

# Awareness Of Physical Therapy's Role in Burn Rehabilitation: A Cross-Sectional Study Among Plastic Surgeons

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## ABSTRACT

**Background of the study:** Burn Rehabilitation Therapist Competency Tool (BRTCT) was created in 2011. The American Rehabilitation Committee of Burn Association has advanced the BRTC tool by adding information about helping burn patients in extended recovery and outpatient treatment to ensure each phase of burn patient care is covered in therapy. Thus, the aim is to explore plastic surgeons' awareness of the role of physical therapy in burn units.

**Methodology:** In this descriptive cross-sectional study of non-random convenience sampling, about 35 Plastic Surgeons were included; 20 were males and 15 were females. The survey was conducted through an online Google form. Demographic data and variables were analyzed using SPSS (version 2021) to collect descriptive statistics to find frequencies and percentages of data.

**Result:** Overall, 35 participants, 54.3% of whom were male and 45.7% of whom were female, completed the survey. Most participants know physical therapy's role in the orthopaedic specialist branch of health (71.4%), and 71.4% were aware of physical therapy's role in hand burn injuries. 62.9% are aware of exercise therapy for joint mobility and hydrotherapy, 71.4% are aware of exercises and positioning in burn rehabilitation, and 40% are aware of electrotherapy in burn rehabilitation.

**Conclusion:** Satisfactory awareness has been acknowledged, awareness of the modalities used in burn care, encompassing the continuous advancement of devices and techniques.

**Keywords:** Burns, burn care, plastic surgery, rehabilitation, exercise, burn centres, physical therapy.

## INTRODUCTION

In 2011 the Burn Rehabilitation Therapist Competency Tool (BRTCT) was created. This updated version of the tool is now known as the (BRTCT-2)<sup>1</sup>. Physiotherapy is a rehabilitation science component of the primary health care system that improves an individual's ability to maintain a healthy and active lifestyle. Physical therapy plays a vital role in burn management<sup>2</sup>. Physiotherapists work with a team of healthcare professionals to help patients and their caregivers, preventing scars, reducing thick scars, and helping them regain their ability to move

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<sup>3</sup>. In hand burn rehab, early referral shows successful regaining functional activities with anti-deformity position and maintaining it by splinting, one of the most essential parts to attain normal hand movement<sup>4</sup>. Physical and occupational therapy also helps to recover the lower limbs and sensory and motor functions, ultimately improving burn patients' survival rate<sup>5</sup>. Chest physiotherapy improves the breathing rate in burn patients<sup>6</sup>. The role of physiotherapy in burn rehab shows their specialities in burn centres and proves that plastic surgeons have academic knowledge of physiotherapy in their field<sup>7</sup>. The World Health Organization (WHO) estimated that there are approximately 265,000 death reports annually due to burn injuries<sup>8</sup>. The majority of these advanced treatments and physical therapies have not been developed in low- and middle-income countries, although 90% of burn-related conditions occur in LMICs<sup>9</sup>. About 86.72% of Plastic surgeons in Egypt are aware of burn modalities, and about (93%) are aware of the use of orthosis by Physiotherapy in post-burn conditions and Exercises in burn cases, especially in hand burn rehab<sup>10</sup>. Because of difficulties in accessing timely medical care, young children who suffer from burns in less developed countries are unable to receive early intervention that could prevent long-term disability<sup>11</sup>. The awareness of burn rehab is lacking in the plastic surgery domain; the cause could be a lack of awareness about Physiotherapy other than exercise<sup>12</sup>. Many reasons can make burn injuries worse for children who live far away from hospitals, use unsafe stoves at home, and have limited access to healthcare practitioners who can treat burns properly<sup>13</sup>. When it comes to patients with burns in the ICU, there has not been much research to find out what specific obstacles can be changed or improved to help them get moving<sup>14</sup>. Burn injuries can also result in damage to other organs and tissues including breathing in combustion products, smoke, or chemicals, which can cause damage to the lungs and respiratory tract<sup>15</sup>. If a significant problem arises after the burn, including physiotherapy as part of the recovery process becomes essential. Therefore, physiotherapy is helpful right from the start of the burn injury until the rehabilitation phase<sup>16</sup>. By combining nutrition, physiotherapy, and other fields in a multidisciplinary approach, burn recovery can be enhanced in various ways<sup>17</sup>. A group of experts with different skills, such as a doctor, a nurse, a nutritionist, and a physiotherapist, work together to treat burn patients with specific medical conditions and the outcomes of their collaboration are significant. (18) Physical therapy rehabilitates each burn patient to support the healthcare professionals in providing front-line care and creating a well-organized system<sup>19</sup>. Rehabilitation therapists evaluate and plan the rehabilitation process for patients and set the goals for short-term and long-term improvements<sup>20</sup>. Proper positioning of the arms and legs was critical to prevent and minimize the development of muscle contractures<sup>21</sup>. Extracorporeal shock wave therapy represents a non-invasive treatment method to support a variety of conditions in plastic surgery<sup>22</sup>. If LMICs invest in better healthcare infrastructure, it could help save more lives and improve patient outcomes in places with limited resources<sup>23</sup>. Physical therapy played an essential role in managing all types of burn injuries of all age groups<sup>24</sup>. Receiving physical therapy after surgery significantly enhanced the recovery process and overall well-being<sup>25</sup>. Physical therapy prevents postoperative plastic surgery complications like hematomas, fibrosis, and oedema<sup>26</sup>. Kinseotaping helps reduce swelling by improving lymphatic flow<sup>27</sup>.

