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THE RELATIONSHIP BETWEEN PHYSICAL THERAPY AND PSYCHOLOGICAL OUTCOMES IN BURN PATIENTS: THE MEDIATING ROLE OF COPING SELF-EFFICACY, ACCEPTANCE OF DISABILITY AND RESILIENCE

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Article Info

Abstract

Introduction: Burn injuries often result in profound physical and psychological challenges. Previous research has indicated that coping self-efficacy, acceptance of disability, and resilience play crucial roles in the rehabilitation of burn patients. This study aims to explore the mediating role of these psychological factors in the relationship between physical therapy and psychological outcomes in burn patients.

Method: A cross-sectional observational study was conducted involving burn patients undergoing rehabilitation. Data were collected from 200 participants using the Burn Specific Health Scale (BSHS), Coping Self-Efficacy Scale (CSE), Acceptance and Action Questionnaire (AAQ), and the Connor-Davidson Resilience Scale (CD-RISC). Statistical analysis was performed using SPSS version 25.0, which included descriptive analysis and multiple regression analysis to determine the mediating effects.

Result: The findings revealed that higher levels of coping self-efficacy, acceptance of disability, and resilience were significantly associated with better psychological outcomes in burn patients. Specifically, coping self-efficacy and resilience showed a strong positive correlation with improved psychological well-being, while acceptance of disability was linked to reduced psychological distress. Physical therapy was found to enhance these psychological mediators, thereby improving overall psychological outcomes.

Conclusion: This study highlights the critical role of coping self-efficacy, acceptance of disability, and resilience in the psychological recovery of burn patients. Enhancing these factors through targeted physical therapy interventions can significantly improve psychological outcomes and quality of life for burn survivors.

Keywords:
Sleep, physical activity, screen time, international physical activity questionnaire (IPAQ), Pittsburgh sleep quality index (PSQI), Perceived stress scale (PSS).

Introduction

Burn injuries can significantly affect a person's physical and mental health. Burn injuries are one of the leading causes of hospitalization, especially in low-income countries. Burn injuries are a major global health issue, causing around 180,000 deaths each year (Peck et al., 2011). A burn injury can happen anywhere, anytime, and to anyone. Its devastating impact extends beyond the physical wound, often leading to significant functional and psychosocial impairments that require long-term rehabilitation (Esselman et al., 2007).

Physical therapy is a critical component of burn rehabilitation and aims to restore function, prevent contractures, and reduce pain. The rehabilitation process is complex and multifaceted, aiming to restore the patient's functional ability and quality of life (Esselman et al., 2007). A burn injury can lead to severe psychological consequences and Burn injury survivors may experience mental health issues such as anxiety, depression, and PTSD (Pavoni et al., 2010). Individuals with severe burns often experience traumatic stress related to the initial injury event and subsequent invasive treatments (Dyster et al., 2008). Patients may experience feelings of guilt, shame, and social isolation, affecting their overall well-being and quality of life.

Depression is a common comorbidity, with an estimated prevalence of 23% in burn patients within a year post-burn (Dyster et al., 2008). These psychological symptoms can negatively affect the patient's daily functioning, quality of life, and engagement in rehabilitation activities (Blakeney et al., 2008). Addressing the psychological outcomes of burn injuries is crucial in promoting successful rehabilitation and improving patients' quality of life (Blakeney et al., 2008).

Given the significant psychological impact of burn injuries, addressing these outcomes is a crucial aspect of burn care and rehabilitation (Willebrand et al., 2004). Psychological distress can influence physical recovery, adherence to medical treatments, and participation in physical and occupational therapy (Wisely et al., 2013). Furthermore, burn patients with untreated psychological symptoms are at a higher risk of developing chronic pain, sleep disturbances, and impaired social relationships, ultimately leading to poorer quality of life (Brusselaers et al., 2010). Thus, identifying and managing psychological distress early in the recovery process can significantly improve patient outcomes and Psychological support can help patients manage the emotional impact of burn injuries and facilitate recovery (Wisely et al., 2013).

Physical therapy plays an integral role in burn rehabilitation. It helps improve physical functioning, alleviate pain, prevent and manage scar contractures, and enhance the overall quality of life (Griffin et al., 2019). Physical therapists also work closely with patients to address their psychological and psychosocial needs, promoting self-efficacy and facilitating reintegration into their community and daily life activities. A multidisciplinary approach is essential in burn rehabilitation, with physical therapy playing a crucial role in facilitating recovery (Griffin et al., 2019).

