Original Article

# EVALUATING THE EFFECTIVENESS OF COMMUNITY PHYSIOTHERAPY IN TERMS OF FUNCTIONAL INDEPENDENCE FOR LOCOMOTOR DISABLED THROUGH REHABILITATION CAMPS IN HIMACHAL PRADESH

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## ABSTRACT

**Background & Purpose**: People with disabilities are estimated to form 7-10% of the population in any country, and around 2% would need some form of rehabilitation services. Yet only 0.01% to 0.02% of the population in developing countries actually get such services. The purpose of this article has been to draw the attention of World Health Organization (WHO) and other international organizations to the existing situation of physiotherapy in developing countries in general. The objective of this study is to examine the effectiveness of community physiotherapy services in relation to progress in ADLs of the locomotor disabled persons.

**Method:** The subjects for the study were selected using the criteria used in 58th Round National Sample Survey Organisation to identify individuals with locomotor disability. The persons with co-morbid psychiatric illness except depression were excluded. In total nine conditions leading to physical disability were selected. The age group taken was 18 years and above. The physical therapy advice includes muscle strengthening /stretching exercises, relaxation exercise, bladder and bowel training, transfer training was demonstrated to patients at camps. They were given a questionnaire of FIM (Functional independence measure) in a local Hindi language to assess the improvement in the ADLs. The filled questionnaires were collected in the next camp held after 4 to 6 months.

**Results:** The mean change in the score of FIM in case of SCI was (43.16 ± 13.75), stroke (40.12 ± 14.96), polio (13.94 ± 3.46), amputee (9.92 ± 5.95), burns (8.76 ± 4.54), cerebral palsy (28 ± 8.15), muscular dystrophy (17.76 ± 9.39), patello-femoral syndrome (27.23 ± 8.85) and other miscellaneous was (12.71 ± 3.05). The t-test score of all the nine parameters showed a highly significant difference between the scores.

**Conclusion:** Community based physiotherapy plays a highly significant role in improving the ADLs of the locomotor disabled persons and should be highly encouraged.

**KEYWORDS:** Rehabilitation, Disability, Locomotor, Activities of Daily Living (ADL), Community Physiotheray.

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## INTRODUCTION

Disability is an important health problem especially in developing country like India. In India, a majority of the disabled resides in rural area where accessibility, availability and utilization of rehabilitation and its cost effectiveness are the major issues[1] .Musculoskeletal conditions are frequently cited as among the most common and disabling of the chronic diseases. These conditions affect the quality of life through increased disability, limited activity, physical pain, and impairment [2]. Because of the nature of the disabilities encountered in the community, the emphasis in therapy is on management of the disability rather than on 'treatment or cure'. Therapists, in designing management plans,

focus on minimising the client's impairments, preventing complications and building on the client's capacities to maximise their potential to be able to contribute to their community life. The process of therapy in the community should be based on a problem solving approach that is functional in orientation and is driven by the environment, cultural, social and other contextual factors.[3] In Much of the UK literature refers to community physiotherapy as including "domiciliary and/or outpatient physiotherapy" whereas other papers refer to community physiotherapy as services which occur "outside of the hospital setting". The philosophy of the community physiotherapy service is to maximise the individual's potential functional ability by educational, preventive and physical means and thereby improve their quality of life.[5] The physiotherapy profession is self-regulated health care profession. Physiotherapists work with their patients to plan and carry out individually designed physical treatment programs for the purpose of restoring function and preventing disability from disease, trauma or injury (Canadian Alliance of Physiotherapy Regulators & the Canadian Physiotherapy Association, 2002) [4]. Improving the quality of life of people with disabilities is a difficult and challenging task.[9] Access to rehabilitation for people with disability is inadequate, more so in rural communities, with the attendant economic and social implications if the status quo is maintained. According to the chartered society of physiotherapy in 2010, physiotherapy workforce has a key role to play in the public health agenda through its contribution to the prevention of disease, promotion of good health, particularly through physical activity and improvement in the general quality of life. [6]

The Rehabilitation Camps and Orthopaedic Workshop enable the organization to better meet the needs of individuals who have restricted mobility. Functional independence interventions focus on a range of activities that aim to improve an individual's level of independence in daily living skill, communication and mobility and so on[7]. Availability and awareness of rehabilitation facilities will go a long way in improving the quality of life of individuals with locomotor disabilities.[2] Thus services can also be made available at the doorsteps of the beneficiaries. The issues are different in developed and developing countries, and rehabilitation measures should be targeted according the needs of the disabled with community participation. Very few community-based studies had been conducted in India to understand the community physiotherapy for locomotor disabled through camps. Such studies have been useful tool in developing CBR programmes for the disabled.

