

The Effects of Severe Burns on Levels of Activity

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ABSTRACT

Purpose: *With the recent advances in medicine, the survival rate of clients with severe burns has improved. This has resulted in greater demand for rehabilitation services. One of the major goals for rehabilitation programmes is to restore these clients to their pre-trauma activity levels. However, there is not much research on the subject.*

Methods: *Based on their availability, 30 clients with severe burns were selected, who had been discharged from the hospital for periods ranging from 1 month to 1 year. Interviews were conducted and the participants' perceptions were recorded regarding changes in their self-care, household chores, professional work, hobbies and recreational activities. Based on the results, 2 independent assessors categorised the activity levels as none, minor, intermediate and severe, in terms of negative effect.*

Results: *In the self-care category, 8 participants reported no negative effect, 12 reported minor, 4 reported intermediate and 6 reported severe effects. In the household chores category, only 2 clients reported no effect and 13 indicated severe effects on their activities. Of the 21 participants who were working, only 2 reported no change in pre-trauma activities while 11 reported severe changes in their working activity levels. While 5 participants indicated no change in their recreational and leisure activity levels, 6 reported severe changes.*

Conclusion: *Severe burns reduce clients' levels of activity in some of the categories. However, they often regain their ability to perform activities at a*

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lower level, depending on the site of burn, burning agent, and having received early rehabilitation pre- and post-discharge. Psycho-social factors, pre- and post- trauma, are also important.

Keywords: *Burn, rehabilitation, level of activity.*

INTRODUCTION

Burns affect people's lives in all aspects with long-term consequences (Ilechukwu, 2002). More than 95% of burns occur in developing and underdeveloped countries (Peck et al, 2009). In Iran, with a population of 79 million, 150000 people are affected annually (Azizi, 2014), which is much more than America's 500,000 people out of a population of 320 million. Burns lead to 3000 cases of death annually in Iran, and the number has decreased to 2000 cases recently (Azizi, 2014). Though improvements in medical care have increased the survival rates in severe burn cases, survivors and their dependents are often left with many physical and psychological challenges for the rest of their lives (Herndon, 2007). Currently, in developed countries, improving the function and form of the burnt areas are a priority, rather than merely helping the clients to survive. For those with severe burns, the scarring and deformity cause impairment of movement, commonly followed by depression, post-traumatic stress disorder, dysmorphic perception and lack of self-confidence (Van Loey and Van Son, 2003). Hence, rehabilitation proves essential (Van Loey and Van Son, 2003).

Rehabilitation for these clients is a long term and painstaking process which requires physical, psychological and social adaptation, and should start before and last for a long time after discharge from hospital (Cheng and Rogers, 1989). Andreasen et al have demonstrated that most of the burn clients will return to their pre-burn level of activities (Andreasen et al, 1971; Bowden et al, 1989). The physical and psychological traumas in burn incidents could lead to significant disorders in clients' social and professional functionality, which could in turn intensify by lack of social support (Druery et al, 2005). Pallua et al (2003) stated that the psychological health of burn clients is not only due to deformities, dysfunction and recent traumas but also physiological factors which are incurred during the treatment period and recovery process. For those individuals who were employed at the time of injury, returning to work is of great importance (Ciofi-Silva et al, 2010). According to one study, the time required before returning to work following burn injury was reported to be between 4.7 weeks - 24 months (Quinn et al, 2010). The duration of this period depends on many factors, including

the size and extent of burn, the level of stress at the time of injury, motivations to return to the pre-trauma status, and family and friends' support (Achterberg-Lawlis, 1983). In another study, the site of burn, number of surgeries, age of the client and type of profession, as well as length of hospitalisation were effective in the re-employment period (Bowden et al, 1989; Helm and Walker, 1992). Saffle et al (1996) showed that the clients' assessment of their recovery, scars and ability to stand were the predicting factors in return to work. The clients tend to stay at home and prefer to keep away from people other than family or friends (Andreasen et al, 1971).

One of the main goals of rehabilitation is to help clients to regain their social status and professional aspirations. However, there has been little research on the levels of activity and functionality of clients with severe burns after discharge, as well as their ability to resume their professional roles. This study focusses on the effects of severe burns on clients' activity levels in different aspects of self-care, household chores, resumption of work, and on how they spend quality leisure time and pursue their earlier hobbies. Assessment was made immediately after discharge. The results of the study could facilitate identification of areas where further assistance is required.

METHODS

Study Sample

Clients who were discharged from Motahari Burn Hospital were randomly selected, depending on their availability and on certain criteria.

