



EXTENT OF PLASTIC SURGEON AWARENESS OF PHYSICAL THERAPY ROLE IN BURN CENTERS

Alaa Tarek Mostafa El Nawawy MScN, BScN.¹, Prof. Dr. Amal
Mohammed Abd El Baky², Dr. Ahmed Aly Mohamed Taha Darwish³, Dr.
Mohamed Bayoumi Ibrahim^{2,4}

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Abstract

Background: Physical therapy is a crucial aspect of medical disciplines all around the world, and it has expanded into many numerous specialties. One of them is burn care, and physical therapists who work in burn care always play a crucial part in patient care. Physician all around Giza and Cairo hospitals were non significantly aware of role of physiotherapy role in burn rehab.

Aim of the study: was to investigate awareness of physician about physical therapy role in burn rehab according to their level of experience in burn rehab and their working place.

Subjects and Methods: One hundred and thirty-four physicians from both sexes participated in this study. All Physicians had experience in burn rehab and had previously worked with burn cases. The awareness of physicians were studied by self-structured close-end questionnaire.

Results: Based on the information gathered from questionnaire. Physician responses about 94.53% were aware of the skills and knowledge of physical therapist while 5.47% are not aware. Regarding different physiotherapy field, plastic surgeons are the well aware with orthopedic 92.19%, neurology 86.72%, and 89.06% surgery and burn departments while less well-known other fields. Plastic surgeons have knowledge 54.69% about burn rehab provided by physiotherapy. The plastic surgeons were Mostly aware of physiotherapy hand burn 95.31% while less aware of other burn case referred to physiotherapy. Burn patients are prone many complications as decreased joint mobility, muscle mass loss, and abnormalities. The physician knowledge of physiotherapy intervention to avert these problems were 86.72% while 10.94% not aware. 93.75% of plastic surgeons are aware of the physical therapy use orthosis to treat post burn deformities. 77.43% Plastic surgeons have read about physical therapy implement hydrotherapy for burn cases but unfortunately not seen in real life. 83.59% have at least some knowledge about physical therapy modalities that enhance burn healing.

Conclusion: We need to focus on improving physician awareness of the modalities used in burn treatment and the ongoing development of these instruments and procedures. Plastic surgeons had a positive perspective on physical therapy role in burn rehab.

Keywords: Burn Rehabilitation, Awareness, Physical Therapy, Plastic surgeons

¹Department of Physical Therapy for Surgery, Faculty of Physical Therapy, Cairo University, Egypt & Teaching Assistant, Faculty of Physical Therapy, Modern Science and Art University, Egypt.

²Department of Physical Therapy for Surgery, Faculty of Physical Therapy, Cairo University, Egypt.

³Department of Plastic Surgery, Faculty of Medicine, Cairo University, Egypt.

⁴Department of physiotherapy, Faculty of Allied Medical Sciences, Middle East University, Amman, Jordan

1. INTRODUCTION

Physiotherapy is a part of primary health care system. As well as it is a type of rehabilitation discipline that aids in improving a person's capacity to live an active and healthy lifestyle. It has an essential part in the treatment of a variety of medical conditions, but few plastic surgeons are aware of physical therapy benefits. Physiotherapists assess each person and devise a treatment plan based on their findings. They play an important role in burn management. (Jadhav et al., 2020) To give better health care,

interdisciplinary cooperation across these diverse areas is essential in the existing circumstances. This is accomplished through respecting, acknowledging, and appreciating the talents and abilities of those other team members capable of providing patient care. (Shemjaz et al., 2016). A greater knowledge of the entire health care system may have an impact by reducing hospital stays, ensuring prompt recovery, and most importantly in the rehabilitation journey for a better lifestyle, which is the ultimate goal of any healthcare staff. (Agrawal, 2019). The medical

community's acceptance of physiotherapy is still a question. As a result, there is a significant need to modify people's perceptions about physiotherapy. (Jadhav et al., 2022). The injury to skin tissue caused by hot (scald, flash, flame, contact), cold, electrical, chemical, radiation, sunlight, or other causes is known as burn injury. Burns are one of the leading causes of illness and mortality across the world. They can cause major deformity, physical damage, loss of employment, psychological issues, and a large financial burden. Burn injuries can be categorized in a numerous of ways depending on the source of heat, the total body surface area affected, and the degree of the burns (Procter, 2010). Burn rehabilitation requires the collaboration of a multidisciplinary team as well as the patient's full cooperation. It's a long and painful process that starts on the first day and lasts until the scars develop and beyond. (Ijaz et al., 2022)

2. AIM OF THE STUDY

The aim of the study was to evaluate the awareness level of physician about physical therapy role for burned patient.

