive Behavioral Therapy (CBT) combined with mindfulness in patients with neuro-traumatic disorders. These frameworks collectively explain how mental health disturbances influence coping mechanisms and how psychotherapeutic interventions can facilitate psychological adaptation and recovery.

1. Lazarus and Folkman's Transactional Model of Stress and Coping

Lazarus and Folkman's (1984) Transactional Model of Stress and Coping is foundational in understanding the cognitive processes that underlie coping. According to this model, stress results from the individual's appraisal of a situation as threatening, overwhelming, or challenging. Coping is defined as the cognitive and behavioral efforts to manage these stressors. In patients with neuro-traumatic disorders, such as traumatic brain injury (TBI) or spinal cord injury (SCI), mental health conditions like anxiety and depression interfere with accurate cognitive appraisals, leading to the adoption of emotion-focused or avoidant coping rather than adaptive, problem-focused strategies (Mohr et al., 2007).

2. Cognitive Behavioral Theory (CBT)

The Cognitive Behavioral Theory, originally developed by Beck (1976), emphasizes the interconnection between thoughts, emotions, and behaviors. Negative automatic thoughts such as those centered around self-worth, recovery failure, or hopelessness—are common after neuro-trauma and often result in emotional distress and dysfunctional behaviors. These maladaptive cognitive patterns, especially prevalent in individuals with depression and anxiety, foster maladaptive coping mechanisms like self-blame, avoidance, and emotional withdrawal (Anson & Ponsford, 2006). CBT works by targeting these thought patterns and promoting more adaptive responses.

3. Seligman's Learned Helplessness Theory

Seligman's (1975) Learned Helplessness Theory posits that repeated exposure to uncontrollable negative events may lead individuals to develop a sense of helplessness, where they believe that their actions have no effect on outcomes. This theory is particularly applicable in the context of chronic neuro-traumatic injuries, where patients may experience repeated failures in regaining function or independence. These experiences contribute to depressive symptoms and foster passive, disengaged coping responses, which further hinder rehabilitation (Whyte & Mulsant, 2002).

4. Diathesis-Stress Model

The Diathesis-Stress Model provides a biopsychosocial lens for understanding the onset of psychological disorders. It proposes that the interaction between an individual's predisposition vulnerability (diathesis) and environmental stress (e.g., neuro-traumatic injury) determines mental health outcomes (Ingram & Luxton, 2005). Individuals with low psychological resilience, limited social support, or a history of mental health issues are particularly susceptible to developing anxiety, depression, or PTSD following neuro-trauma. These mental health disorders, in turn, inhibit effective coping and lead to reduced quality of life and delayed recovery (Hart et al., 2011).

5. Bandura's Self-Efficacy Theory

Bandura's (1997) Self-Efficacy Theory highlights the critical role of personal belief in one's ability to perform tasks and influence events. Self-efficacy significantly determines the effort an individual invests in recovery, their perseverance in the face of setbacks, and their overall coping capacity. Neuro-trauma often results in decreased self-efficacy due to functional impairments and psychological distress. Anxiety and depression further erode confidence, fostering avoidant coping and reducing adherence to therapeutic interventions (Middleton et al., 2007). Enhancing self-efficacy is therefore a key therapeutic goal of CBT and mindfulness-based practices.

6. Hobfoll's Conservation of Resources (COR) Theory

Hobfoll's (1989) Conservation of Resources Theory asserts that stress arises when individuals perceive a threat to their personal resources, experience actual resource loss, or fail to gain anticipated resources after investing effort. Neuro-trauma typically results in resource losses, including physical mobility, social roles, cognitive functioning, and financial stability. Mental health issues such as depression and anxiety magnify this loss by depleting cognitive and emotional resources required for adaptation. When patients perceive themselves as unable to replenish or regain lost resources, they may disengage or develop hopelessness, which severely limits rehabilitation outcomes (Hobfoll, 2001).

Conceptual Frame Work

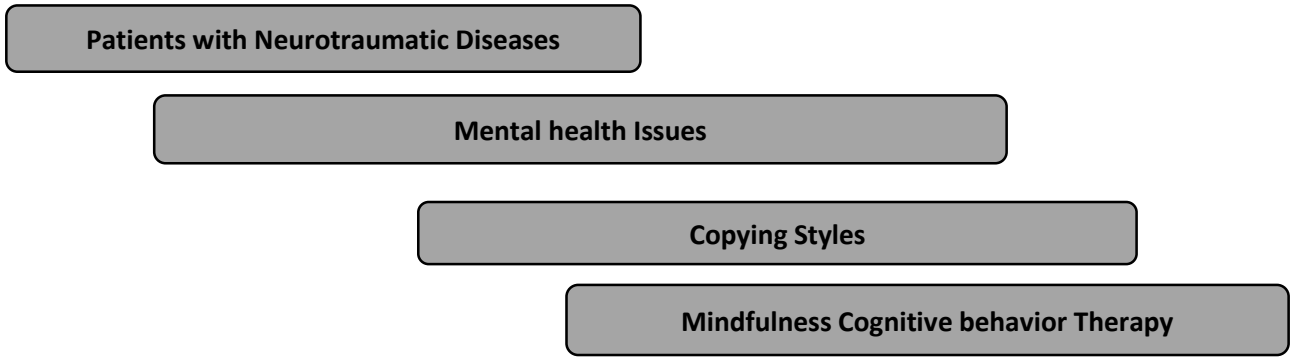

Fig 1.1 Conceptual Frame work of current research

Literature Review

Neuro-traumatic disorders, including traumatic brain injury (TBI), spinal cord injury (SCI), and other trauma-induced neurological conditions, represent a significant public health concern due

