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Original Article

Perception of Caregiver on Physical Therapy Management for Pediatric Burn Patients

Aleena Ishfaq[1], Samreen Sadiq[2]*, Shazia Rizwan[3], Hafiz Muhammad Asim[4], Sana Imdad[5]

[1]DPT Student, Department of Physical Therapy, Lahore University of Biological & Applied Sciences Lahore, Pakistan.
[2]Associate Professor, Department of Physical Therapy, Lahore University of Biological & Applied Sciences Lahore Pakistan.
[3]Associate Professor, Department of Paediatric Medicine, Ghurki Trust Hospital Lahore, Pakistan.
[4]Chairman, Department of Physical Therapy, Lahore University of Biological & Applied Sciences Lahore Pakistan.
[5]Plastic Surgery Ward, Lahore General Hospital Lahore, Pakistan.
Corresponding Author: Samreen Sadiq, Associate Professor; Email: samreen.sadiq@lmdc.edu.pk

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ABSTRACT

Background: Burn injuries are among the most severe types of child injuries, leading to significant functional, social, and psychological disabilities. Physiotherapy plays a crucial role in the rehabilitation of pediatric burn patients, and caregivers are essential in facilitating the treatment process. Understanding caregivers' perceptions and adherence to physiotherapy treatment can inform better care strategies.

Objective: This study aimed to assess the perceptions of caregivers towards physiotherapy treatment for pediatric burn patients and to evaluate adherence to prescribed exercise regimens.

Methods: A descriptive cross-sectional study was conducted from June 2023 to December 2023. Data were collected from caregivers at two public hospitals and one private rehabilitation center using a non-probability convenience sampling method. The sample included 53 caregivers of children aged 1-5 years with burn injuries covering more than 20% of their total body surface area and who had been undergoing physiotherapy for 3-4 weeks. Exclusion criteria were caregivers not actively involved in daily care, those unable to communicate in English or Urdu, and patients without a caregiver. Data were collected using a semi-structured questionnaire based on the Measure of Processes of Care (MPOC). The questionnaire was validated and had a Cronbach's alpha of 0.703. Data were analyzed using SPSS version 25, with descriptive statistics presented as frequencies, percentages, means, and standard deviations.

Results: Among the caregivers, 64.2% were mothers, 15.1% were fathers, and 20.8% were other relatives. A total of 81.1% of caregivers agreed and 18.9% strongly agreed that the physiotherapist encouraged active participation in decision-making. Comfort in discussing concerns was reported by 69.3% agreeing and 18.9% strongly agreeing. Emotional and social aspects were adequately addressed according to 39.6% of caregivers, with 41.5% neutral and 15.5% disagreeing. Clear communication of treatment plans was reported by 75.5% agreeing and 24.5% neutral. Adherence to exercise routines varied, with 47.2% often, 32.1% always, and 20.8% sometimes helping with exercises. However, 39.6% reported that the child always refused to do exercises, and 64.2% noted the child always complained of pain during therapy.

Conclusion: The study concluded that caregivers generally have a positive perception of physiotherapy for pediatric burn patients and actively participate in their care. Challenges such as pain during exercises and time constraints highlight the need for enhanced support and communication to improve adherence and outcomes.

Keywords: Pediatric burns, physiotherapy, caregiver perceptions, exercise adherence, burn rehabilitation, family-centered care, pediatric physiotherapy, burn injury management, child rehabilitation, caregiver involvement.

INTRODUCTION

Burns are among the most severe types of child injuries, leading to significant functional, social, and psychological disabilities (1). A burn refers to any damage to the skin or other organic tissue caused primarily by heat, radiation, radioactivity, electricity, friction, smoke, or contact with flammable materials (2). In pediatric rehabilitation, achieving agreement between medical professionals and caregivers regarding treatment plans is crucial, as caregivers play a vital role in the daily healthcare recovery of children's injuries. A

Journal of Health and Rehabilitation Research 2791-156X JHRR

caregiver, residing in the child's home, takes care of daily needs and serves as a parental figure, which can include family members like grandparents and older siblings or be limited to biological parents. Some studies define caregivers as those who assist a relative with chronic illness or disability (3).

