



Surgery

ROLE OF OCCUPATIONAL THERAPY IN THE REHABILITATION OF BURN VICTIMS

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ABSTRACT **AIM:** To use various occupational therapy treatment methods in the treatment of burn victims to improve their performance in the Activities of Daily Living (ADL).
MATERIALS AND METHODS: 280 patients with burns with hand involvement admitted in Government Kilpauk Medical College and Hospital, Chennai were taken for the study. Various therapeutic modalities and techniques of occupational therapy were used and the patients were analyzed for functional improvement using the FIM system of scoring.
RESULT; Occupational therapy intervention was found to be effective in improving the functional skills of the burns victims. The level of independence in self-care ADL, leisure and return to routine had improved significantly.
CONCLUSION: Occupational therapy is given for the rehabilitation of burns victims and is found to be effective for a better quality of life following burns.

KEYWORDS : ADL, Burns hand, rehabilitation burns, FIM

INTRODUCTION

Burns is a condition which affects the victim in physical, psychological, social, emotional, vocational and financial aspects. Occupational therapy is an essential and integral part of the rehabilitation of such victims and all the above mentioned aspects are dealt with holistically.

Among the various features in burn injury, involvement of hands is very prominent and this in turn affects the performance of various tasks of ADL, writing, vocational activities etc in such victims. Occupational therapy is the branch of rehabilitation which plays a crucial role in hand rehabilitation and improving the functional performance of an affected client. This in turn improves the better participation of the client in the ADL and respective scholastic and vocational tasks, thus increasing the competence of the client in the society.

This study discusses the various methods of Occupational Therapy and their effect on burn victims. It is very essential to totally rehabilitate the patient with burns to make him return to his routine. This paper analyses the methods by using the FIM scoring with which, this objective is achieved.

MATERIALS AND METHODS:

STUDY SETTING: The present study was conducted in the Department of Burns, Plastic and Reconstructive Surgery, Government Kilpauk Medical College and Hospital, Chennai.

SAMPLE SIZE: 280 participants

DURATION OF STUDY: 10 months, from April 2017 to Feb 2018.

STUDY SAMPLE: Men, women and children having burns with hand involvement in the inpatient ward were chosen/included for this study. Of the 280 participants, there were 135 males, 98 females, 33 male children and 14 female children in gender distribution.

INCLUSION CRITERIA:

1. All patients admitted with less than 40% burns
2. Burns Involving both the hands admitted
3. Patients during the period of April 2017 to Feb 2018.
4. Children over 5 years and adults up to 70 years old.
5. Patients should attend at least 25 sessions of occupational therapy.

EXCLUSION CRITERIA:

1. More than 40% burn,
2. Single hand or no hand involvement in burns.
3. Less than 5 years and more than 70 years of age.
4. Patients who underwent less than 25 sessions of occupational therapy.

SESSIONS: Minimum of 25 sessions were given to the patients.

METHODS USED:

HAND FUNCTION TRAINING: POP casts, newspaper, wheat dough, stickers, glue, cereals and pulses (for fine pinch) toys, puzzles, beads, coins, bottles,

FOR ADL TRAINING: eating with regular utensils, tumbler, dress, toothbrush,

FOR HANDWRITING TRAINING: pen, notebook. Patients were given therapy with splinting, hand function training, handwriting training, activities of daily living training, leisure skill training and return to routine.

ASSESSMENT TOOLS/PARAMETERS

Functional Independence Measure (FIM)- FIM is an 18 item measure of physical, psychological and social function of a person. The instrument lists 6 self-care activities, bowel and bladder control, 3 items on functional mobility and transfers, 2 items on communication and 3 on social cognition. The scoring ranges from 1- 7 where 1 is total assistance and 7 is complete independence.

For our study, we had taken only the self-care activities components of which consists of 6 activities, namely:

1. Eating
2. Grooming
3. Bathing
4. Dressing upper body
5. Dressing lower body
6. Toileting

The maximum score is 42 and minimum score is 6.

PROCEDURE

Rehabilitation of a burn victim starts as soon as the patient is resuscitated and stabilized and continues through the remainder of a patient's hospital treatment, discharge and return for follow-up. The

goals of occupational therapy are to prevent contracture and deformity, to promote the performance of daily living skills and educating the patient and family to facilitate recovery. The long term goal is to return the patient to pre-traumatic functional ability.