Coping with burns is a multifaceted and challenging journey, both physically and psychologically. One crucial element that significantly influences recovery and resilience is self-efficacy. Self-efficacy is the belief in one's ability to successfully complete tasks and overcome obstacles. In the context of burns, developing and nurturing self-efficacy is essential for individuals to regain control, adapt to the changes, and actively participate in their healing process (Wisely et al., 2013).

The acceptance of disability, particularly in cases of burn injuries, is a deeply personal process crucial for individuals to embrace their changed reality, fostering resilience and a fulfilling life (Linley et al., 2004). Rooted in the World Health Organization's biopsychosocial model, this acceptance involves integrating disability into one's identity, leading to improved well-being and life quality (Bickenbach et al 1999, Elliott et al., 1991).

In burn patients, accepting their disability aids in rehabilitation, adaptation to new roles, and pursuit of life goals despite limitations, buffering against distress and isolation (Groomes et al., 2007, Wiechman et al., 2009).

Resilience, a dynamic process, enables positive adaptation post-burn, mediating trauma's impact and fostering engagement in rehabilitation (Masten et al., 2001, Tedeschi et al., 2004, Connor et al., 2003). Studies highlight resilience's role in reducing psychological distress and enhancing quality of life in burn survivors (Kornhaber et al., 2017).

Coping self-efficacy, influenced by burn injuries, mediates psychological outcomes, emphasizing the importance of enhancing self-efficacy to alleviate distress in burn survivors (Chester et al., 2018).

Material and Methods:

A cross-sectional study was conducted among burn patients undergoing rehabilitation at multiple medical facilities. The study spanned from January 2022 to December 2022. The sample size, calculated using Open RAO software, included 200 participants, comprising (n=80) males and (n=120) females, aged between 18 to 60 years. A non-probability convenience sampling method was utilized for participant selection.

To measure the relevant psychological factors, the following instruments were used: the Burn Specific Health Scale (BSHS) for assessing health outcomes related to burn injuries, the Coping Self-Efficacy Scale (CSE) for evaluating patients' confidence in managing their rehabilitation, the Acceptance and Action Questionnaire (AAQ) for measuring acceptance of disability, and the Connor-Davidson Resilience Scale (CD-RISC) for assessing resilience levels. Data were analyzed using SPSS version 25, with frequency and percentage calculations applied to describe the sample characteristics and inferential statistics used to explore relationships between variables.

Inclusive Criteria

- The study included individuals who have experienced burn injuries, regardless of the severity or location of the burns.
- The study included participants of age groups 18-60
- Participants were currently undergoing or have undergone physical therapy interventions as part of their burn injury rehabilitation.
- Patients diagnosed with burn injuries of any severity (e.g., first-degree, second-degree, third-degree burns).
- Participants that must be willing to participate in the study.

Exclusion Criteria

- Individuals with pre-existing disabilities unrelated to burn injuries will be excluded from the study, as the focus is specifically on burn-related disabilities.
- Participants who do not have a sufficient understanding of the English or Urdu language to complete the study measures and assessments will be excluded. This is to ensure accurate data collection and interpretation.
- Individuals with severe cognitive impairments that prevent them from providing reliable responses or understanding the study requirements will be excluded.
- Participants who have not received a sufficient duration or intensity of physical therapy interventions will be excluded to ensure an adequate exposure to the treatment variable.
- Participants who decline to participate or withdraw their consent during the course of the study will be excluded from the final analysis.

Result:

A total number of (n=200) participant from burns population undergoing physical therapy in which 57.5% (n=115) was male and 42.5% (n=85) was female were enrolled in this cross- sectional study. The age of the participant is between 18 to 60 years.