To make the locomotor disabled people self sufficient and improve their quality of life, we need to understand the efficiency and effecetiveness of community based physiotherapy in remote areas through camps. With this aim in mind, this study was conducted among people with locomotor disability, to assess the effectiveness of community physiotherapy making them independent functionally in ADL.

**Status of Disability in Himachal Pradesh**

As per Census of 2001, there are 1, 55,950 persons with disabilities (PWDs) in Himachal Pradesh, which constitute approximately 2% of the total population. The data includes all categories of persons with impairment irrespective of Degree of impairment. Out of these, 1, 44,756 live in rural areas while 11,194 are residents of towns/cities. The data also reveals that 81, 240 PWDs are Literate while the rest of 74,710 are illiterate. Since the census data consists of all persons having disability to any extent irrespective of the definition of disability as laid down in the Persons with Disability Act, the Department of Social Justice and Empowerment (SJ&E) has taken an initiative in 2007-08 to identify the persons with disabilities in the state through the network of ICDS which has a wide reach right down to every household of the state, to provide remedial and rehabilitation services to them. As a result of this survey total 66,932 Persons with Disabilities have been identified out of which 10,611 are visually impaired, 11,924 Hearing Impaired, 36,249 orthopedically impaired and 8,148 Intellectually Challenged Especially for Distt. Mandi, total no. of disabled are 24214, out of which locomotor disabled are 7711 acc. to census of India 2001.

**Statement of the problem:** It is intended to exa-

mine the progress in daily living activities of the locomotor disabled persons, after specific period of time of applying the CBP services.

**Research question:** To which extent did the CBP services provide to Locomotor disabled patients improve their daily living activities?

Did the CBP services increase independency in all functions?

**Aim of the study:** The aim of the study is to evaluate the effect of CBP program on the functional independence in daily living activities of Locomotor disabled in Dist. Mandi, Himachal area. Physiotherapy and Rehabilitation was aimed to improve Quality of Life (QOL) of patients who are abundantly lacking with Community Based Rehabilitation (CBR).

**Significance of the problem:** It is the first study in Dist. Mandi; Himachal that will weigh up the community based Physiotherapy services provided to locomotor disabled Persons, according to the researcher knowledge. Also the study will induce the performance of further studies for other disabled categories.

**Context of study:** The study was conducted in Dist. Mandi, Himachal; therefore the researcher presents some background information about the geographical context disability population

**Geographical context:**

Himachal Pradesh is situated between $30^0$ 22' 40" to $33^0$ 12' 20" north Latitudes and $75^0$ 45' 55" to $79^0$ 04' 20" east longitudes. The altitude in the Pradesh, a wholly mountainous region in the lap of Himalayas, ranges from 350 Metres to 6975 metres above mean sea level. It is surrounded by Jammu and Kashmir in the north, Tibet on north east, Uttaranchal in the east/ south east; Haryana in south and Punjab in south west/west with a total geographical area of 55673 square meters. Besides the seasonal variations, the climate of Himachal Pradesh varies at different altitudes. The average rainfall is 152 cms. (60 inches).Geographical area of Mandi is 3950 sq meter.

**The Place of Study:** The study was conducted at various tehsils and villages under Dist. Mandi. The rehabilitation camps were organised by CRC, Sundernagar Rehabilitation Team as per requirement of agencies like NGO, Dist.Red cross society and by CRC itself for disabled.

## METHODOLOGY

A criterion used in 58th Round National Sample Survey Organisation (NSSO) was used to identify individuals with locomotor disability. Persons having locomotor disability included in the study were those with (a) loss or absence or inactivity of whole or part of hand or leg or both due to amputation, paralysis, deformity or dysfunction of joints which affected his/her "normal ability to move self or objects" and (b) those with physical deformities in the body (other than limbs) such as, hunch back, deformed spine, etc. Dwarfs and persons with stiff neck of Permanent nature who generally did not have difficulty in the normal movement of body and limbs were also treated as disabled.