## METHODOLOGY

The study was conducted using a cross-sectional design of convenience technique, non-random sampling descriptive. The participants take part from different hospitals, Liaquat University of Medical and Health Science Hyderabad, Hashim Medical City Hospital Hyderabad, Trauma and Burn Center Hyderabad, Memon Charitable Hospital Hyderabad, Jinnah Postgraduate Medical Center Karachi and Dow University of Medical and Health Science Karachi Pakistan. The duration of the study is around three months after the acceptance of the proposal. A sample was calculated using the Raosoft Sample Size Calculator, in which response distribution was 50% with a 95% confidence interval and a 5% margin of error. A total sample of 37 plastic surgeons was recruited

from different burn units of Hyderabad, of which two still needed to fill out the Google form. Plastic surgeons who work in different hospitals and burn units include Residents, demonstrators, assistant lecturers, professors and lecturers. Male and female participants also included their completed consent forms in this study. Those plastic surgeons who were unwilling to participate and had difficulty communicating were excluded from this study— data collected by an online Google survey questionnaire. Demographic data and variables were analyzed using a descriptive method in terms of frequencies and percentages using SPSS (version 2021).

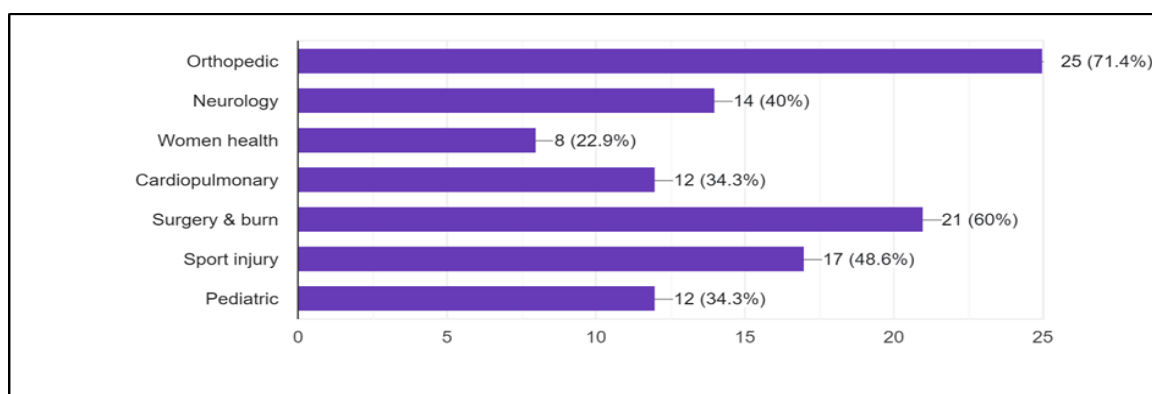
Following ethical approval from the Isra Institute of Rehabilitation Sciences departmental committee, we administered the questionnaire with a consent form, maintaining participant’s privacy and obtaining their informed consent.