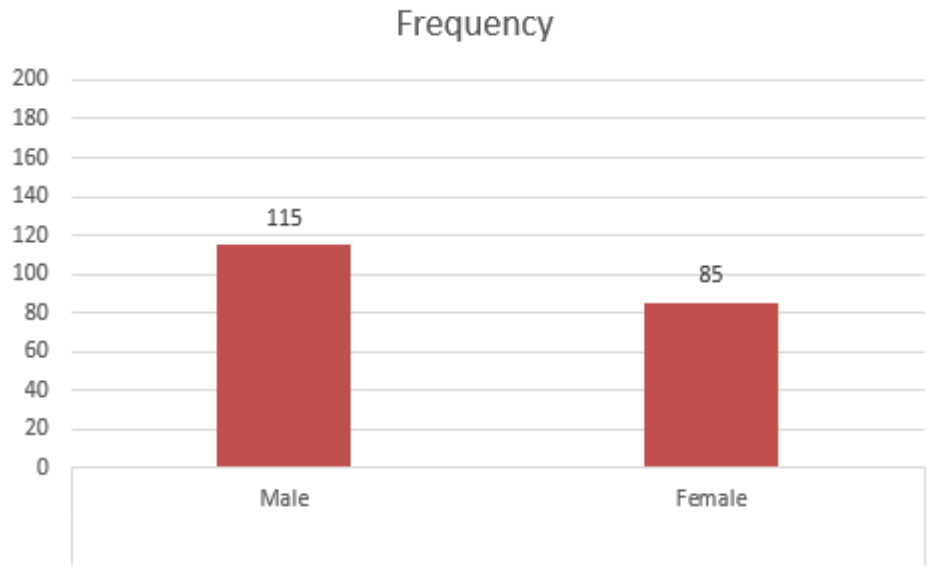

Figure #1: Gender of Participants

In Figure 2, among the male participants, 8.7% reported high psychological inflexibility, 87.0% reported moderate psychological inflexibility, and 4.3% reported low psychological inflexibility. For female participants, 9.4% reported high psychological inflexibility, 81.2% reported moderate psychological inflexibility, and 9.4% reported low psychological inflexibility. Overall, within the entire sample, 9.0% reported high psychological inflexibility, 84.5% reported moderate psychological inflexibility, and 6.5% reported low psychological inflexibility.

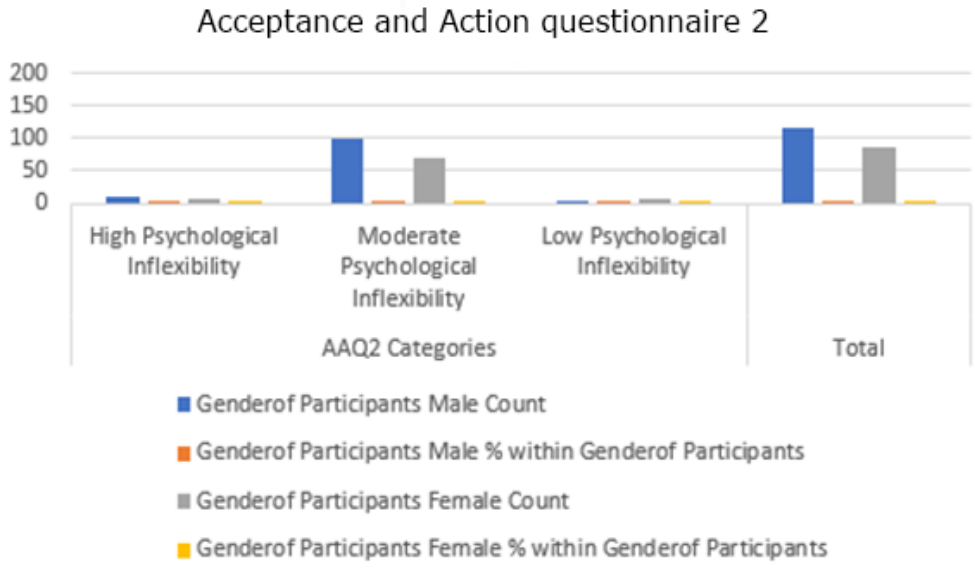

Figure 2, AAQ-2 Categories

			High Inflexibility	Moderate Inflexibiliy	Low Inflexibility	
	Male	**Count**	10	100	5	115
		% within Gender of Participants	8.7%	87.0%	4.3%	100.0 %
	Female	**Count**	8	69	8	85
		% within Genderof Participants	9.4%	81.2%	9.4%	100.0 %
Total		**Count**	18	169	13	200
		% within Genderof Participants	9.0%	84.5%	6.5%	100.0 %

Table 2, AAQ-2 Categories

In Figure 3, when questioned for coping self-efficacy, in the male participant group, 1.7% reported low coping self-efficacy, 76.5% reported moderate coping self-efficacy, and 21.7% reported high coping self-efficacy. Among the female participants, 4.7% reported low coping self-efficacy, 61.2% reported moderate coping self-efficacy, and 34.1% reported high coping self-efficacy. Across the entire sample, 3.0% reported low coping self-efficacy, 70.0% reported moderate coping self-efficacy, and 27.0% reported high coping self-efficacy.