An initial announcement was made regarding the date of camp in district by the CRC. All the patients were assessed and examined in camps held in dist. Mandi. Locomotor disabled patients who were certified by medical board were taken up from total no. of disabled patients. These patients were assessed and evaluated for their residual functional capacities. After collecting the socioeconomic data, the FIM questionnaire translated in Hindi were distributed to all locomotor disabled patients .This was at pre treatment time (phase1). Those identified with locomotor disability, were subjected to the questionnaire of FIM to assess the ability to perform day to day activities. The FIM, an assessment instrument of functional status, is part of the Uniform Data Set for Medical Rehabilitation (UDS). The FIM is an 18-item, 7-level functional assessment designed to evaluate the amount of assistance required by a person with a disability to perform basic life activities safely and effectively.

The patients were described all the instructions and asked to fill the questionnaire and submit it to concerned physiotherapist at camp. A pilot study was conducted at CRC, Sundernagar on 10 no. of patients to check that the patients were able to understand the FIM questionnaire in Hindi. Counselling session was mainly emphasized on health education, hygiene and ergonomic advises besides life style modification for every patient. Interventions in physical therapy including muscle strengthening / stretching exercises, relaxation exercise, bladder

and bowel training, transfer training with planning and specific instructions demonstrated to patients at camps. The exercises were selected according to subject's baseline assessment and onsite observation supplemented with physical activities and ergonomics advices. Simple home modifications with low cost materials were also implemented as additional measures. Approximately after 3 months following initial therapy programme at camp, we conducted a follow up visit at same places in dist. Mandi and again distributed questionnaire, termed as post treatment questionnaire. Some of patients who attended the initial first camp missed the second follow up camp and thus questionnaire. The data was calculated by SPSS Version 11.0.

**Research Design**

**Research Population:** The study encompasses all locomotor disabled clients, whom age is above 18 years old, who received CBP Services.

**Sample Size.** The calculated sample size was all the target population with locomotor disability. Total of certified 270 patients from rural areas of Mandi districts had availed an advantage of the camp. The large number of patients with physical and functional disability (FD) from musculoskeletal (mainly degenerative joint disorders) and neuromuscular disease & disorders were participated in the camp and availed the free physiotherapy consultation, diagnosis, and treatment. Patients with moderate to severe disability were provided free orthosis to improve activities of daily livings (ADLs).

**Eligibility criteria**

**Inclusion criteria:** All locomotor disabled clients certified by medical board above 18 years

**Exclusion criteria:**

1. People with co morbid psychiatric conditions other than depression.
2. Not less than 18 years.
3. No General patients of musculoskeletal/ neurological disorders.
4. Rejection of the patient to take part in the survey.
5. Presence of unstable angina, arrhythmia, "Severe hypertension (systolic> 200 or diastolic> 120)
6. Evidence of exercise-induced ischemia
7. Evidence of exercise-induced arrhythmias.
8. Multiple disabilities such as visual, hearing or mental along with locomotor disability
9. Stenotic coronary lesions causing Exercise intolerance or physical activity of any cause.

**Research period**

The study started on March 2011 when the initial proposal was approved. The study was carried out in dist. Mandi of Himachal Pradesh. The analysis, discussion, conclusion and recommendations were completed on the mid April 2012.

**Ethical consideration:** an official approval letter from in charge, CRC.

**Data Analysis**

The purpose of this article has been to draw the attention of WHO and other international organizations to the existing situation of physiotherapy in developing countries in general. Along with this, we have attempted to highlight the innovations in community physiotherapy in enhancing easy and equitable access.