### RESULTS

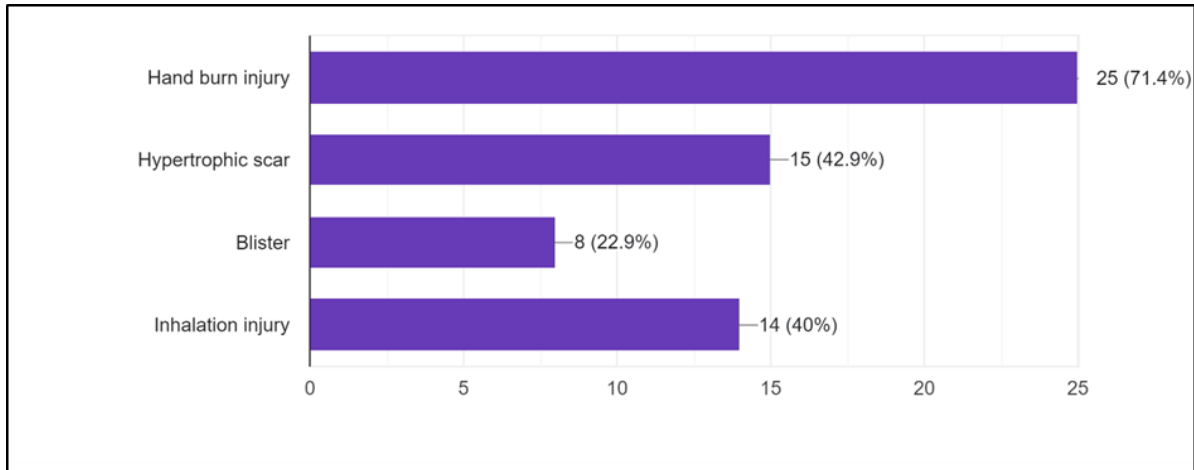
This research study concerned plastic surgeons’ awareness of physical therapy's role in burn units. By analyzing the questionnaire, there were 35 plastic surgeons, of which 15 (45.7%) were female plastic surgeons and 20 (54.3%) were male plastic surgeons, with respected their age as shown in table 1. About 71% Plastic surgeons were more aware of role of physical therapy in orthopedic, 71% were aware about hand burn injury, 60% were aware about role of physical therapy in burn as shown in figure 1. About 71.4% plastic surgeons would suggest/refer hand burn injury cases for physiotherapy as shown in figure 2. 54.3% plastic surgeons were thinking that role of physical therapy is essential in burn rehabilitation and 42.9% think there is important role of physical therapy in burn patient as shown in figure 3. Plastic surgeons have opinion that burn related complications improve with physical therapy, 60% aware about contracture, 51.4% aware of decreased muscle strength and 51.4% aware of limitation of functions can improve with physical therapy as shown in figure 4. n scar management 54% surgeons were aware that scar massage, 40% were aware about pressure therapy, 40% were aware about electrotherapy used as prevalent intervention as shown in figure 5.

Gender	Frequency	Percentage
Male	20	54.30%
Female	15	45.70%
Age	21-30 yrs old	40.00%
	30-40 yrs old	34.40%
	40-50 yrs old	22.90%
	>50 years old	2.7%