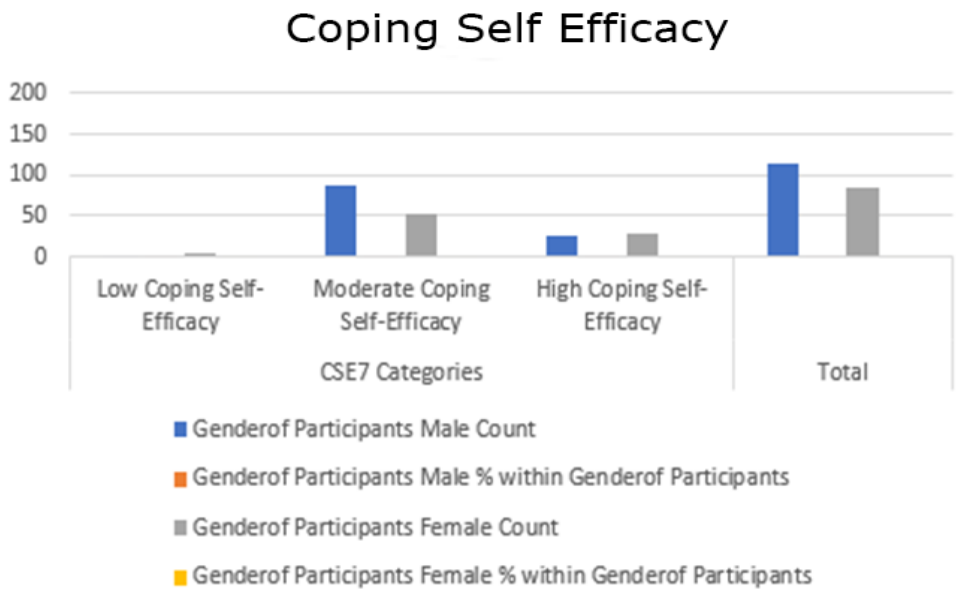

Figure 3 CSE-7 Categories

			CSE7 Categories			Total
			Low	Moderate	High	
Genderof Participants	Male	Count	2	88	25	115
		% within Genderof Participants	1.7%	76.5%	21.7%	100.0 %
	Female	Count	4	52	29	85
		% within Genderof Participants	4.7%	61.2%	34.1%	100.0 %
Total		Count	6	140	54	200
		% within Genderof Participants	3.0%	70.0%	27.0%	100.0 %

Table 3, CSE-7 Categories

In figure 4, the male participant group, 2.6% reported very low resilience, 65.8% reported moderate resilience, and 31.6% reported high resilience. Among the female participants, 4.9% reported very low resilience, 53.7% reported moderate resilience, and 41.5% reported high resilience. Across the entire sample, 3.6% reported very low resilience, 60.7% reported moderate resilience, and 35.7% reported high resilience.

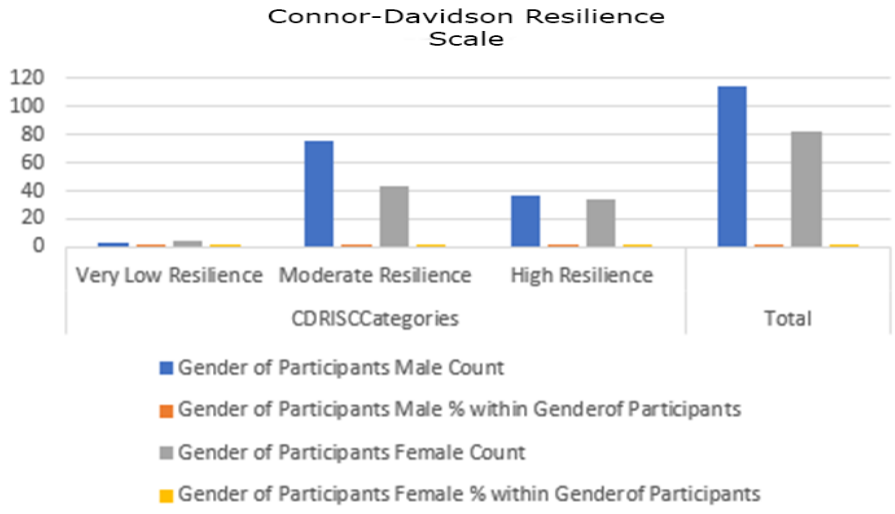

Figure 4, CD-RISC

In figure 5, among male participants, 77.4% reported moderate burn-specific health, while 22.6% reported high burn-specific health. Among female participants, 67.9% reported moderate burn-specific health, and 32.1% reported high burn-specific health. In the overall sample, 73.4% reported moderate burn-specific health, and 26.6% reported high burn-specific health.