Physiotherapy is an essential intervention in the care of burns, with physical therapists selecting, prescribing, and executing exercise regimens based on examination findings, diagnosis, and prognosis to promote, maintain, or restore health through patient education, physical intervention, rehabilitation, disease prevention, and health promotion. Globally, nearly eight million new burn cases were reported in 2019, with an equal ratio of males and females affected. The most reported age group was 10-19 years, and 111,292 deaths were documented, primarily among children aged 1-4 years. In Pakistan, the incidence of burns was recorded at 35.50 overall (4). Nearly two-thirds of these burns occur in African and South-East Asia regions, predominantly in low- and middle-income nations (5). In Karachi, Pakistan, in 2010, there were 3.5 burn injuries per 100 person-years of exposure (6). Scalds are the most common type of burn in children, followed by fire-related burns (7). Sixty percent of burns and scalds in children result from hot baths, spilling hot drinks, chewing electrical cables, while fire causes the remaining injuries, with girls suffering twice as many injuries as boys (8). Burn injuries impose significant financial stress on patients, families, and society, often requiring multiple operations and extended hospital stays. Even after recovery, patients may endure mental and physical scars (9).

Children who survive burns often face bullying, stigma, body image issues, and social difficulties. Coping behaviors can provide social support and a positive self-concept for children with various illnesses, but their role in children with burns has not been extensively studied (1). Research on pediatric burns has shifted focus from acute treatment to functional rehabilitation and post-burn health-related quality of life (11). The cooperation of caregivers is crucial for achieving better prognosis, as they explain, convince, and encourage burnt children to cooperate during potentially unpleasant or painful physiotherapy sessions. Caregivers help carry out ward exercise programs, maintain progress made during regular physiotherapy sessions, and continue care when the physiotherapist is not around (12). Family caregivers play a key role in connecting patients with the healthcare system, facilitating or hindering timely access to care. Engaging family caregivers in care decisions and integrating them into the care team is essential for achieving patient-centered care and ensuring continuity (13). When caregivers understand the benefits of physical therapy for their child's treatment, they are more likely to have a positive attitude towards the exercise plan, leading to better outcomes compared to those who are not well-informed. Caregivers who feel excluded from the treatment process tend to be dissatisfied, as they care deeply about their child's recovery. Children with burns have a greater chance of meeting goals and enhancing motor function when caregivers participate in the intervention program (14). Home exercise plans, carried out without a physiotherapist, are an important part of ongoing care for burn patients, maintaining the therapeutic advantages of regular physical therapy sessions, and adherence is crucial (10).

There is a noticeable paucity of research focusing on caregivers' perceptions regarding physical therapy treatment for pediatric burns in Pakistan. Caregivers play a vital role in the recovery and rehabilitation process of children with burns, serving as the primary support system during the treatment journey. Understanding their perceptions and perspectives is crucial for healthcare professionals to design client-centered and effective physical therapy interventions that can be easily incorporated into the daily lives of children and their families.

In 2022, Mohamed Muftah Alzaabi and Hegazy Fatima conducted a cross-sectional study on caregivers' perspectives on physiotherapy treatment for pediatric burns in the United Arab Emirates. The study included fifty-five caregivers and utilized a self-administered questionnaire to explore caregivers' experiences, knowledge, burden, attitude, compliance, and satisfaction with physiotherapy rehabilitation. The findings revealed that caregivers had a favorable attitude towards physiotherapy management, were well-informed about its benefits, and expressed high levels of satisfaction with the services provided (15). Another global study by Yakupu et al. in 2022 analyzed the epidemiological characteristics and trends of burns using data from the Global Burden of Disease 2019. This study reported 8.4 million new burn cases in 2019, with similar gender distribution and a peak in the 10-19 age group. Pakistan had the lowest age-standardized incidence rate of burns (35.50), with a prediction of continued decline in age-standardized rates of burn incidence, disability-adjusted life years, and deaths globally, despite an increase in the number of new burn cases. The study aimed to inform better prevention and treatment strategies for burn patients, reduce medical costs, and improve quality of life (4).