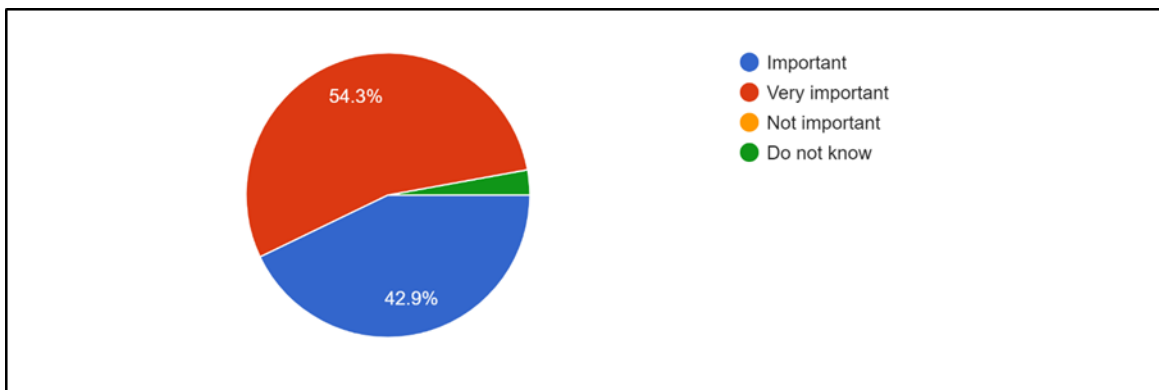
*Table 1: Frequency of Gender of Respondents and Their Age*



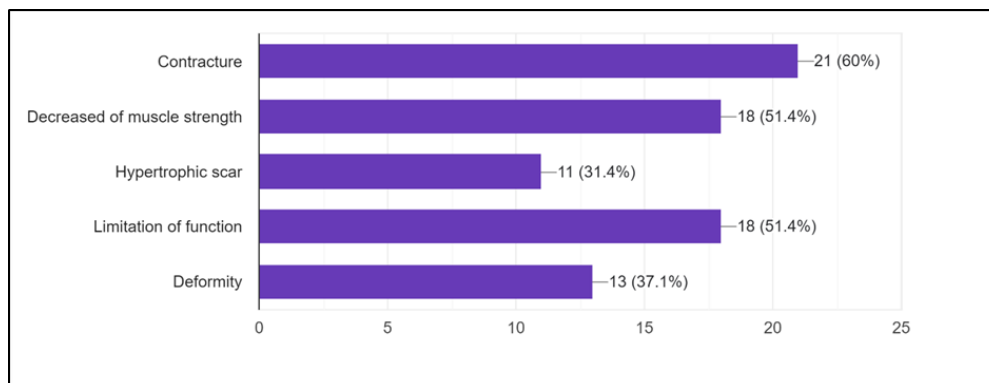
*Fig1: Plastic Surgeon's awareness about physical therapy's role in the health care system / different health science branches*



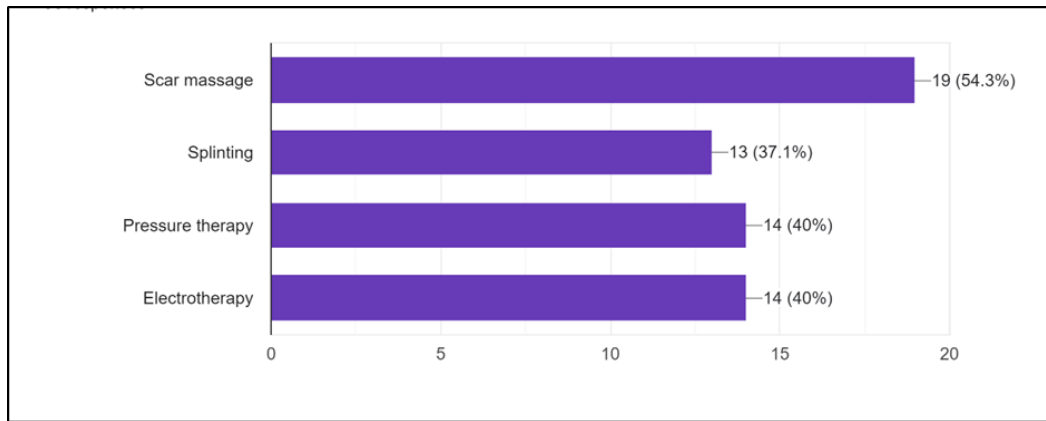
**Fig 2: Different cases suggest/referred by plastic surgeons for physiotherapy**