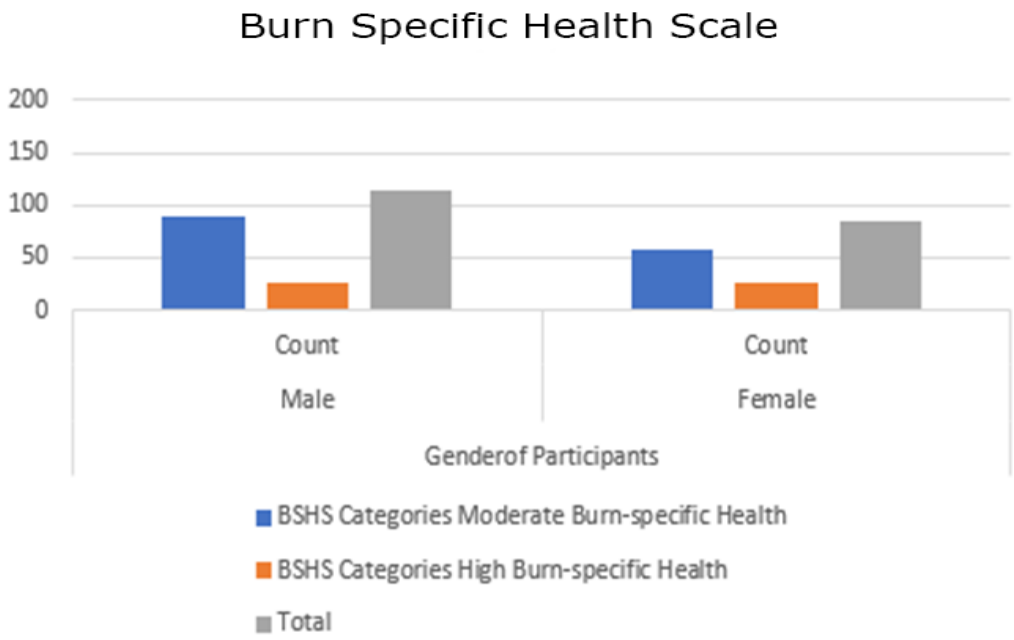

Figure 5, BSHS Categories

Among male participants, in figure 6, 11.3% reported excruciating pain, while 88.7% reported moderate pain. Among female participants, 18.8% reported excruciating pain, and 81.2% reported moderate pain. In the overall sample, 14.5% reported excruciating pain, and 85.5% reported moderate pain.