In 2016, Chiwaridzo et al. conducted a cross-sectional survey in Harare, Zimbabwe, exploring caregivers' perspectives on physiotherapy treatments for hospitalized children with burns. Conducted at Parienyatwa Hospital and Harare Central Hospital, the study included caregivers of children under twelve years with burns. It analyzed thirty-one questionnaires with complete data, revealing that caregivers had mostly positive views on physiotherapy and agreed on its importance for burn management and preventing wound complications, although adherence to ward exercise programs was an issue (16). Erin A. Brown's 2019 behavioral study investigated the impact of parental acute distress on young children's pain during burn wound dressing. Including eighty-seven

Journal of Health and Rehabilitation Research 2791-156X JHRR

parents of children aged one to six, the study found that parental general depression symptoms predicted less child coping, mediated through less parental coping-promoting behavior, and increased procedural pain in children. The study concluded that increased acute physiological support for parents might reduce young children's procedural pain-related distress and improve cooperation during healthcare procedures (17).

In January 2018, Erin A. Brown and Alexander De Young published a review on parents' influence on pediatric procedural distress and recovery, summarizing how parents' psychological distress and parenting behavior are risk factors for distressing pediatric medical procedures and their long-term effects. The paper also presented a new model to explain the parent–child distress relationship during medical procedures and suggested current assessment tools and parenting behavior interventions to reduce pediatric procedural distress (18). A 2018 study by Amy F. Bailes, Mary Gannotti, and Danielle M. Bellows examined caregivers' knowledge and preferences for gross motor function information in cerebral palsy. The study found that only 45% of caregivers knew their child's gross motor function level and 31% knew about their child's motor development compared to other children of similar age and level. Most caregivers preferred to discuss motor development with a therapist. The study concluded that caregivers of children with cerebral palsy might need information on their child's gross motor function level and had different experiences and preferences for this information (19).

MATERIAL AND METHODS

The descriptive cross-sectional study was conducted over six months following the approval of the topic (June 2023 to December 2023). Data were collected from two public hospitals and one private rehabilitation center. A non-probability convenience sampling technique was applied, and the sample size was calculated using the census method (20). All participants fulfilling the inclusion criteria and reporting within the timeframe (n=53) were included in the study. Caregivers of children aged 1-5 years (21), with a total surface area of burn greater than 20% (15), and those with 3-4 weeks of experience in post-burn physiotherapy management (15) were included. Exclusion criteria comprised caregivers not actively involved in the daily care of the pediatric burn patient, those unable to understand and communicate effectively in English or Urdu, and patients arriving at the rehabilitation center without a caregiver.

To achieve the study's goal, a semi-structured questionnaire was developed. The Measure of Processes of Care (MPOC) questionnaire, originally developed in Canada to evaluate caregivers' self-reported perceptions of the family-centered behavior of rehabilitation service providers, served as the basis for part of the questionnaire (22). The questionnaire was developed in both Urdu and English. It was validated and approved by the Physiotherapy Department at Lahore College of Physical Therapy and Ghurki Trust and Teaching Hospital, with input from seven panelists averaging 8.2 years of experience. Content validation was performed using a four-point scale, where experts rated each survey question on relevance, clarity, simplicity, and ambiguity. Each rating point was further divided into four categories: Not Relevant, Item Needs Some Revision, Relevant But Needs Minor Revision, and Very Relevant. For each question, the item content validity index (I-CVI) was calculated as the proportion of experts rating the item as 3 or 4, with a threshold of 0.83 or higher considered valid. Items scoring below this threshold were modified based on expert advice (23). After modification, 17 questions were finalized from an initial 22. The reliability of the questionnaire was confirmed by a Cronbach's alpha value of 0.703 for the closed-ended items (24). The questionnaire was translated into Urdu and then retranslated into English to ensure validity.

The questionnaire comprised two sections. The first section, completed by the researcher, gathered sociodemographic information about the child and caregiver, including the child's age, mode of injury, caregiver's gender, age category, place of residence, marital status, educational status, and relationship with the child. The second section assessed the physiotherapist's attitude, the caregiver's knowledge of the treatment, the caregiver's involvement in the treatment, and the caregiver's perception and satisfaction with physiotherapy for pediatric burn patients. It also included questions on adherence to the rehabilitation plan, ending with an open-ended question soliciting suggestions for improving the physiotherapy experience. Interpretation of perception scores was categorized as positive (1-20), neutral (21-30), and negative (31-50). Adherence scores were categorized as high (5-14), moderate (15-19), and low (20-25).