3. METHODS

• Study Design:

A Pilot study was conducted to get an overview of plastic surgeons' awareness about role of physiotherapy in burn rehabilitation from different burn departments centers at Giza and Cairo hospital. Questionnaire was conducted based on the papers: awareness and knowledge of physical therapy among medical interns a pilot study (Shemjaz et al., 2016), rehabilitation of the burn patient (Procter, 2010), awareness about the role of physical therapy among medical practitioners working in burn units (Ijaz et al., 2022), and awareness of various aspects of physiotherapy among medical residents (Abichandani et.al, 2013). Questionnaire was validated, first it was displayed to the board which consisted of five professional professors at burn department. The questionnaire was modified according to their reviews and comments till it reached final form that was accepted by the board. Last step it was uploaded on google link to extend and reach other physician to see their level of awareness.

• Participants:

A sample of 134 plastic surgeons were recruited from different burn departments at Giza and Cairo hospital as Kasr Einy hospital, Om El Masreyin hospital, Heliopolis Hospital, Helmya Military Hospital, Sheikh Zaied hospital, El Demerdash hospital, Ahmed Maher hospital, El Sahel Hospital, El Matareya hospital and private clinics.

• Inclusion Criteria:

All plastic surgeons included in this study met the following criteria:

Plastic surgeon worked on burn cases (Residents, demonstrators, assistant lecturers, lecturer, and professors working at different departments burn centres at Giza and Cairo hospital.); Female and male physicians participated in study. All physicians filled their informed consent.

• Exclusion Criteria:

Physician were excluded if they have any of the following:

Plastic surgeons with difficult communication skills or unwilling to participate. Those who spent < 3 months in the burn rehab.

Outcome measure

Statistical analysis:

- Descriptive statistics in the form of frequency presented in tables, charts and figures carried out to summarize the data.
- Responses of the physicians were collected and analyzed to know weak points of plastic surgeons regarding their knowledge about physiotherapy role in burn rehab.
- The level of significance for all statistical tests is set at $p < 0.05$.
- All statistical measures performed through the statistical package for excel version professional plus 2019 for windows.

4. RESULTS

This research studied physician awareness analysis through questionnaire divide into five parts.

IV.I Part one: Physician general knowledge about physiotherapy:

Plastic surgeons (94.53%) were aware about physiotherapy qualification job designation degree program and their specialties as shown in table 5. Plastic surgeons are the most aware with (92.19%) orthopedic, (86.72%) neurology, and (89.06%) surgery and burn departments while other less well-known fields as shown in table 6. This part of the questionnaire is to study awareness and misconceptions about physiotherapy degree program. (94.53%). Plastic surgeons agreed that physiotherapy enhances burn patients' quality of life while very few doctors (0.78%) didn't agree and (4.69%) were not aware as shown in table 5.

IV.II Part two: Physiotherapy role in burn rehab and types of cases referred.

Plastic surgeons about 54.69% agreed that early referral to physical therapy results in a successful recovery as table 5. That's why in this study the physicians were asked about the type of cases referred and complication of burn that had better prognosis after physiotherapy sessions. (95.31%) agreed on hand injuries, (18.75%) on hypertrophic

scar, (3.91%) blister and (6.25%) inhalation injury as shown table 6.

IV.III Part 3: Physiotherapy intervention and modalities used in burn rehab.

Burn patients are prone to many complications that affected their ADL to avoid these complications there are many various techniques applied by physiotherapy so in this study. Plastic surgeons are aware of (86.72%) burn modalities while (7.03%) are not aware as shown in table 6. Plastic surgeons were aware of modalities used to enhance burn healing while (7.03%) as shown in table 6. (93.75%) Plastic surgeons have awareness about physical therapy use of orthosis for post burn deformities, and (1.56%) didn't know as shown in table 5. (77.43%) have knowledge about hydrotherapy from reading while (14.84%) don't have knowledge about it and (7.81%) as shown in table 5. Table 6 showed burn complications that improve with physiotherapy agreed on (83.59%) contracture, (80.47%) muscle strength, (12.50%) hypertrophic scar, and (82.03%) limitation of function. Table 6 revealed Physician awareness about general principles for exercise were (82.03%) stretches should both address lines of tension and may not necessarily be in the anatomical plane and combine stretches over multiple joints, and 85.16% observing stretch without dressings or garments in place. Plastic surgeons were about physical therapy effectiveness in the treatment and

prevention of scar formation with modalities as scar massage (33.58%), splinting (91.41%), pressure therapy (86.72%), and electrotherapy (32.81%) used by physical therapy. Plastic surgeons' perception about physical therapy approaches for edema management were (99.22%) while not aware (32.81%) shown in table 6.