to their long-lasting physical, cognitive, and emotional consequences. These disorders not only impair neurological functioning but also contribute to psychological distress, affecting how individuals cope with chronic illness and trauma. The interplay between mental health issues (e.g., depression, anxiety, PTSD) and coping strategies becomes central to understanding the adaptive or maladaptive psychological outcomes in patients with neuro-traumatic diseases. This literature review aims to synthesize current research on the impact of mental health disturbances on coping styles in patients with neuro-traumatic conditions, while also identifying gaps for future exploration. Neuro-traumatic disorders often result from external mechanical force to the brain or spinal cord and are typically characterized by significant neuropsychological consequences. Traumatic brain injury and spinal cord injury are the two most commonly studied forms. Research highlights that such injuries frequently result in cognitive impairments, emotional dysregulation, and personality changes (Corrigan et al., 2010). The severity of mental health symptoms post-injury is influenced by factors such as lesion location, pre-injury psychological state, and access to rehabilitation (Dikmen et al., 2003). The psychological consequences of neuro-trauma include depression, anxiety, irritability, emotional instability, and post-traumatic stress symptoms. Depression has been found to occur in up to 60% of TBI patients, while anxiety disorders can affect more than 40% of the population suffering from neuro-trauma (Bombardier et al., 2010). These psychological issues significantly affect how patients interpret, respond to, and manage their conditions—thereby influencing their coping behavior. Mental health issues post-neuro-trauma are common and complex. Depression and anxiety are the most prevalent, but emerging evidence also indicates the presence of PTSD, adjustment disorder, and emotional numbing (Ponsford et al., 2014). A meta-analysis by Polinder et al. (2015) confirmed that psychological distress is consistently elevated in individuals with moderate-to-severe TBI even years after the injury. Furthermore, patients with spinal cord injuries report persistent depressive symptoms due to chronic pain, reduced mobility, social isolation, and the loss of prior roles or autonomy (Craig et al., 2009). The prevalence of suicidal ideation in this population is alarmingly high, particularly among those who report poor social support and ineffective coping strategies (Fann et al., 2011). Coping is broadly defined as the cognitive and behavioral efforts an individual employs to manage stressors appraised as taxing or exceeding their resources (Lazarus & Folkman, 1984). Coping strategies are typically classified into three major categories:

- Problem-focused coping (e.g., seeking solutions, planning)
- Emotion-focused coping (e.g., expressing emotions, avoidance)
- Avoidance coping (e.g., denial, substance use)

Adaptive coping (especially problem-focused) is associated with better psychological outcomes, whereas maladaptive coping (e.g., avoidance, denial) tends to exacerbate distress (Compas et al., 2001).

A critical question explored in the literature is how mental health status affects the choice and effectiveness of coping strategies. Several studies suggest that depression and anxiety reduce the capacity to engage in problem-focused coping and increase reliance on avoidance and emotion-focused styles (Moore et al., 2006). For example, patients with TBI who suffer from

depressive symptoms are less likely to engage in goal-setting or positive reframing and more likely to disengage or withdraw socially (Anson & Ponsford, 2006).

Moreover, PTSD symptoms post-TBI or SCI often result in hypervigilance, irritability, and difficulty regulating emotions, leading to reliance on maladaptive coping mechanisms like substance use or social withdrawal (Osborn et al., 2014). The emotional dysregulation commonly observed in these populations interferes with their ability to seek social support or utilize cognitive reframing, which are typically beneficial in managing chronic illness stressors.

A large body of research has examined coping in individuals with traumatic brain injury. Ponsford and colleagues (2014) noted that TBI patients often struggle with executive functioning, which impairs their ability to plan and solve problems, thereby limiting their use of problem-focused coping. Additionally, TBI-induced apathy and fatigue may reduce motivation to engage in active coping. In a longitudinal study, Dikmen et al. (2003) found that poor coping at six months post-injury predicted higher levels of depression and anxiety at one year. Similarly, Bombardier et al. (2010) demonstrated that patients who initially relied on denial or passive coping strategies were more likely to experience prolonged psychological distress.

Spinal cord injuries, while different from TBI in terms of cognitive involvement, also challenge individuals with lifelong disability. Craig et al. (2009) found that the use of active coping**,** including seeking support and reappraisal, was associated with higher quality of life and psychological resilience among SCI patients. On the other hand, catastrophizing and rumination were associated with depressive symptoms and chronic pain..

Cognitive impairments resulting from neuro-trauma can significantly restrict coping options. For instance, impairments in attention, memory, or executive function may compromise the individual's ability to appraise situations accurately or plan effective coping responses (Sherer et al., 2003). Such cognitive limitations can lead to frustration, helplessness, and eventually depressive symptoms, further perpetuating the use of maladaptive coping.

Moreover, emotional regulation deficits, often caused by frontal lobe injury, reduce the ability to process and express emotions healthily. This leads to emotional suppression or outbursts, both of which hinder the development of effective interpersonal coping mechanisms (Prigatano, 2011). Gender and culture influence how neuro-trauma patients perceive mental health challenges and select coping strategies. Women have been found to use more emotion-focused coping, such as seeking social support or expressing feelings, while men are more likely to engage in denial or avoidance (Kelly et al., 2008). Culturally, collectivist societies may promote reliance on family support and spiritual coping, which can either buffer or compound psychological distress depending on context (Chow et al., 2013).