Data collection involved self-administered questionnaires distributed to caregivers of pediatric burn patients advised to undergo post-burn physiotherapy. Upon providing consent, participants filled out the questionnaire in the clinic's rehabilitation area. Caregivers were also included via an internet-based survey, with contact details obtained from the medical records department. Caregivers expressing willingness to participate were included in the study. Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Continuous variables were presented as mean and standard deviation, while categorical variables were presented as frequency and percentage. Data representation included graphs and charts.

Journal of Health and Rehabilitation Research 2791-156X JHRR

RESULTS

Table 1: Descriptive Statistics of Caregiver Relationship with Child

Relationship	Frequency	Percentage
Mother	34	64.2%
Father	8	15.1%
Other	11	20.8%

Table 2: Descriptive Statistics of Perception of Caregiver

Perception Statement	Response	Frequency	Percentage
My child's physiotherapist encourages me to actively participate in decision-making regarding my child's care	Strongly Agree	10	18.9%
	Agree	43	81.1%
I feel comfortable discussing my concerns and preferences about my child's treatment plan with the physiotherapist	Strongly Agree	10	18.9%
	Agree	37	69.3%
	Neutral	6	11.3%
The physiotherapist addresses all aspects of my child's needs, including emotional and social well-being, not only physical	Strongly Agree	2	3.8%
	Agree	21	39.6%
	Neutral	22	41.5%
	Disagree	8	15.5%
The physiotherapist provides clear and understandable information about my child's condition	Strongly Agree	7	13.2%
	Agree	41	77.4%
	Neutral	5	9.4%
The physiotherapist discusses the potential risks and benefits of intervention options for my child	Strongly Agree	7	13.2%
	Agree	44	83.0%
	Neutral	2	3.8%
The physiotherapist explains the details of my child's treatment plan clearly	Agree	40	75.5%
	Neutral	13	24.5%
The physiotherapist addresses all of my questions and concerns about my child's care	Strongly Agree	2	3.8%
	Agree	48	90.6%
	Neutral	3	5.7%
I receive timely updates from the physiotherapist regarding my child's progress	Agree	14	26.4%
	Neutral	25	47.2%
	Disagree	14	26.4%
The physiotherapist efficiently manages my child's treatment and provides individualized services	Strongly Agree	2	3.8%
	Agree	15	28.3%
	Neutral	25	47.2%
	Disagree	7	13.2%
	Strongly Disagree	4	7.5%
I am involved in care planning and decision-making, including transition planning if applicable	Agree	39	73.6%
	Neutral	14	26.4%

Table 3: Descriptive Statistics of Adherence to Treatment

Adherence Question	Response	Frequency	Percentage
How often do you help your child with their physical therapy exercises?	Sometimes	11	20.8%
	Often	25	47.2%
	Always	17	32.1%
How often does your child refuse to do their physical therapy exercises?	Never	5	9.4%
	Sometimes	11	20.8%

Journal of Health and Rehabilitation Research 2791-156X JHRR

Adherence Question	Response	Frequency	Percentage
	Often	16	30.2%
	Always	21	39.6%
How often do you have difficulty finding time to help your child with their physical therapy exercises?	Never	1	1.9%
	Rarely	20	37.7%
	Sometimes	15	28.3%
	Often	8	15.1%
	Always	9	17.0%
How often does your child complain of pain during physical therapy?	Rarely	4	7.5%
	Sometimes	4	7.5%
	Often	11	20.8%
	Always	34	64.2%
How often does your child get frustrated during their physical therapy exercises?	Rarely	2	3.8%
	Sometimes	17	32.1%
	Often	24	45.3%
	Always	10	18.9%
What do you think is the reason for not following the prescribed exercise plan?	Child is not cooperative	37	69.8%
	Child cries during exercise	12	22.6%
	Lack of time	1	1.9%
	Other	3	5.7%

The study explored the relationship between caregivers and their perception of physiotherapy management for pediatric burn patients. The majority of caregivers were mothers, comprising 64.2% of the sample, followed by fathers at 15.1%, and other caregivers, including grandparents and siblings, at 20.8% (Table 1). This distribution underscores the significant role mothers play in the caregiving process for pediatric burn patients.