IV.IV Part 4: Physiotherapy management hand burn

Hand burn play a significant role in a patient's survival, its function and aesthetic appearance are critical for re-integration into society and professional life. A comprehensive understanding of hand burns improves rehabilitation outcomes and prevents burn-related issues. Plastic surgeons are aware of (94.53%) of general principles of splints techniques applied for burn cases as shown in table 6. The Plastic surgeons agreed on that physiotherapy principles for gaining range motion as in table 6 has shown are active range of motion (ROM) as (91.41%) preferred to passive ROM and if patients are unable to achieve full ROM; (88.28%) Active-assisted movement or passive movement of the hand will be implemented and range of motion (ROM) performed to isolated joints before composite ROM, performing pain-free lengthening of tight structures. One of the most important principles is performing pain-free lengthening of tight structures (83.59%).

Table (1): Comparison between different burn centers for awareness response in physiotherapy burn center.

Groups	Count	Sum	Average
Ahmed Maher Hospital	10	741	74.1
Heliopolis Hospital	10	687	68.7
El Demerdash Hospital	16	1135	70.9375
El Matareya Hospital	2	140	70
El Sahel	5	386	77.2
El Sheikh Zayed Hospital	8	560	70
Helmya Military Hospital	9	669	74.33333
Kasr Alainy Hospital	33	2464	74.66667
Om El Masreyin Hospital	12	879	73.25
Police Hospital	2	126	63
Private Clinics	21	1474	70.19048

Table (2): Comparison between different burn centers for awareness response in physiotherapy burn center concerning p- value.

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	863.6208	10	86.36208	1.285942	0.246264	1.912537
Within Groups	7857.559	117	67.15862			
Total	8721.18	127				

The mean score of physicians according to their degree maximum mean was 73.5 and the minimum mean was 70.4. The study had shown a non-

significant awareness about physiotherapy's role in burn rehab. (p = 0.2)

Table (3): Comparison concerning plastic surgeon experience for awareness response in physiotherapy burn center.

Groups	Count	Sum	Average
Doctoral Scores	47	3459	73.59574468
Master Scores	51	3689	72.33333333
Bachelor Score	30	2113	70.43333333

Table (4): Comparison concerning plastic surgeon experience for awareness response in physiotherapy burn center related p-value

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	183.1605386	2	91.58026928	1.340771608	0.265379956	3.068688537
Within Groups	8538.019149	125	68.30415319			
Total	8721.179688	127				

Table (5): Frequency distribution of items examined in the questionnaire- Part A

Parts	Questions	Yes	No	Don't Know
Physician general knowledge about physiotherapy	Are you aware about the skills and knowledge of a physical therapist and the eligibility for entering physical therapy degree program?	94.53%	3.13%	2.34%
	Do you think all burn hospitals should have a physical therapy department?	96.88%	0.78%	2.34%
Physiotherapy role in burn rehab and types of cases referred	Are you aware of Burn Rehab provided in physical therapy?	54.69%	9.38%	35.94%
	Does early Referral for burns patients through physical therapy results in a successful recovery?	54.69%	25%	20.31%
	Do you find physical therapy has an impact on the quality of life of burn patients?	94.53%	0.78%	4.69%
Physiotherapy intervention and modalities used in burn rehab	Do you have any perspective with physiotherapy following a skin graft?	91.41%	8.59%	0%
	Do you agree physical therapy is effective in skin reconstruction?	63.28%	4.69%	32.03%
	Are you aware that burn deformities can be treated using orthotics in physical therapy?	93.75%	4.69%	1.56%
	Do you presume that hydrotherapy has a significant impact on burn rehabilitation?	77.34%	7.81%	14.84%
	Do you think exercise therapy can be applied as one intervention in burn Rehab?	78.91%	15.63%	5.47%
	Are you aware of physical therapy modalities that enhance burn healing?	83.59%	7.03%	9.38%