**Fig3: Plastic surgeons' point of view on the importance of physical therapy's role in burn**



**Fig 4: Plastic surgeon's opinion about burns-related complications improve with physical therapy**



*Fig 5: Prevalent physical therapy interventions used with scar management*

## DISCUSSION

This study investigates plastic surgeons' knowledge about the role of physiotherapy in burn rehabilitation, seeking to bridge the communication gap between plastic surgeons and physiotherapists in burn units, ultimately enhancing patient outcomes and quality of life. This study found that plastic surgeons know physical therapy specialities like orthopaedics, neurology, and surgery. Most plastic surgeons know that physical therapy plays a significant role in burn rehabilitation, particularly in reconstructing skin, managing scars, controlling swelling, and helping patients regain normal functions and daily activities with improved quality of life in the burn units. In this study, about 60% of plastic surgeons are aware of the role of physical therapy in their field; this study is supported by another study conducted by Agarwal S, 2019<sup>7</sup>, which shows that 54.9% of plastic surgeons in the south Gujarat are aware of the role of physical therapy in their field. In the case of burn injuries, it is essential to deal with certain complications like handling scars, reducing swelling (oedema control) and addressing contractures. Moreover, burns are a crucial aspect of burn rehabilitation. It is good to know that most plastic surgeons (71.4%) are aware that physiotherapy plays a vital role in burn treatment, as shown in another study by Elssherbiny O E et al.<sup>18</sup>, which focused on hand contracture and patient anti-deformity position and maintained it by splinting, which is the most critical aspect of regaining full range of motion. His studies are also supported by another research conducted by Abd El Baky et al.<sup>9</sup>, which shows that plastic surgeons showed a high level of awareness of pressure therapy (86.72%), scar massage (34%) and splinting (91.41%) because most of them apply modalities for scar management in burn cases by themselves. Plastic surgeons have limited knowledge about electrotherapy (32%) and retrograde massage (32.81%) because they must focus on applying them in the burn unit. In addition, the result demonstrated that plastic surgeons need a better understanding of physical therapy's role in managing hypertrophic scars (18.75%). Managing swelling (oedema) is an essential part of hand burn injuries. The study explored oedema management strategies like positioning and mobilization, and it revealed a notable need for more awareness regarding retrograde massage, with only (37.1%) of participants familiar with these techniques. 40%) of plastic surgeons demonstrate the knowledge gap regarding the use of manual therapy and electrotherapy in burn rehabilitation, highlighting an area for professional development and education, while some other modalities, such as hydrotherapy, a plastic surgeon is having only read about it in theory but not practically applied it as shown in a study conducted by Surghiou et al.,<sup>19</sup>. about 62.9% of plastic surgeons are aware that putting the patient in an anti-deformity position reduces the contractures, which is supported by certain studies such as Mudawarima T et al.<sup>27</sup>, which show that physiotherapy plays a vital role in creating an influential anti-deformity position in which physical therapy plays a significant role in reducing contractures by placing patients in that position which prevent deformities and using splints to hold them in place.

## CONCLUSION

This study shows satisfactory awareness among plastic surgeons about physical therapy's role in burn units. It acknowledges the modalities used in burn units, which comprehend the continuous advancement of devices and techniques. Collaboration between plastic surgeons and physical therapists facilitates a mutual understanding of their perspectives and communication.

### AUTHORS' CONTRIBUTION:

The following authors have made substantial contributions to the manuscript as under:

**Conception or Design:** Ousha Devi , Shamsa Abdul Rehman

**Acquisition, Analysis or Interpretation of Data:** Ousha Devi, Tahzeeb, Manisha Kumari, Muskan Panhwar

**Manuscript Writing & Approval:** Ousha Devi , Shamsa Abdul Rehman, Kanwal Lalwani

All authors acknowledge their accountability for all facets of the research, ensuring that any concerns regarding the accuracy or integrity of the work are duly investigated and resolved.

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**INFORMED CONSENT:** Written Informed Consent was taken from each patient.

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**ETHICS STATEMENTS:** The study was approved by the Research Committee of the Institute of Rehabilitation Sciences, Isra University (Reference No: IU/IIRS/ODL/2023/091).

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