## TABLES

**Table no. 1:** Showing No. Of Population and questionnaire distributed.

| No. of Subjects /Population | No. Of distributed questionnaire | No. Of valid respondents | Percentage of valid respondents to no. Of distributed questionnaire |
|---|---|---|---|
| 270 | 270 | 238 | 88.15% |

**Table no. 2:** Showing the Gender, Frequency and Percentage.

| Gender | Frequency | Percentage% |
|---|---|---|
| Male | 188 | 69.63 |
| Female | 82 | 30.37 |
| Total | 270 | 100 |

**Table no. 3:** Types of locomotor disabilities.

| Types | Frequency | Percentage (%) |
|---|---|---|
| SCI | 43 | 18.07 |
| STROKE | 34 | 14.28 |
| POLIO | 31 | 13.03 |
| AMPUTEE | 25 | 10.5 |
| CEREBRAL PALSY | 14 | 5.88 |
| MUSCULAR DYSTROPHY | 17 | 7.14 |
| BURNS | 25 | 10.5 |
| POST FRACTURE STIFFNESS/CONTRACTURE/DEFORMITY | 21 | 8.82 |
| CHRONIC ILLNES/DEFORMITY | 28 | 11.76 |
| TOTAL | 238 | 99.98 |

**Table no. 4:** Demographic data of participants.

| S.No. | Name of Place | Total no. Of participants | <30 years | 31-40 years | 41-50 years | 51-60 years | 61-70 years | >70 years |
|---|---|---|---|---|---|---|---|---|
| 1 | **Kotli** | 32 | 7 | 3 | 7 | 5 | 7 | 3 |
| 2 | **Janjheri** | 56 | 12 | 19 | 11 | 7 | 5 | 2 |
| 3 | **Sundernagar** | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 4 | **Ballichowki** | 20 | 4 | 7 | 3 | 3 | 2 | 1 |
| 5 | **Thunag** | 31 | 13 | 6 | 4 | 4 | 3 | 1 |
| 6 | **Karsog** | 89 | 24 | 17 | 5 | 15 | 18 | 10 |
| 7 | **Dodhwan** | 37 | 13 | 5 | 5 | 7 | 5 | 4 |
| **TOTAL** | | **238** | **78** | **57** | **35** | **41** | **40** | **21** |
| **%age** | | | 32.77% | 23.94% | 14.70% | 17.23% | 16.80% | 8.82% |

**Table no. 5:** Mean change in score of FIM.

| Name of condition | No. of subjects | Mean | Standard deviation |
|---|---|---|---|
| Spinal cord injury | 43 | 43.16 | 13.75 |
| Stroke | 34 | 40.12 | 14.96 |
| Polio | 31 | 13.94 | 3.46 |
| Amputee | 25 | 9.92 | 5.95 |
| Burns | 14 | 8.76 | 4.54 |
| Cerebral palsy | 17 | 28 | 8.15 |
| Muscular dystrophy | 25 | 17.76 | 9.39 |
| PFS/Deformity | 21 | 27.23 | 8.85 |
| Others | 28 | 12.71 | 3.05 |

**Table no. 6:** Paired t-test for FIM.

| Name of condition | t-score | t-score at 5% level |
|---|---|---|
| Spinal cord injury | 20.58 | 2.02 |
| Stroke | 15.64 | 2.04 |
| Polio | 22.4 | 2.04 |
| Amputee | 8.34 | 2.06 |
| Burns | 9.65 | 2.06 |
| Cerebral palsy | 12.85 | 2.16 |
| Muscular dystrophy | 7.79 | 2.12 |
| PFS/Deformity | 14.11 | 2.09 |
| Others | 22.03 | 2.05 |