In the Pakistani context, mental health stigma and low access to psychological rehabilitation can push patients toward silence and isolation, reinforcing avoidant coping (Khan et al., 2020). Awareness campaigns and culturally sensitive interventions are necessary to address this issue. Psychosocial interventions such as cognitive-behavioral therapy (CBT)**,** mindfulness-based stress reduction (MBSR)**,** and psychoeducation have shown efficacy in improving mental health and coping among neuro-trauma patients. CBT, in particular, helps patients identify negative thought patterns and replace them with adaptive coping skills, resulting in reduced depression and anxiety symptoms (Ponsford et al., 2006). Family-based interventions also play a crucial role, as

the presence of supportive caregiving can reduce the psychological burden and encourage problem-solving strategies (Kreutzer et al., 2009). Furthermore, rehabilitation programs that integrate mental health support with physical therapy tend to produce more holistic outcomes for patients (Sinnakaruppan & Williams, 2001). Despite significant advancements, several gaps remain in understanding the mental health–coping link in neuro-trauma populations. Firstly, longitudinal studies are limited, making it difficult to establish causality between mental health status and coping outcomes. Secondly, most studies originate from Western contexts, and there is a dire need for cross-cultural research**,** especially in low-income countries like Pakistan where support systems and healthcare infrastructure are markedly different.

Additionally, neurobiological studies investigating how brain damage specifically alters emotional regulation circuits involved in coping remain scarce. Finally, intervention research should focus more on tailoring coping skills training to cognitive capacities and cultural backgrounds of neuro-trauma patients. The literature provides strong evidence that mental health issues significantly influence coping strategies in patients with neuro-traumatic disorders. Depression, anxiety tend to lead to maladaptive coping, such as avoidance and denial, which exacerbate psychological and functional difficulties. Cognitive and emotional impairments resulting from neuro-trauma further limit coping capacity. Nonetheless, psychosocial interventions and support structures have the potential to promote adaptive coping and improve mental health outcomes. Understanding and addressing the bidirectional relationship between psychological distress and coping in neuro-trauma patients is essential for rehabilitation professionals, policymakers, and mental health practitioners. Future research must explore culturally informed interventions and longitudinal designs to create sustainable and impactful therapeutic models.

Methodology

Research Design

The present study employs an informal experimental design within a mixed-method framework. Quantitative methodology will be used to explore the prevalence of mental health issues and disturbances in coping mechanisms among patients diagnosed with neurotraumatic diseases. A qualitative research methodology will be utilized to examine the effectiveness of Mindfulness-Based Cognitive Behavioral Therapy (MCBT) in addressing these psychological challenges.

Participants

The current study utilizes a purposive sampling technique to recruit participants, aligning with the qualitative and exploratory nature of the research. The sample size was determined by reviewing similar studies in existing literature, where qualitative investigations involving mindfulness-based interventions among neurological or clinical populations typically include 10 to 30 participants (Guest, Bunce, & Johnson, 2006; Creswell & Poth, 2018). Current research comprises 25 participants for Pre-test and Post-Test. Thus, the selected sample size in this study is consistent with methodological standards in comparable research context.

Measures

Data was collected by the application of following standardized tools.

Aga Khan University Anxiety and Depression Scale (AKUADS): This scale was originally developed in Urdu by Ali et al. (1998) at the Aga Khan University in Pakistan. It consists of 25

items, of which 13 measure psychological symptoms and 12 measure somatic symptoms. Responses are scored on a Likert-type scale, with higher scores indicating more severe symptoms. The scale is widely used in clinical and community settings in Pakistan and has demonstrated high internal consistency (Cronbach's alpha = .83) and good sensitivity (66%) and specificity (79%) for detecting anxiety and depression. The AKUADS is culturally relevant and suitable for populations with varying literacy levels, making it especially useful in local community-based research.

Brief COPE Inventory: To assess the coping strategies of participants, the Urdu version of the Brief COPE Inventory was used. Originally developed by Carver (1997), the Brief COPE is a 28-item self-report measure that evaluates a wide range of coping responses. It measures three broad domains:

- Problem-focused coping
- Emotion-focused coping
- Avoidant coping

Each item is rated on a 4-point Likert scale ranging from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). The Urdu version of the Brief COPE was translated and adapted to suit the linguistic and cultural context of Pakistan. It has shown good psychometric properties. Reported Cronbach's alpha values for subscales range from .70 to .88, indicating acceptable to excellent internal consistency. The Urdu version has been used in various local studies and is considered culturally appropriate for the Pakistani population.

BASE Scale for Psychological Adaptation:

To measure psychological adaptation, the BASE Scale for Psychological Adaptation was used. This scale was developed by Nesic, Petrovic, and Knezevic (2011) to assess the adaptive capacity of individuals when facing health-related or life-altering challenges. The term BASE stands for Belongingness, Affect, and Self-worth, Engagement— four psychological domains considered essential for adaptive functioning. The scale contains 28 items, rated on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The items are designed to reflect an individual's ability to maintain a sense of connection (belonging), regulate emotions (affect), preserve self-esteem (self-worth), and remain active and involved (engagement) despite challenging circumstances. The BASE scale has demonstrated good psychometric properties. The original authors reported a Cronbach's alpha of .91, indicating excellent internal consistency. It has been validated in various clinical and non-clinical populations, making it suitable for studies on chronic illness, disability, trauma, and psychological recovery.

Semi-structured Interview Guide

A semi-structured interview guide was developed for the qualitative component of the study to explore participants' coping experiences and their feedback regarding therapeutic interventions. This tool allowed for an in-depth understanding of the participants' subjective experiences in dealing with neuro-traumatic conditions and the psychological strategies they employed throughout the process of adaptation and treatment.

The interview guide included open-ended questions focused on key themes such as:

- Personal perceptions of illness or trauma
- Emotional and behavioral coping strategies

- Role of social support and spirituality
- Experience and perceived effectiveness of therapeutic interventions (e.g., CBT)
- Suggestions for improving psychological care

The flexible structure of the interview allowed participants to elaborate on areas most relevant to their individual experiences, while also ensuring consistency across interviews for thematic analysis. Probing questions were used when necessary to encourage deeper responses.