Table (6): Frequency distribution of items examined in the questionnaire- Part B

Questions	Answers	Physicians answers
Choose from this list the branches where the physical therapy specialist plays an important role? (You can choose more than 1 answer)	a. Orthopedic	92.19%
	b. Neurology	86.72%
	c. Women health	15.63%
	d. Cardiopulmonary	23.44%
	e. Surgery& burn	89.06%
	f. Sport injury	81.25%
	g. Pediatric	21.88%
What do you think about role of physical therapy in burn rehabilitation?	a. Very important	82.81%
	b. Important	7.81%
	c. Not important	7.81%
	d. Don't know	1.56%
Which of the following cases would you suggest physiotherapy for? (You can choose more than 1 answer)	a. Hand burn injuries	95.31%
	b. Hypertrophic scar	18.75%
	c. Blister	3.91%
	d. Inhalation injury	6.25%
Which of the following are the most prevalent physical therapy interventions used in burn rehabilitation? (You can choose more than 1 answer)	a. Electrical therapy for healing	10.94%
	b. Positioning and splinting to prevent deformity	86.72%
	c. Exercise therapy for joint mobility and hydrotherapy.	86.72%
	d. Respiratory therapy.	7.03%
List out the physical therapy Modalities used in burn rehab? (You can choose more than 1 answer)	a. Positioning	81.25%
	b. Splinting	89.84%
	c. Exercises	96.88%
	d. Pressure garment	91.41%
	e. Breathing Exercises	34.38%
	f. Coughing	25.78%
	g. Postural drainage	20.31%
Which of the following essential principle are done by physical therapy during stretching with burn cases? (You can choose more than 1 answer)	a. Stretches should address lines of tension and may not necessarily be in the anatomical plane	82.03%
	b. Combine stretches over multiple joints.	82.03%
	c. Observe stretching without dressings or garments in place	85.16%
	d. Identifying and optimizing the lengthening or stretching on contracture banding	82.81%
Which of the following are general principles for exercises used by physical therapy in burn rehab? (You can choose more than 1 answer)	a. Early range of motion and maintenance will be necessary until scar maturation, commonly 12-18 months post-burn	98.44%
	b. Encourage independence and self-management as early as possible.	98.44%
	c. Consider pain tolerance, medication regime and source of pain are important while exercising	96.88%
	d. More frequent exercise is better than just one long session	95.31%
Which of the following burn-related complications have improved in your opinion would improve with physiotherapy? (You can choose more than 1 answer)	a. Contracture	83.59%
	b. Decreased of muscle strength	80.47%
	c. Hypertrophic scar	12.50%
	d. Limitation of function	82.03%
	e. Deformity	83.59%
Are you aware of any physical therapy modalities that are used to decrease contracture with burn patients? (You can choose more than 1 answer)	a. Stretching and Passive Movements	96.09%
	b. Splints	95.31%
	c. Serial Casting	95.31%
	d. Positioning	94.53%
Which of the following are the most prevalent physical therapy interventions used with scar management? (You can choose more than 1 answer)	a. Scar massage	33.59%
	b. Splinting	91.41%
	c. Pressure Therapy	86.72%
	d. Electrotherapy	32.81%
Which of the following are the approaches done by physical therapy to manage edema? (You can choose more than 1 answer)	a. Positioning of the extremities.	99.22%
	b. Passive mobilization in affected joints.	96.88%
	c. Elevation of the Limb.	98.44%
	d. Bandage.	96.88%
	e. Retrograde massage.	32.81%
Which of the following describes the general principles applied for splinting by physical therapy during burn rehabilitation? (You can choose more than 1 answer)	a. Splints are worn at night until the scar is mature and during the day when the scar is active.	94.53%
	b. Splints should be made with longer levers so that they can be anchored more effectively.	95.31%

	c. Use small surface area of a small splinted limb to reduce the space available for appropriate strapping.	93.75%
	d. Thermoplastic material used for fabrication of splint	96.88%
Which of the following describes the general principles applied for range of motion by physical therapy during hand burn rehabilitation? (You can choose more than 1 answer)	a. Active Range of motion (ROM) is preferred to passive ROM if patients are unable to achieve full ROM active-assisted movement or passive movement of the hand will be implemented	91.41%
	b. ROM performed to isolated joints before composite ROM	88.28%
	c. Performing pain-free lengthening of tight structures.	83.59%
Which of the following must be considered by physiotherapy while managing hand burn (You can choose more than 1 answer)?	a. Putting patient in antideformity splint positions (wrist in extension, the MP joints in greater than 60 of flexion, and the IP joints in full extension.)	80.47%
	b. Apply a sustained stress when the burn involves the palm and volar wrist	29.69%
	c. Splint should flatten the palmar arches and extend the digits	39.06%
	d. Hand should be elevated above heart level to control edema	92.97%