Criteria for inclusion:

- A period of 1 month to 12 months since discharge;
- Between 18 and 65 years of age;
- Received rehabilitation programme while admitted in the hospital;
- Free of any psychiatric condition or cognitive impairment; and,
- Severity of burns - second degree burns involving more than 30% of body area or third degree burns involving 10% or more of the body, or burns involving face, hands, neck or joints.

Accordingly, 30 clients were selected for the research project and their consent was obtained.

Among them, 18 clients were male and 12 were female. The average age was 34.4 years and the average period since discharge was 4.13 months. The average percentage of burn area was 27.9% of the total body surface area (TBSA). Of the 30 participants, 7 had facial burns and 16 had burns scattered all over their bodies. There were 22 who had burns on their hands, 14 had on their trunk and 18 had on their lower limbs.

Data Collection

Interviews of 1-2 hours duration were held at the Motahari Hospital. The questions were either direct and targeted, or open questions.

Basic personal demographic details were recorded, including age, gender, education and qualifications, jobs, marital status, length of hospital stay, as well as the degree of burn and mechanism. Details of the effects of burns on the levels of self-care, household chores, return to work and recreational activities and hobbies were also noted. The self-care activities included dressing, eating, bathing, self-cleaning, and toileting. Household chore management consisted of the following activities: looking after other members of the family, using public transport, socialising, cooking and preparing food, and routine daily shopping. Work is what the person is paid for, to earn a living. Recreational activities are those which provide happiness and relaxation for the person (Radomski and Latham, 2008).

For each variable, clients were asked to compare their present situation with the pre-trauma status, and explain the changes and the reasons. The open questions provided a good opportunity for clients to express their feelings and ideas, as well as come up with out-of-the-box solutions to improve their condition.

Data Analysis

The results of the interviews were assessed independently by two assessors and categorised in groups of “no effect”, “minor”, “intermediate” and “severe” change. The group with “no effect” showed no change of abilities compared to their pre-trauma state. The group with “minor” change was capable of independent activities despite some problems. The group with “intermediate” effects either required some help in carrying out their responsibilities and social roles or needed extra time and effort to fulfil their tasks. This group may have learned new ways of doing things so as to reduce dependence to others. “Severe”

change was when the clients were not capable of doing tasks independently or without help.

The data analysis included assessment and comparison of the clients' activity changes, pre-trauma and post-trauma, both in terms of quality and quantity.

RESULTS

Table 1: Levels of Activities among all the Clients

	Self-care	House work	Job	Hobbies	Age	Marital Status	Burn Area (%)	Facial Burn	Hand Burn	Lower limb Burn	Period since discharge (Months)	Cause of Burn	Job before Burn
1	Severe	Severe	Severe	Severe	26	Single	58	Y	Y	Y	11	Gas	Labourer
2	Inter mediate	Severe	Inter mediate	Inter mediate	31	Married	32	N	Y	N	5	Thinner	Painter
3	Minor	Inter mediate	-	Minor	35	Single	11	N	Y	N	1.5	Gas	House keeper
4	Minor	Inter mediate	-	Minor	34	Single	20	N	Y	N	1	Gas	House keeper
5	Minor	Inter mediate	Severe	Minor	44	Married	33	N	Y	Y	1	Gas	Farmer
6	Inter mediate	Severe	Severe	Inter mediate	40	Married	5	N	Y	Y	1	Electricity	Labourer
7	Minor	Inter mediate	-	Inter mediate	47	Married	30	N	Y	Y	1	Gas	House keeper
8	Inter mediate	Severe	Severe	Inter mediate	41	Married	45	Y	Y	Y	2	Petrol	Nurse
9	Minor	Inter mediate	-	Minor	42	Married	28	N	Y	Y	2.5	Boiling water	House keeper
10	Minor	Minor	Minor	Minor	31	Married	10	N	N	N	2	Hot Object	Clerk
11	Nil	Minor	Minor	Minor	35	Married	28	N	N	N	3	Melted Aluuminum	Labourer
12	Severe	Severe	Severe	Inter mediate	22	Single	10	N	Y	Y	3	Electricity	Labourer
13	Nil	Minor	Minor	Nil	27	Married	22	N	N	N	4	Boiling water	Chef
14	Minor	Severe	Severe	Severe	29	Married	15	N	Y	N	2	Boiling water	Labourer
15	Inter mediate	Severe	Severe	Severe	33	Single	5	N	Y	Y	3	Electricity	Engineer
16	Severe	Severe	Severe	Severe	48	Married	58	Y	Y	Y	4	Gas	Welder
17	Minor	Inter mediate	Unemployed	Minor	24	Single	26	N	Y	N	3	Fire	-
18	Nil	Minor	-	Nil	28	Single	30	N	N	N	5	Boiling water	House keeper