The interview guide was developed in Urdu to ensure cultural and linguistic relevance and was validated by a panel of experts in psychology, qualitative research, and language. A pilot interview was conducted to assess clarity and flow, and minor revisions were made accordingly. Interviews were audio-recorded with participant consent and later transcribed and translated into English for analysis. This qualitative approach provided rich, narrative data that complemented the quantitative measures (e.g., AKUADS, Brief COPE, and BASE Scale), offering a holistic understanding of the participants' psychological adaptation processes.

Procedure

Prior to data collection, ethical approval for the study was obtained from the Institutional Review Board (IRB) of University of Gujrat Pakistan to ensure compliance with research ethics and participant safety. Participants were recruited from private hospitals and Govt. Neuro Wards in Sialkot. After providing a clear explanation of the study's purpose, informed consent was obtained from all participants in both written and verbal format. In the pre-test phase, participants were asked to complete standardized psychological instruments, including the Depression Anxiety Scale (AKUAD), Brief COPE Inventory, and the BASE Scale for Psychological Adaptation, to assess their baseline mental health and coping profiles. The intervention phase lasted for six weeks. Participants in the experimental group attended weekly Cognitive Behavioral Therapy (CBT) sessions, each lasting approximately 1.5 hours, which were conducted by a trained clinical psychologist. These sessions were integrated with mindfulness practices, including body scan exercises, breathing techniques, and awareness training, to enhance emotional regulation and coping. Following the intervention period, a post-test assessment was conducted, where the same psychological instruments were re-administered to same sample to measure changes in emotional well-being, coping strategies, and psychological adaptation. To complement the quantitative data, semi-structured qualitative interviews were conducted. These interviews aimed to explore their subjective experiences, insights gained during therapy, and perceived benefits of the CBT and mindfulness-based intervention.

Ethical Considerations and protocol of Therapy

The intervention was based on an integrated protocol combining Cognitive Behavioral Therapy (CBT) with mindfulness-based practices, tailored for patients experiencing neuro-traumatic conditions (e.g., stroke, TBI). The Mindfulness-Based CBT (MCBT) was delivered to the experimental group over a period of six weeks, consisting of weekly sessions lasting 90 minutes each. The protocol was designed to target maladaptive thought patterns, emotional dysregulation, and ineffective coping mechanisms, while cultivating present-moment awareness, acceptance, and adaptive functioning.

Structure of the MCBT Sessions

Each session was structured as follows

1. **Check-in and Psychoeducation (15 minutes):**
   A brief review of the previous session, followed by psychoeducation on relevant CBT concepts such as automatic thoughts, cognitive distortions, or the stress-response cycle.
2. **Mindfulness Practice (20 minutes):**
   Guided mindfulness exercises including body scan**,** focused breathing**,** and mindful awareness of thoughts and emotions.
3. **Cognitive Restructuring (30 minutes):**
   Identification and challenging of negative automatic thoughts using Socratic questioning, thought records, and behavioral experiments.
4. **Skill Building and Coping Strategies (15 minutes):**
   Training in emotion regulation**,** problem-solving**,** activity scheduling**, and** relaxation techniques**.**
5. **Group Discussion and Homework Review (10 minutes):**
   Participants shared their experiences and challenges with mindfulness or cognitive exercises. Homework tasks were assigned for daily practice.

This therapeutic model was selected due to its evidence-based efficacy in improving psychological well-being, reducing symptoms of depression and anxiety, and enhancing resilience and coping in individuals with chronic illness or neurological impairment. The sessions were conducted by the trained clinical psychologist. Fidelity to the treatment protocol was maintained through session checklists and supervision.

Results

Qualitative Data Analysis

Session 1: The first session focused on orientation and psychoeducation, where participants were introduced to the therapeutic process, the effects of neuro-trauma on mental health, and the basic concepts of CBT and mindfulness. This laid the groundwork for engagement and rapport-building.

Session 2: In session two**,** the focus shifted to understanding the physiological stress response and identifying personal stress triggers. Participants practiced mindful breathing techniques to begin cultivating awareness of internal states.

Session 3: introduced cognitive distortions and trained participants in recognizing automatic negative thoughts that contribute to anxiety and depression. A guided body scan was used to strengthen the mind-body connection.

Session 4: In session four**,** cognitive restructuring techniques such as thought-stopping and reappraisal were taught, complemented by mindful awareness exercises that helped participants observe thoughts without judgment.

Session 5: In 5^{th} session emotional regulation were addressed by teaching clients to label emotions accurately and use mindfulness to reduce emotional reactivity, including a loving-kindness meditation to foster compassion toward the self.

Session 6: In session six**,** behavioral activation was introduced to combat inertia and promote engagement in pleasurable and meaningful activities. Participants set SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals and learned to integrate mindfulness into routine behaviors.