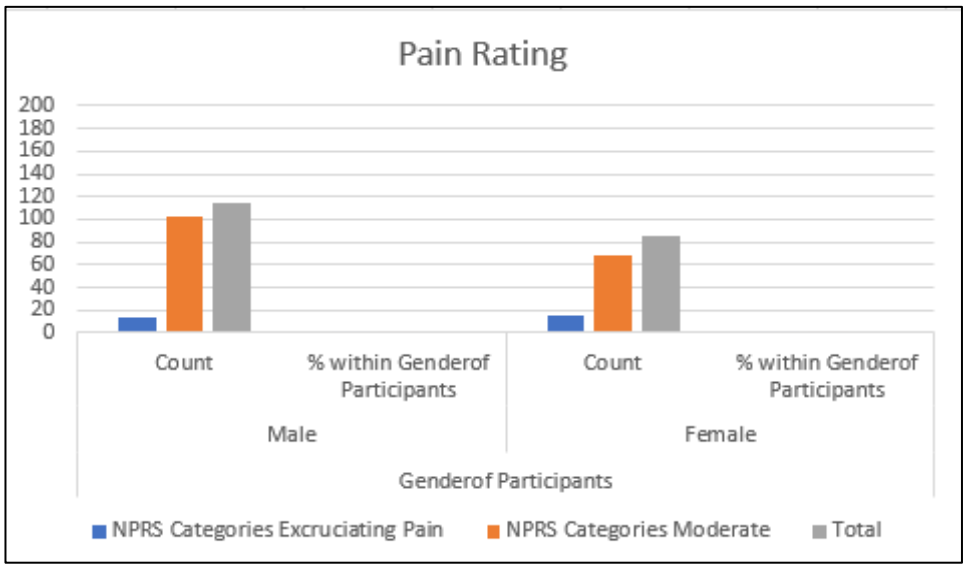

Figure 6, Pain Rating Scale

Extensively in the total (n=200) participants, the relationship between Physical Therapy and Psychological Outcomes in Burn Patients is directly and positively linked and males (n=115) are more inclined to better progressive recovery than females (n=85). The results revealed the pivotal role of physical therapy in the rehabilitation and overall well-being of burn patients. The participants undergoing coping self-efficacy show 3.0% (6) mild, 70.0% (n=140) moderate, and 27.0% (n=54) severe. While considering the acceptance of disability shows 9.0% (n=18) mild, 84.5% (n=169) moderate and 6.5% (n=13) severe. While considering the resilience show, 73.4% (n=146) were moderate and 26.6% (n=53) severe. Notably, most surveyed participants reported moderate to high coping self-efficacy and resilience, indicating their capacity to cope with challenges and adapt to adversity effectively. The results also highlighted the prevalence of moderate pain and the substantial impact of psychological inflexibility on burn patients. It was evident that individuals who exhibited higher resilience, an accepting attitude toward their disabilities, and a positive outlook on life experienced greater psychological contentment and faster recovery.

Discussion:

This study explored the relationship between physical therapy and psychological outcomes among burn patients, focusing on the mediating roles of coping self-efficacy, acceptance of disability, and resilience. The findings revealed that 27% of participants demonstrated high coping self-efficacy, 70% moderate levels, and only 3% reported low coping self-efficacy. These results align with Chester et al. (2019), who found that burn survivors with higher coping self-efficacy reported significantly better quality of life and rehabilitation outcomes. Bandura's theory of self-efficacy (1997) supports this, suggesting that individuals with stronger beliefs in their coping abilities are more likely to persevere and adapt during recovery.

Regarding acceptance of disability, 84.5% of participants exhibited moderate acceptance, 9% reported high acceptance, and 6.5% demonstrated low acceptance levels. This is comparable to Wiechman Askay et al. (2009), who observed that greater acceptance correlates with improved psychological well-being

and reduced levels of pain in burn survivors. Our findings reinforce the importance of addressing psychological adjustment during physical rehabilitation to enhance overall recovery outcomes.

Resilience levels varied among participants, with 35.7% exhibiting high resilience, 60.7% moderate resilience, and 3.6% reporting very low resilience. Interestingly, a higher proportion of females (41.5%) showed high resilience compared to males (31.6%), which contrasts with Akhtar Bibi et al. (2018), who noted lower resilience in female burn survivors. This discrepancy may reflect differences in psychosocial support and coping mechanisms between populations.

Pain levels also emerged as a critical factor, with 85.5% of participants experiencing moderate pain and 14.5% reporting excruciating pain. These results are consistent with Van Loey et al. (2018), who documented pain as a significant contributor to post-traumatic stress symptoms in burn patients. Addressing pain effectively within physical therapy programs is essential, as uncontrolled pain can impede both physical and psychological recovery.

In terms of burn-specific health scores, 26.6% of participants achieved high health scores, while 73.4% remained in the moderate range. This distribution underscores the effectiveness of physical therapy in improving quality of life but also highlights the need for additional targeted interventions to elevate those in the moderate category. Similar findings were reported by Anzarut et al. (2013), who emphasized the benefits of comprehensive rehabilitation in achieving better long-term outcomes.

Additionally, the relationship between resilience and psychological distress supports the findings of Zaman et al. (2023), who reported that higher resilience levels were inversely related to symptoms of anxiety and depression among burn patients. Our results confirm this association, suggesting that resilience-building strategies should be integrated into burn rehabilitation programs.

Overall, the study underscores the pivotal role of physical therapy not only in physical recovery but also in enhancing psychological outcomes. The findings support Kornhaber et al. (2016), who argued that resilience, self-efficacy, and acceptance of disability are dynamic processes that can be strengthened through targeted interventions. Incorporating psychological support within physical therapy may thus provide a holistic approach to burn rehabilitation, improving both functional outcomes and quality of life.

Conclusion:

This study highlights the major role of physical therapy in improving the psychological well-being of patients with burn injuries. The findings support close associations between physical therapy intervention and psychological factors, particularly coping self-efficacy, acceptance of disability, and resilience. The patients with high levels of these psychological factors were found to have greater rehabilitation participation and a better quality of life.

The results highlight the urgent necessity for an interdisciplinary approach to managing burn injury that includes combining physical rehabilitation with targeted psychological intervention to address both functional and emotional challenges. Through the focus on supporting self-efficacy, resilience development, and acceptance promotion, health care providers can maximize recovery pathways and enable integrated rehabilitation of burn survivors.

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