19	Severe	Severe	Unem ployed	Severe	23	Single	19	N	Y	Y	3	Electricity	Unem ployed
20	Minor	Minor	-	Nil	45	Married	40	N	N	Y	4	Boiling water	House keeper
21	Nil	Nil	Nil	Nil	28	Married	25	N	N	N	8	Hot Object	Clerk
22	Nil	Minor	Minor	Minor	28	Single	35	Y	Y	Y	6	Gas	Clerk
23	Nil	Nil	Nil	Nil	45	Married	32	N	N	N	6	Boiling water	Chef
24	Severe	Severe	Severe	Inter mediate	48	Married	40	Y	Y	Y	9	Gas	Labourer
25	Minor	Severe	Severe	Minor	55	Married	25	N	Y	Y	3	Gas	Engineer
26	Minor	Inter mediate	Inter mediate	Inter mediate	23	Married	15	N	Y	Y	6	Electricity	Labourer
27	Nil	Inter mediate	Inter mediate	Inter mediate	55	Married	55	N	N	Y	10	Gas	Driver
28	Minor	Severe	Unem ployed	Minor	18	Single	37	Y	Y	Y	5	Gas	Unem ployed
29	Nil	Minor	Minor	Minor	28	Single	35	Y	Y	N	6	Fire	Labourer
30	Severe	Severe	Severe	Severe	21	Single	15	N	Y	Y	3	Electricity	Welder

Self-care: Of the 30 clients, 8 reported “no change” in their activities in this category. 7 of them had burns that were limited to the trunk, and no burns on face or limbs.

The group with “minor” changes had issues with dressing, bathing and going to the toilet, as their problems were mainly due to reduced dexterity or limitation in the range of movements of shoulder, elbow or fingers. They required more time to perform their routine tasks.

The group with “intermediate” changes reported that the use of utensils, bathing, self-hygiene, dressing and using hands were difficult. They required help from other people as they would otherwise take longer to perform these routine tasks, with undesirable and non-ideal outcomes. Most of them attributed their difficulty to skin dryness, limitation in range of movements of the joints, muscle weakness, and manual dexterity. They had problems in holding objects, as well as inability to coordinate movements.

Of the 6 clients with “severe” effects, 3 had electrical burns which had led to damage of their peripheral nerves or upper arm tendons, resulting in inability to use their hands. The other 3 clients had extensive burns on their upper and lower limbs, which had led to complete dependence on others in performing routine tasks. These people had limited ability to stand up and walk, with very limited range of movements, reduced muscle tone, and loss of motivation.

Household Activities: While 2 participants did not report any difficulty in this category, 7 reported “minor” effect and mentioned issues related to using public transport and shopping. There were 8 clients who reported “medium” dysfunction in shopping, using public transport, socialising and preparing meals. Some of them stated that they did not like to appear in public due to facial burns as people would act judgemental. They preferred to use their own means of transport. Others mentioned that due to reduction in hand strength and ability to walk and stand, plus limitations in range of movements, they could not go shopping on their own. They had difficulty in cooking and baking as they had a phobia about heat and fire, and consequently preferred to be supervised.

There were 13 clients who reported “severe” reduced function in shopping, socialising and preparing food. They believed that they were completely dependent on others due to lack of appropriate limb function, disfigured appearance and evoking adverse reactions from people when socialising.

Work: 21 participants were working before their burn accident. Of these, 2 had no problem in returning to work and 5 reported “minor” difficulty. One of them was a chef who was concerned about being too close to heating sources and re-injuring himself. The 2 who were working in an office were uncomfortable with their reduced manual dexterity and writing abilities as a result of using pressed burn gloves. The 2 who were manual workers reported reduced strength in their hands, limitations in their movements due to wearing pressed burn clothes, inability to stand on their feet for a long time, and being exposed to contaminated industrial environment and direct sunlight. Of the 3 people who reported “intermediate” effect, one was a painter who could no longer tolerate the smell of paint and thinner, and another was a driver who was uncomfortable about sitting for long hours in the car, unable to remain focussed whilst driving, and suffered from dry skin as well as pain and tenderness in the feet. Of the 11 participants who reported “severe” change, 4 had electrical burns and could not return to work due to severe hand injuries, and 3 were construction labourers whose reasons for not returning to work included factors such as inappropriate work environment (in terms of high or low temperature and noise level), upper and lower limb dysfunction, and skin dryness. One of the participants was a nurse who lacked confidence because of facial injuries, dry skin, reduced range of joint movements, and depression. Another was a farmer who could not return to work because of pain in the lower limbs, blisters in his hands and reduced strength.