Session 7: Session seven emphasized acceptance and self-compassion, especially for dealing with physical limitations and perceived failures. Exercises helped participants distinguish between acceptance and resignation while practicing self-compassion meditations.
Session 8: Session eight targeted the management of chronic pain and physical discomfort, common in neuro-trauma recovery. Patients were taught how to differentiate between pain and suffering, utilizing mindfulness-based strategies such as focused body scans to reduce distress. In **Session 9:** In Session nine**,** attention was given to worry and rumination. Clients learned to distinguish between productive and unproductive worry, employing tools like worry logs and imagery exercises (e.g., "leaves on a stream") to foster cognitive detachment.
Session 10: In Session ten interpersonal communication skills, especially assertiveness. CBT techniques for managing interpersonal conflict were taught alongside mindful listening and speaking exercises to enhance empathy and social connection.
Session 11: Session eleven centered on relapse prevention, helping participants identify high-risk scenarios and develop individualized coping toolkits. Anchoring meditation was introduced as a technique to maintain psychological balance.
Session 12: Finally, session twelve provided space for reflection, review of therapeutic gains, and planning for future maintenance. Clients shared personal insights, received feedback, and developed strategies to sustain progress post-therapy.
Throughout the program, the therapeutic approach emphasized self-awareness, self-regulation, cognitive flexibility, and psychological resilience, aligning with the needs of patients facing the complex challenges of neuro-traumatic disorders. The integration of mindfulness practices into CBT helped participants ground themselves in the present moment, reduce emotional distress, and adopt more adaptive and empowering responses to their condition and environment. Thematic analysis of the semi-structured interviews revealed that the integrated Cognitive Behavioral Therapy (CBT) and Mindfulness-Based Intervention significantly contributed to improvements in participants' mental health and coping styles. Participants consistently expressed that the intervention enhanced their self-awareness, helping them recognize negative thought patterns and emotional triggers that previously went unnoticed. Many described experiencing a sense of emotional regulation, where mindfulness exercises such as deep breathing and body scanning enabled them to calm anxiety, reduce irritability, and remain present-focused during distressing situations. This regulation, in turn, facilitated adaptive cognitive restructuring, a core component of CBT, allowing participants to reframe hopeless or catastrophic thoughts and replace them with more constructive and realistic interpretations. Additionally, a marked shift toward problem-focused coping strategies was observed. Participants reported actively engaging in goal-setting, planning, and seeking support—behaviors they had previously avoided due to emotional overwhelm. The intervention also boosted motivation for rehabilitation, with individuals expressing renewed confidence in their capacity to manage their health and recovery. One participant noted, "I stopped blaming myself and started making small daily goals, which made me feel in control again." Another reflected, "The therapist helped me see that even if my condition doesn't fully reverse, I can still find purpose and manage stress." Lastly, the development of a supportive therapeutic alliance emerged as a vital factor in the intervention's success. Participants described the therapist as

empathetic, nonjudgmental, and encouraging, which fostered a safe environment to express vulnerabilities and explore emotional struggles. Overall, the combined CBT and mindfulness approach empowered patients with neuro-traumatic disorders to build resilience, regain psychological stability, and adopt healthier coping mechanisms in the face of persistent challenges.

Quantitative Data Analysis

Table 1.1 *Frequency Distribution of demographic Variables*

Variable	Category	Frequency	Percent (%)
Age Group	20–30	17	68.0%
	30–40	3	12.0%
	40–50	2	8.0%
	50–60	3	12.0%
Gender	Male	17	68.0%
	Female	8	32.0%
Socioeconomic Status	Lower Middle Class	3	12.0%
	Middle Class	8	32.0%
	Upper Middle Class	10	40.0%
	Elite Class	4	16.0%
Education	Metric–Intermediate	8	32.0%
	BA/BSc/Eng.	10	40.0%
	Post-graduation	7	28.0%
Habitat	Rural	10	40.0%
	Urban	15	60.0%
Psychological Illness	No	25	100.0%
Permanent Disability	No	25	100.0%
Impact of Substance Use	No	25	100.0%
No. of Siblings	1–5	25	100.0%

Table 1.2 depicts **t**he demographic profile of the participants (N = 25) revealed that the majority were aged between 20 and 30 years (68%), with fewer participants in the 30–40 (12%), 40–50 (8%), and 50–60 (12%) age ranges. Most participants were male (68%) and from urban areas

(60%). In terms of socioeconomic status, 40% identified as upper middle class, followed by 32% from the middle class, 16% from the elite class, and 12% from the lower middle class. Educationally, 40% held a BA/BSc/Engineering degree, 32% had completed Matric to Intermediate education, and 28% were postgraduates. All participants reported no history of psychological illness, permanent disability, or substance use impact, and all had between one and five siblings.

Table 1.2 *Descriptive statistics of demographic variables*

Variable	M	SD
Age	1.90	0.935
Gender	1.51	0.558
Socioeconomic Status (SES)	2.44	0.889
Education	2.01	0.724
Habitat	1.69	0.462
Psychological Illness	2.00	0.000
Permanent Physical Disability	2.00	0.000
Impact of Substance Use	2.00	0.000
Number of Siblings	1.33	0.585

Table 1.2 presents the descriptive statistics for demographic variables among the participants (N = 25). The mean age category was 1.90 (SD = 0.94), indicating that most participants fell within the younger age brackets. Gender had a mean of 1.51 (SD = 0.56), suggesting a relatively higher proportion of males. Socioeconomic status had a mean of 2.44 (SD = 0.89), reflecting a concentration around the middle to upper-middle class categories. Education (M = 2.01, SD = 0.72) and habitat (M = 1.69, SD = 0.46) show that participants were mostly graduates and predominantly from urban areas. All participants reported no psychological illness, permanent physical disability, or substance use impact (M = 2.00, SD = 0.00), and the average number of siblings was low (M = 1.33, SD = 0.59), indicating most had between one to five siblings.

Table 1.3 Normality Test

Shapiro-Wilk Test of Normality for Mental Health Variables by Disease Group

Variable	Group	W	df	P
Depression and Anxiety	Neurotraumatic	.787	25	.311
Adaptation (BASE)	Neurotraumatic	.987	25	.914
Coping (COPE)	Neurotraumatic	.973	25	.472

Note. W = Shapiro-Wilk statistic. A p > .05 indicates that the variable is normally distributed; thus, the normality assumption is met.