Patients were analysed at the end of 6 months follow up, after undergoing occupational therapy sessions.

RESULTS

The below table shows the age-wise categorization of all patients with bilateral hand burns during the period of April 2017 to Feb 2018. The total number of patients attended amounted to 280 (Figure 1).

| AGE (YEARS) | MALE | FEMALE |
|--------------|------------|------------|
| 5 - 12 | 33 | 14 |
| 13 - 20 | 15 | 11 |
| 21 - 30 | 44 | 33 |
| 31 - 40 | 62 | 42 |
| 41 - 70 | 14 | 12 |
| Total | 168 | 112 |

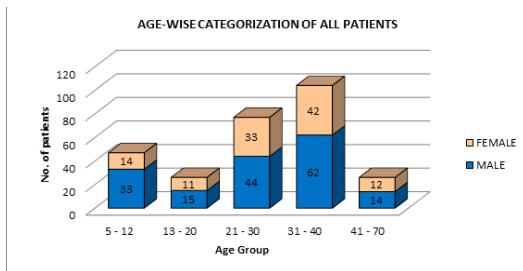


Figure : Age-wise categorisation of all patients

The burn victims who had undergone 25 occupational therapy sessions, were analysed after a follow up of 6 months. The range of follow up extended from a minimum of 6 months to a maximum of 16 months. The criterion of analysis was to select patients who had attended 25 therapy sessions.

Out of 280 patients, 180 patients underwent occupational therapy for 25 or more sessions. These 180 patients who followed up regularly were analysed using the Functional Independence Measure (FIM). Only the self-care activities of FIM were analysed, which has a minimum score of 6 and a maximum score of 42.

Based on the FIM score, the functional performance of patients were categorised from poor to excellent as follows:

1. FIM score - 6 to 10 - Poor
2. FIM score - 11 to 20 - Fair
3. FIM score - 21 to 30 - Good
4. FIM score - 31 to 42 - Excellent

At the end of the analysis the following results were observed (Figure 2).

1. Only 2 children got 'Poor' FIM scoring.
2. 7 Children and 5 adults scored 'Fair'
3. 12 Children and 13 adults scored 'Good'
4. 35 children and 127 adults scored 'Excellent' FIM scores (Figure 3,4)

| FIM SCORE AFTER 6 MONTHS | CHILDREN | ADULTS | TOTAL | Total % |
|--------------------------|-----------|------------|------------|-------------|
| 6 to 10 - Poor | 2 | 0 | 2 | 1.1% |
| 11 to 20 - Fair | 7 | 5 | 12 | 6.7% |
| 21 to 30 - Good | 12 | 13 | 25 | 13.9% |
| 31 to 42 - Excellent | 14 | 127 | 141 | 78.3% |
| Total | 35 | 145 | 180 | 100% |

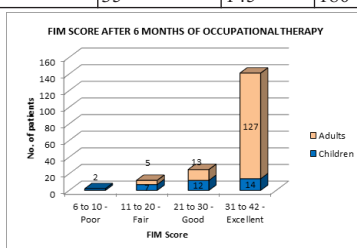


Figure : FIM score after 6 months of occupational therapy

| Description | Children | Adults |
|-------------------|----------|--------|
| Good results | 26 | 140 |
| Total Patients | 35 | 145 |
| % of Good results | 74.3% | 96.6% |

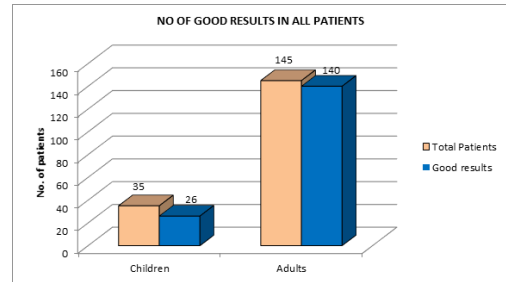


Figure : Number of good results in all patients

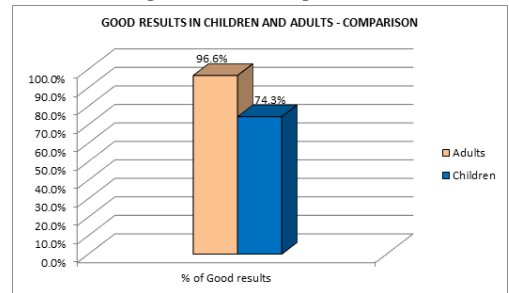


Figure : Comparison of good results in children and adults

DISCUSSION

The male-female gender ratio is found to be 60:40 respectively. The maximum number of burn victims are in the 21 - 40 years age group, which is the most productive age group. Hence, it is very essential that these patients receive occupational therapy.