5. DISCUSSION

The study aimed to study plastic surgeons' awareness of physical therapy's role in burn rehab, with the aim of closing the gap between physicians and physiotherapists in the burn branch and improving prognosis for burn patients and their quality of life. This present study revealed that plastic surgeons were aware about physiotherapy qualification job designation degree program and their specialties as orthopedic, neurology, and surgical departments. Majority of plastic surgeons were aware of role of physiotherapy role in burn rehab especially in skin reconstruction, contracture, scar management, edema control, gaining normal function and returning normal ADL with better quality as result of physiotherapy department in the hospitals they are working at. A lot of studies supported these result as (Agrawal S, 2019) also demonstrated study about program of physiotherapy and their specialties and has proven plastic surgeon have academical knowledge of physiotherapy field in surgeon field. Some of the most essential complications that must be managed for burn injuries are scar management, edema control, and contracture are so in this study their interventions were discussed. Hand burn is an integral part in burn rehab and fortunately most physicians are aware and well informed by physiotherapy role in burn. Referral played an important role in this knowledge. (Ijaz et al., 2022) performed a study about role of physical therapy among medical practitioner in burn unit. Their study had also found that outcome of early referral results successful recovery. This study focused on hand rehab so some of the questions contracture and how to put patient in antideformity position and maintain it by splinting; most important part gaining normal movement. Physiotherapy have shown a lot of excellent out with these cases which made plastic surgeons more aware of physiotherapy role and also, they don't have knowledge regarding hand burn rehab which made them refer these cases to physiotherapy. (Moore et al., 2009) also conducted a study rehabilitation of the burned hand which also stated that most physician agreed on that physical

therapy rehab most important in patients with hand burn. Although Plastic surgeons had good knowledge about pressure therapy, scar message and splinting because most of them apply those modalities for scar management for burn cases by themselves. The plastic surgeons have few knowledges about electrotherapy and scar massage because in their studies don't focus about applying them for burn cases. The results also demonstrated that physicians required more knowledge about physiotherapy role in hypertrophic scar management as stated in (Ai et al., 2017). Edema management is one of crucial complication that must be treated so in this study questions focused regarding intervention of edema as positioning of the extremities, mobilization but unfortunately there was a lack of awareness in retrograde massage and its effect. Some of the modalities used for burn rehab by physiotherapy not knowledgeable in their field as manual therapy and electrotherapy while some other modalities as hydrotherapy physician only read about it and not seen when applied. It was found in some studies as (Serghiou et al., 2009) that physiotherapy essential role in developing an effective antideformity positioning. Physiotherapy have shown significance role in preventing contractures by positioning patient in antideformity positioning and fixing them by splinting. The research has been conducted to find out and improve this very aspect of our health care system.

6. RECOMMENDATIONS

The results of this study indicated the need to suggest the following recommendations:

1. Multi-disciplinary team (MDT) approach in managing burn patients and sharing knowledge with all team membership. A team involving the surgeon, physical therapist, and psychiatric should make all choices regarding the patient's care, including the initial evaluation, urgent emergency treatment, rehabilitation, and follow-up after discharge.
2. Daily round on patients with updating progress notes after surgery between whole team.

3. Awareness campaigns about physiotherapy's role in burn rehab.
4. Posters made that will bring physicians awareness into burn work environment.
5. E-learning courses about burn rehab to enhance awareness.

7. CONCLUSION

The physician acknowledged that physical therapy is necessary for some patients and should be refereed as early as possible. There is a lot of study evidence that illustrates how successful physical therapy treatments are for burn patients. Hence, highlighting the need of physical therapy in burn care improve the level awareness of physician about care given to the patient. We need to focus on increasing awareness of physician about modalities which are used in burn and the development for these devices and techniques that are updated from time to time. There is a need to be collaboration between physician and physiotherapy so both of them know and understanding their perspectives. The easiest way to do this is to increase communication between the doctor and the physical therapist.

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