Table 1.3 explains the Shapiro–Wilk test was conducted to assess the normality of mental health variables among patients with neurotraumatic conditions. Results indicated that all variables met the assumption of normality, as the p-values were greater than .05: depression and anxiety (W

= .787, p = .311), adaptation (BASE) (W = .987, p = .914), and coping (COPE) (W = .973, p = .472). These findings suggest that the distributions of all three mental health measures did not significantly deviate from normality, thereby satisfying the assumption for parametric analyses.

Table 2.1 *Paired sample T-Test for comparison between Pre-test and Post-Test Phases among patients suffering from Neurotraumatic diseases*

Pair	Outcome Variable	M (Pre)	SD (Pre)	M (Post)	SD (Post)	*t*	*df*	*P*
1	Depression and Anxiety	55.08	8.63	29.72	4.67	54.27	24	.000
2	BASE Total	57.38	8.99	24.12	2.24	32.32	24	.000
3	Coping Skills (COPE)	51.98	6.86	112.93	3.66	-68.78	24	.000

M = Mean; SD = Standard Deviation; *p* values < .001 indicate statistically significant differences between pre- and post-intervention scores.

Table 2.1 illustrates the results of a paired-samples t-test that was conducted to evaluate the effectiveness of the intervention among patients with neurotraumatic diseases. Results revealed a statistically significant reduction in depression and anxiety scores from pre-test (M = 55.08, SD = 8.63) to post-test (M = 29.72, SD = 4.67), $t(24) = 54.27$, $p < .001$. Similarly, adaptation scores (BASE Total) significantly decreased from pre-test (M = 57.38, SD = 8.99) to post-test (M = 24.12, SD = 2.24), $t(24) = 32.32$, $p < .001$, indicating improved psychological adjustment. Additionally, coping skills significantly increased from pre-test (M = 51.98, SD = 6.86) to post-test (M = 112.93, SD = 3.66), $t(24) = –68.78$, $p < .001$. These findings suggest the intervention had a substantial positive impact on psychological well-being and coping capacity among the patients.

Graphical representation

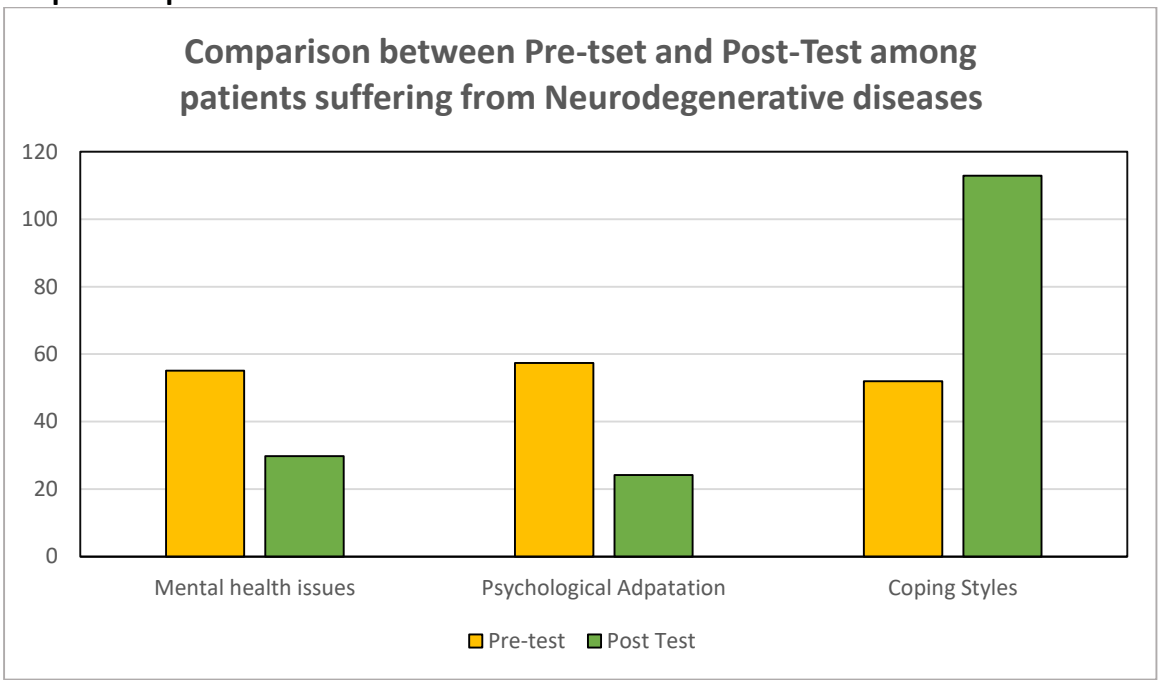

Figure 1.2 Bar Chart comprises Pre-test and Post-Test results

The bar chart illustrates a comparison between pre-test and post-test scores among patients suffering from neurotraumatic diseases across three psychological domains. Results indicate a notable reduction in mental health issues and psychological adaptation difficulties from pre- to post-test, alongside a substantial increase in coping styles. These findings highlight the effectiveness of Mindfulness-Based Cognitive Behavioral Therapy (MCBT) in enhancing psychological well-being. Specifically, MCBT appears to significantly reduce emotional distress and maladaptive responses, while strengthening patients' coping abilities. The observed changes suggest that MCBT was a beneficial intervention for improving overall mental health in this population.