Of the total number of patients, the 21 – 40 years age group constituted the maximum of 65%. The second in the order is 5 – 12 years age group, which accounts to 17%. The age group 13 to 20 years and 41 to 70 years both accounted to 9% each. The Functional Independence Measure (FIM) was chosen as the assessment tool due to its high reliability and validity rate^{2,3}. Various occupational therapy protocol and techniques were used for the patients and were given for 25 or more sessions based on the skill level and requirement of patients. Few of those occupational therapy methods include the following.

SPLINTING⁵

Positioning and hand splinting is essential in preventing contracture and deformity. The type of hand splint fabricated was decided based on the severity and the area of hand involved. POP casts were used extensively for splinting in burns victims as it is cost effective and consumes less time in fabrication.

HAND FUNCTION TRAINING⁶

Various hand function components like reach, grasp (spherical, cylindrical, hook grasp) carry and release of objects were trained actively. Activities like reaching for objects, holding objects like ball, bottles of various sizes and shapes were given to enhance grasp.

Fine hand function skills like radial tripod, ulnar tripod, lateral prehension, opposition, tip to tip grasp were trained using various smaller objects like cereals, pulses newspaper and wheat dough. These items were chosen as they are readily available at home thus ensuring better compliance to the home program regime.

Therapy then proceeded in developing in-hand manipulation skills which focuses on fine dexterity of one hand without the involvement of the other hand. It comprises of skills like translation (finger to palm and palm to finger), shift (vertical and horizontal) and rotation (simple and complex).

Bilateral hand activities were encouraged for the better performance of everyday tasks like dressing, toileting, bathing, eating, etc.

Injury induced hand dominance transfer training was given for the patients who had lost their dominant upper extremity due to burns⁷.

HANDWRITING TRAINING⁷

This is essential for students and professionals for whom writing is mandatory. Pre writing skills like positioning and stabilization of notebook, fine motor co-ordination, visual spatial and visual motor skills, In-hand manipulation skills and dexterity were trained to gain adequate speed and legibility while writing. Suitable adaptations like built up pens and modified writing techniques were adopted wherever found necessary.

ACTIVITIES OF DAILY LIVING (ADL)⁶

These are the defined set of activities necessary for normal self-care. The activities are movement in bed, transfers, locomotion, dressing, personal hygiene and feeding.

The patients were trained in the initial phase of hospitalization for various bed mobility skills like turning sides, coming up to sitting from supine position and reaching out for objects while sitting.

Bed side ADL skills like eating with spoon, drinking with glass and bottle independently were encouraged at the early stages. One-handed ADL techniques were taught for those patients who had undergone unilateral upper extremity amputation or had extensive burn involvement in one upper extremity than the other.

LEISURE SKILLS

These are the skills which one does during their free time. Identification and implementation of leisure pursuits were carried out during therapy sessions. This aided the patients in achieving a positive attitude, an ideal diversion from pain, a better faith in post hospitalization life and increased their compliance towards therapy sessions. Toys and picture puzzles were given to paediatric population.

RETURN TO ROUTINE⁸

The aim of rehabilitation was to achieve effective return of the patients to their routine with normal to near normal functional performance in comparison with their pre-trauma functional ability. This includes performing self-care skills, home making tasks, childcare skills, scholastic performance and vocational reintegration.

The percentage of good results in children is 74.3% and in adults is 96.6%. The increased performance of adults in self-care skills could be high due to their high motivation to achieve self-sufficiency in these basic, highly personal and often private self-care tasks, especially after experiencing dependency during the acute stage of recovery¹.

Poor results of 1.11% in total have been noted in the paediatric population. It could be due to their reduced pain tolerance. Further analysis is required based on these findings.

CONCLUSION

Burns victims with hand involvement received occupational therapy in the domains of hand function and ADL for analysis. From this study, it is proven that burns victims have improved satisfactorily in gaining independence in basic self-care skills, in the activities of daily living.

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