Caregivers reported their perceptions of the physiotherapy care their children received. An overwhelming 81.1% of caregivers agreed, and 18.9% strongly agreed that the physiotherapist encouraged their active participation in decision-making regarding their child's care (Table 2). Additionally, 69.3% of caregivers felt comfortable discussing their concerns and preferences about the treatment plan with the physiotherapist, with 18.9% strongly agreeing and 11.3% remaining neutral (Table 2). This highlights the importance of clear communication and collaborative decision-making in pediatric burn care.

The assessment of the physiotherapist's approach to addressing all aspects of the child's needs, including emotional and social well-being, showed more variability. While 39.6% of caregivers agreed that these needs were addressed, a substantial 41.5% were neutral, and 15.5% disagreed. Only 3.8% strongly agreed, indicating room for improvement in holistic care (Table 2).

In terms of the clarity of information provided, 77.4% of caregivers agreed that the physiotherapist provided clear and understandable information about the child's condition, and 13.2% strongly agreed. A smaller proportion, 9.4%, remained neutral (Table 2). When discussing the potential risks and benefits of intervention options, 83.0% of caregivers agreed that this was adequately covered, with 13.2% strongly agreeing and 3.8% neutral (Table 2).

The clarity of the treatment plan was acknowledged by 75.5% of caregivers who agreed that the physiotherapist explained it clearly, though 24.5% were neutral, indicating a need for further clarity in communication (Table 2). Addressing questions and concerns was another strong area, with 90.6% of caregivers agreeing and 3.8% strongly agreeing that the physiotherapist addressed all their queries (Table 2).

Timely updates on the child's progress were less consistently reported, with 47.2% of caregivers being neutral, 26.4% agreeing, and 26.4% disagreeing (Table 2). This suggests that communication regarding progress updates could be improved. The management of individualized services also showed mixed responses, with 28.3% agreeing and 47.2% remaining neutral, while 13.2% disagreed and 7.5% strongly disagreed (Table 2).

Regarding adherence to the treatment plan, 47.2% of caregivers often helped their child with physical therapy exercises, 32.1% always did, and 20.8% sometimes assisted (Table 3). However, challenges were noted as 39.6% reported that their child always

Journal of Health and Rehabilitation Research 2791-156X JHRR

refused to do the exercises, 30.2% often refused, and 20.8% sometimes refused (Table 3). Finding time to assist with exercises was difficult for some caregivers, with 37.7% rarely having difficulty, but 28.3% sometimes and 17.0% always faced challenges (Table 3). Pain during physical therapy was a common issue, with 64.2% of children always complaining of pain, 20.8% often, and 7.5% sometimes experiencing pain (Table 3). Frustration during exercises was also reported, with 45.3% of children often getting frustrated, 32.1% sometimes, and 18.9% always feeling frustrated (Table 3). The primary reasons for not following the prescribed exercise plan included non-cooperation from the child (69.8%), crying during exercises (22.6%), lack of time (1.9%), and other reasons (5.7%) (Table 3).

These results highlight the critical role of caregivers in the rehabilitation process and the need for tailored support to address the challenges they face in adhering to physiotherapy regimens for their children. Enhanced communication and comprehensive support systems could significantly improve the effectiveness of pediatric burn rehabilitation programs.

DISCUSSION

The primary objective of this study was to understand the perception of caregivers towards physiotherapy treatment for pediatric burns and determine the adherence to prescribed exercise regimens. The findings provided valuable insights into the dynamics of pediatric burn care, encompassing diverse demographic factors that influence both caregiver perception and adherence to treatment protocols. The data revealed that caregivers exhibited a solid level of comprehension and recognition of the significance of physiotherapy for children with burn injuries. Notably, the study found that women significantly outnumbered men among caregivers, with biological mothers predominantly assuming the caregiving role during hospitalization and after discharge. This aligns with sociocultural norms in Pakistan, where mothers traditionally take on caregiving responsibilities while fathers typically provide financial support. These findings are consistent with similar trends identified in other countries (10).