Discussion

The present study aimed to examine the effectiveness of Mindfulness-Based Cognitive Behavioral Therapy (MCBT) in improving psychological functioning among patients suffering from neurodegenerative diseases. The findings demonstrated significant improvements in mental health outcomes following the intervention. Specifically, post-test scores indicated a marked reduction in depression, anxiety, and maladaptive psychological adaptation, along with a substantial increase in effective coping strategies. These results support the efficacy of MCBT in addressing the psychological challenges commonly experienced by individuals with chronic neurological conditions. The observed reduction in mental health issues aligns with previous research suggesting that MCBT enhances emotional regulation and reduces symptoms of anxiety and depression (Kuyken et al., 2016). Additionally, the improvement in psychological adaptation (as measured by BASE scores) suggests that participants developed greater resilience and acceptance of their condition, which is consistent with the mindfulness principle of nonjudgmental awareness. The significant increase in coping skills further highlights the value of

incorporating mindfulness and cognitive restructuring techniques, enabling patients to respond to stress more constructively.

These findings illustrates the importance of integrating psychological therapies like MCBT into the standard care of patients with neurotraumatic diseases. Given the chronic and often progressive nature of such conditions, equipping patients with effective coping mechanisms is critical for improving quality of life and psychological well-being. However, future research should consider longitudinal follow-up to evaluate the sustainability of therapeutic gains over time and expand the sample size for broader generalizability.

Conclusion

In conclusion, the study provides strong empirical support for the effectiveness of Mindfulness-Based Cognitive Behavioral Therapy in reducing mental health issues, improving psychological adaptation, and enhancing coping skills among patients with neurotaumatic diseases. These findings highlight the transformative potential of MCBT in addressing the emotional and psychological burden associated with chronic neurological conditions. The intervention not only aligns with theoretical principles of mindfulness and cognitive-behavioral therapy but also offers a practical, scalable solution for enhancing psychological well-being in clinical settings. As such, MCBT represents a valuable therapeutic tool in the multidisciplinary care of neurodegenerative populations.

Study Implications

Theoretical implication

The findings of this study contribute to the growing body of literature supporting the theoretical foundations of Mindfulness-Based Cognitive Behavioral Therapy (MCBT). Rooted in cognitive-behavioral and mindfulness traditions, MCBT posits that psychological distress can be alleviated through increased awareness of thoughts, emotions, and bodily sensations, coupled with cognitive restructuring. The significant improvements in mental health, adaptation, and coping skills observed in neurodegenerative patients support the theory that mindfulness facilitates psychological flexibility and emotional regulation. This study extends the application of MCBT theory to patients with chronic neurodegenerative conditions, reinforcing its relevance beyond affective disorders and highlighting its adaptability to diverse clinical populations.

Practical Implications

From a clinical perspective, this study underscores the practical utility of incorporating MCBT into rehabilitation and mental health programs for individuals with neurodegenerative diseases. The statistically and clinically significant reductions in depression, anxiety, and maladaptive coping suggest that MCBT can be a cost-effective, non-pharmacological intervention with long-term psychological benefits. Healthcare professionals, particularly psychologists, psychiatrists, and rehabilitation therapists, can integrate structured MCBT protocols into routine care to enhance patients' quality of life, emotional resilience, and adaptive functioning. The intervention's group-based format also makes it feasible for implementation in hospital, outpatient, and community-based settings.

Recommendations

Based on the results of this study, several key recommendations are proposed to enhance the application and impact of Mindfulness-Based Cognitive Behavioral Therapy (MCBT) in clinical

settings. First, MCBT should be formally integrated into mental health services for individuals with neurodegenerative conditions, given its demonstrated effectiveness in improving psychological well-being. To ensure consistent and high-quality delivery, mental health professionals should receive specialized training in administering MCBT protocols. At the policy level, support from healthcare administrators and government bodies is essential to secure funding and allocate resources for mindfulness-based interventions as part of comprehensive chronic disease management strategies. Furthermore, future research should focus on conducting longitudinal and randomized controlled trials with larger, more diverse samples to evaluate the sustainability and generalizability of MCBT outcomes over time. Finally, it is recommended that culturally and linguistically tailored versions of MCBT be developed and implemented to ensure relevance and accessibility for diverse populations, particularly in non-Western and underserved communities.

References

Abbas, S., & Naz, I. (2025). *Role of social support, psychological well-being and satisfaction of life among patients suffering from neuro-traumatic diseases*. ACADEMIA International Journal for Social Sciences, 4(2), 219–228. https://academia.edu.pk/ | https://doi.org/10.63056/ACAD.004.02.0170

Abbas, S., Ashraf, M. U. & Butt, R. (2023). *Frequency of self-acceptance level and depression in association with death anxiety among patients suffering from Hepatitis C*. Pakistan Journal of Health Sciences, Vol 4 (6), 300–305. https://doi.org/10.54393/pjhs.v4i06.900

Abbas, S., Abbas, S., Ahmad, K., Shahid, H., & Noreen, S. (2022). *Impact of dementia on life satisfaction, happiness and quality of life among elderly people in Sialkot*. Journal of Pakistan Society of Internal Medicine**,** 3(3), 225–229.

Abbas, S., Razzaq, M., Shamshaad, M., & Saeed, S. (2024). *Navigating the nexus: Understanding socio-economic status, social isolation, and depression among primary caregivers of individuals with physical disabilities.* Pakistan Journal of Humanities and Social Sciences**, 12**(1), 710–718. https://doi.org/10.52131/pjhss.2024.v12i1.2050

Ali, B. S., Reza, H., Khan, M. M., & Jehan, I. (1998). Development of an indigenous screening instrument in Pakistan: The Aga Khan University Anxiety and Depression Scale. *Journal of Pakistan Medical Association, 48*(9), 261–265.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Anson, K., & Ponsford, J. (2006). Coping and emotional adjustment following traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 21(3), 248–259.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman.

Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International Universities Press.

Beck, J. S. (2011). *Cognitive behavior therapy: Basics and beyond* (2nd ed.). Guilford Press.

Bedard, M., Felteau, M., Mazmanian, D., Fedyk, K., Klein, R., Richardson, J., & Minthorn-Biggs, M. B. (2005). Pilot evaluation of a mindfulness-based intervention to improve quality of life

among individuals who sustained traumatic brain injuries. *Disability and Rehabilitation*, 25(13), 722–731. https://doi.org/10.1080/09638280400014492
Bombardier, C. H., Fann, J. R., Temkin, N., Esselman, P., Barber, J., & Dikmen, S. S. (2010). Rates of major depressive disorder and clinical outcomes following traumatic brain injury. *JAMA*, 303(19), 1938–1945.
Bryant, R. A., O'Donnell, M. L., Creamer, M., McFarlane, A. C., Clark, C. R., & Silove, D. (2010). The psychiatric sequelae of traumatic injury. *American Journal of Psychiatry*, 167(3), 312–320. https://doi.org/10.1176/appi.ajp.2009.09050617
Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92–100. https://doi.org/10.1207/s15327558ijbm0401_6
Chiesa, A., & Serretti, A. (2011). Mindfulness based cognitive therapy for psychiatric disorders: A systematic review and meta-analysis. *Psychiatry Research*, 187(3), 441–453.
Corrigan, J. D., Selassie, A. W., & Orman, J. A. (2010). The epidemiology of traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 25(2), 72–80.
Dikmen, S. S., Machamer, J. E., Powell, J. M., & Temkin, N. R. (2003). Outcome 3 to 5 years after moderate to severe traumatic brain injury. *Archives of Physical Medicine and Rehabilitation*, 84(10), 1449–1457.
Dreer, L. E., Elliott, T. R., Fletcher, D. C., & Swanson, M. (2007). Social problem-solving abilities and psychological adjustment of persons in low vision rehabilitation. *Rehabilitation Psychology*, 52(3), 254–261. https://doi.org/10.1037/0090-5550.52.3.254
Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129–136.
Fann, J. R., Hart, T., & Schomer, K. G. (2011). Treatment for depression after traumatic brain injury: A systematic review. *The Journal of Neurotrauma*, 28(8), 1589–1602.
GHDX. (2022). *Global Health Data Exchange*. https://ghdx.healthdata.org
Hart, T., Brenner, L., Clark, A. N., Bogner, J. A., Novack, T. A., & Chervoneva, I. (2011). Major and minor depression after traumatic brain injury. *Archives of Physical Medicine and Rehabilitation*, 92(8), 1211–1219.
Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44(1), 1–25.
Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524.
Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50(3), 337–421.
Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2010). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research*, 36(5), 427–440.
Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-stress models. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of Psychopathology: A Vulnerability-Stress Perspective* (pp. 32–46). Sage Publications.

Institute of Health Metrics and Evaluation. Global Health Data Exchange (GHDx), (https://vizhub.healthdata.org/gbd-results/, accessed 14 May 2022).
Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Delta.
Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2003). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 593–602.
Khan, M. A., & Iqbal, N. (2015). Urdu translation and validation of the Brief COPE Inventory in a Pakistani sample. *Pakistan Journal of Psychology, 46*(2), 55–70.
Kuyken, W., Warren, F., Taylor, R. S., Whalley, B., Crane, C., Bondolfi, G., Hayes, R., Huijbers, M., Ma, H., Schweizer, S., Segal, Z., Speckens, A., & Teasdale, J. D. (2016). *Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: An individual patient data meta-analysis from randomized trials.* JAMA Psychiatry, 73(6), 565–574. https://doi.org/10.1001/jamapsychiatry.2016.0076
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
Mental Health and COVID-19: Early evidence of the pandemic's impact. Geneva: World Health Organization; 2022.
Middleton, J. W., Tran, Y., & Craig, A. (2007). Self-efficacy and spinal cord injury: Psychometric properties of a new scale. *Rehabilitation Psychology*, 52(3), 281–289.
Mohr, D. C., Hart, S. L., Julian, L., Cox, D., & Pelletier, D. (2007). Association between stressful life events and exacerbation in multiple sclerosis: A meta-analysis. *BMJ*, 334(7601), 1200.
Moore, A. D., Stambrook, M., & Peters, L. C. (2006). Rehabilitation outcome following traumatic brain injury: The influence of coping style. *Brain Injury*, 10(8), 537–544.
Nesic, M., Petrovic, B., & Knezevic, G. (2011). BASE: A new scale for psychological adaptation. *Psychological Test and Assessment Modeling, 53*(2), 154–170.
Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., ... & Unützer, J. (2018). The Lancet Commission on global mental health and sustainable development. *The Lancet*, 392(10157), 1553–1598.
Ponsford, J., Cameron, P., Fitzgerald, M., Grant, M., & Mikocka-Walus, A. (2014). Long-term outcomes after uncomplicated mild traumatic brain injury: A comparison with trauma controls. *Journal of Neurotrauma*, 28(6), 937–946.
Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. Guilford Press.
Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death*. W.H. Freeman.
Whyte, E. M., & Mulsant, B. H. (2002). Post stroke depression: Epidemiology, pathophysiology, and biological treatment. *Biological Psychiatry*, 52(3), 253–264.
World Health Organization. (2014). *Mental health: Strengthening our response*. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

World Health Organization. (2022). *Mental health and COVID-19: Early evidence of the pandemic's impact*. https://www.who.int/news-room/feature-stories/detail/mental-health-and-covid-19
Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? *Field Methods*, 18(1), 59–82. https://doi.org/10.1177/1525822X05279903