Hobbies: There were 5 participants who did not report any change in their leisure activities. “Minor” change was reported by 11 clients, mainly due to reduced interaction with their friends and colleagues. Most of the free time activities for this group did not really involve any movement, and was generally limited to watching TV and reading books. The 8 participants who were evaluated as “intermediate” used to spend most of their spare time in physical activities but found it almost impossible to return to their previous levels due to diminished strength in their limbs, standing, walking and the vulnerability of the burnt skin. Of the 6 clients who experienced “severe” change, 4 had suffered electrical burns in their hands which left their limbs with no residual function, and the other 2 had psychological issues apart from physical disabilities. The main issue was disfigurement and, consequently, the tendency to keep away from friends and other social opportunities.

DISCUSSION

This research study demonstrated that individuals with severe burn injury followed 3 patterns in their activities. In the first group, there was no or only minor change in their ability to look after themselves, in household management, working and enjoying their spare time. Therefore their situation was not significantly changed. The second category had independence in self-care but reduced or complete loss of ability to manage household activities and return to work. Most of these individuals found it difficult to entertain themselves when their activities became less physical and more static. The third group of clients were significantly dysfunctional in all four types of activities. The results demonstrated that severe burn injuries, such as third degree burns, electrical burns and burns resulting in amputation or immobility would definitely lead to dependence on others.

Clients with severe burns are able to return to professional activities but at a lower level compared to the pre-injury status. The diminished physical ability after burn injury results in reduced potential to undertake intense, fast and specialised activities. Even simple or seated activities prove to be challenging for those with severe burns. Hence, those with physically challenging professions will experience severe changes as compared to individuals with less physically demanding jobs. The change in activity levels depends on the individual’s fitness and mental well-being, as well as social factors. For instance, adverse reactions from members of the public to facial disfigurements would inevitably lead to

isolation of an individual who enjoys outdoor hobbies and activities. Moreover, people with burn injuries may develop a phobia about activities that pose the risk of getting burnt, such as cooking. The psychological impact could be so intense that they may find it impossible to go back to work if the incident incurred at the workplace. In some cases, they have had to change their profession. Therefore it is of paramount importance to develop insight into feelings and thoughts of these individuals as a part of their rehabilitation.

Self-care is the minimum expectation for clients with severe burns. Rehabilitation in the acute phase helps in achieving this goal by developing skills to increase self-care abilities and overcome physical limitations such as the range of joint movements, oedema and muscle weakness. Self-care activities require less physical effort compared to household management and work. If standing is difficult, most of these activities could be carried out while seated and at a slower pace, over a longer time. Some physical limitations could also be overcome by using machines or adopting different approaches.

Changing jobs and difficulties in returning to work are more common among those with electrical burns or grade 3 burns in their hands and legs. Majority of the cases in this study did not have the ability to go back to work as they required more time to regain their skills and confidence. This is similar to the results of the study by Quinn et al (2010). Also, sustaining burns in the exposed areas such as face, neck and hands will cause some limitations in social integration. As stated in the other studies, mental, psychological, social and family support, are very important factors in adaptation with after-burn problems.

CONCLUSION

Regaining independent self-care in the first year after discharge is a very good achievement. However, this may not be feasible due to the variability of injuries. Also, people need more time in resuming household management and returning to work as more physical activity is required, along with more mental and social adaptation. The psychosocial factors such as the individual character, mental status, family and social support are also important.

This study was done around 1 to 12 months after clients had been discharged from hospital. Hence, it is possible that more time would be required for them to return to normal levels of activity. It is likely that in-patient and post-discharge rehabilitation improves the range of movements, muscle strength, and prevents

long-term limb deformities to avoid further disabilities. Unfortunately, majority of the clients are unable to continue with the rehabilitation programmes, either due to financial constraints or service inaccessibility. Consequently they may not regain their previous level of physical activity.

In summary, the site of injury, source and mechanism of injury, rehabilitation, ability to adapt to the new condition, as well as family and social support all play major roles in repatriation of the burn victim to normal life.

Limitation

One limitation of this study was the small study sample (only 30 participants). This was due to the limited number of clients attending rehabilitation services. The other limitation was the unavailability of clients with burn injuries who had been treated more than a year earlier.

Implications

A further study with a larger sample is recommended, to make a better assessment of the different effects that burns have on clients' careers. Attempts should also be made to recruit those who have been treated for burns since more than a year.

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