In contrast to other research, this study found that not only biological mothers but also other relatives, such as aunts and grandmothers, were actively involved as caregivers, accounting for approximately one-third of the participants. This finding contradicts previous studies where such caregivers were present in much smaller numbers (15). The gender distribution among participants showed a higher representation of female caregivers compared to male caregivers, which is consistent with existing literature. This demographic factor can influence communication styles, preferences, and expectations, potentially affecting how caregivers perceive and engage with physiotherapy treatment.

The results of this study were consistent with findings from studies conducted in Zimbabwe and India, which similarly described the socio-demographic characteristics of caregivers (16)(25). Participants were relatively young, with the majority falling within the age range of 30 to 39 years. This demographic information is important as it may impact the level of experience, knowledge, and comfort with physiotherapy. The predominant form of burn injury observed was scalding caused by hot water, mirroring prevalent trends in existing literature on burn injuries (26)(27). Pediatric patients in this study were between 1 and 5 years old, whereas previous studies included children up to the age of 12 or 13 (15)(16). The age of the child can significantly impact their ability to engage in and benefit from physiotherapy, with younger children requiring different approaches compared to older ones.

Marital and employment statuses offered additional insights into the caregivers' circumstances, with a significant proportion being married and a majority employed. These factors influence their availability in terms of time and resources for actively participating in their child's physiotherapy treatment, consistent with previous studies (15). Furthermore, the educational status of caregivers was diverse, ranging from limited literacy to university-level education. This diversity influences the degree of health literacy and understanding of the treatment process. Despite a minority of illiterate participants, their perception of the importance of physiotherapy was positive, contrasting with studies that included only educated participants (15)(19).

In a prior study conducted in Australia, caregivers expressed distress, guilt, and blame, along with a need for information and support. In contrast, the present study revealed that caregivers held a positive attitude towards physiotherapy treatment. A significant majority felt encouraged to actively participate in decision-making regarding their child's care, indicating a collaborative approach between caregivers and physiotherapists. Caregivers also expressed comfort discussing their concerns and preferences about their child's treatment plan, reflecting a high level of satisfaction with physiotherapy services. They praised the professional conduct of physiotherapists and staff, expressing confidence in their child's well-being under their care. The majority noted that physiotherapists took time to explain treatment procedures and justify chosen techniques. This contrasts with a South African study where half of the caregivers were dissatisfied with pain management, the fit of prescribed pressure garments, and psychosocial outcomes (28).

Caregivers of children with burns face the challenge of transitioning from hospital to home, where they must adhere to care plans, including exercise routines. While many caregivers successfully followed prescribed exercise sessions, others struggled due to the child's unwillingness to cooperate and discomfort during exercises. This contrasts with a UK study where emotional and psychological impacts of burns and other family responsibilities hindered exercise adherence (11). Nearly half of the participants in this study

Journal of Health and Rehabilitation Research 2791-156X JHRR

struggled with adherence due to the emotional impact of the burn incident, highlighting caregivers' understanding of physiotherapy's importance. Another study found that most caregivers failed to complete exercise programs due to the child's discomfort during physiotherapy, attributed to treatments like passive range of motion and stretching exercises required in post-burn regimens (30).

Despite the positive perceptions of physiotherapy, areas for improvement included addressing emotional and social well-being alongside physical needs. Enhancing communication about treatment plans and providing timely updates could further support caregivers. The study's strengths included a comprehensive approach to understanding caregiver perceptions and adherence in a culturally specific context. However, limitations included the non-probability sampling method and the potential for self-report bias in questionnaire responses. Recommendations for future research include exploring interventions to support caregivers in managing exercise adherence and addressing the emotional and psychological needs of both caregivers and children. This study contributes to a better understanding of the critical role caregivers play in pediatric burn rehabilitation and the need for tailored support to improve outcomes.

CONCLUSION

The study concluded that caregivers of pediatric burn patients generally hold positive perceptions of physiotherapy and actively participate in their child's care, though challenges such as pain during exercises and difficulty finding time were prevalent. These findings underscore the importance of supporting caregivers through enhanced communication, comprehensive support systems, and interventions addressing both physical and emotional needs. The implications for human healthcare are significant, suggesting that improving caregiver engagement and addressing barriers to adherence can enhance the effectiveness of pediatric burn rehabilitation programs and overall patient outcomes.

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