**Fig. 1:** Depicting various locomotor disabilities by graphical representation.

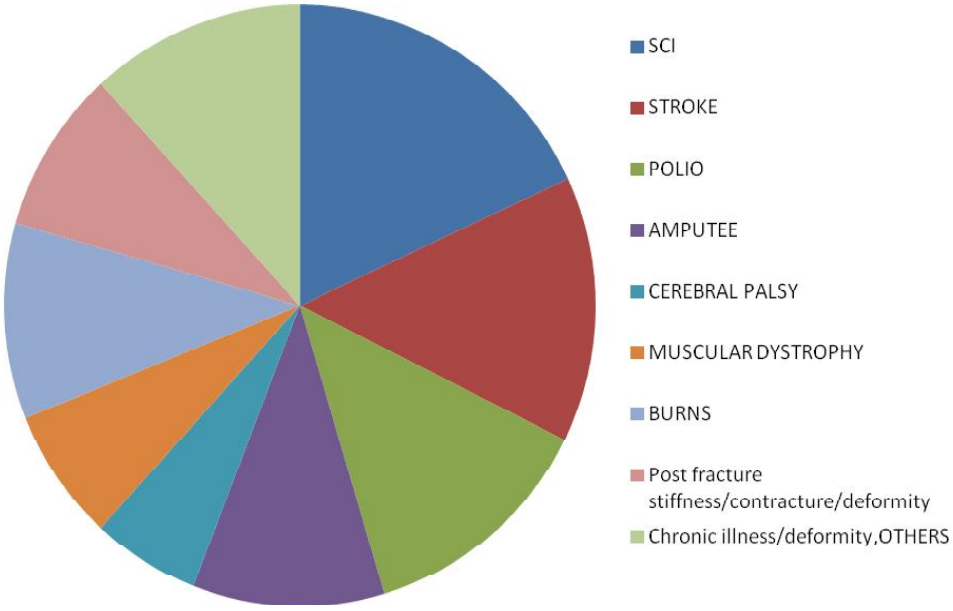


**Table no. 4** Presents the demographic details of various subjects. From the table it is clear that subjects were included from all the age groups ranging from less than 30 years to more than 70 years. Maximum patients were from less than 30 years age (32.77%) and least number of patients were from more than 70 years.

**Table no. 5** depicts the mean change in FIM score in all the conditions .The mean change in score of FIM in case of SCI was ( 43.16+13.75), Stroke (40.12+14.96), polio(13.94+3.46), Amputee(9.92+5.95),burns (8.76+4.54), cerebral palsy (28+8.15), Muscular Dystrophy(17.76+9.3), Patellofemoral syndrome (27.23+8.85) and other miscellaneous was (12.71+3.05)

**Table no. 6** depicts the results of paired t –test for FIM in all conditions .The results indicating highly significant difference between pre and post readings of FIM score indicating that community physiotherapy advice has produced a significant effect in patients of various conditions .

**Limitation of the Study:**

1. The present study is conducted in only one dist.of Himachal state.

2. Only the Locomotor disabled have selected in present study.

3. Only locomotor disabled of 18 yrs and above have been selected in the present study

4. General cases of neurological and musculoskeletal patients are also excluded.

## DISCUSSION

Our study demonstrated that majority of the disabled especially SCI, Stroke and C.P Patients were able to do their ADL and around one-fourth of the disabled required special care with aids & appliances. Availability and awareness of physiotherapy services/ facilities in community will go a long way in improving the quality of life of individuals with locomotor disabilities. Accordingly, the prevalence of disability in basic, self-care activities of daily living is also rising, posing a great challenge to the health care and social systems that are already experiencing financial constraints. In this scenario, we need to absorb people with disability in the mainstream socially as well economically. Physiotherapists should be made aware of the growing need for physiotherapy in rural areas for locomotor disabled. Also quite a number of the health workers completely had no knowledge of Physiotherapy therefore may not refer patients appropriately. The purpose of this article has been to draw the attention of WHO and other international organizations to the existing situation of physiotherapy in developing countries in general. Along with this, we have attempted to highlight the innovations in community physiotherapy in enhancing easy and equitable access. A touch provides a powerful comfort that is better than a thousand pain killers. We have identified that, in relation to physiotherapy, there is at present relatively little research which demonstrates its effectiveness. However, we are satisfied that community physiotherapy makes an important contribution to health and social gain.

## CONCLUSION

Community based physiotherapy plays a highly significant role in improving the ADLs of locomotor disabled persons and should be highly encouraged.

The study shows that locomotor disability in the community is not of severe nature as majority of the individuals detected with locomotor disability were ambulatory, showed good FIM score. Thus advancing age and longer duration of disability will make rehabilitation difficult by early diagnosis and prompt treatment. Thus timely diagnosis and effective community physiotherapy services will go a long way to restrict the deterioration of individuals with locomotor disability. The physically-disabled in most developing countries still face a lot of obstacles or barriers to full participation in their affairs and in the society. Most governments need to revisit the principles of WHO-CBR to provide equal opportunities for their citizens. Aside involving the disabled in the running of CBR, developing a strong disabled community network will also go a long way in sustaining the project and making the disabled part of the solution of overcoming the restriction in participation in all areas of human endeavour. Lastly, rehabilitative services including physiotherapy need to be developed at grass root level and awareness needs to be created regarding their availability. This will increase the number of people seeking treatment, limit the disability and will eventually improve the employment rate and financial status of people with locomotor disability.

**Conflicts of interest:** None

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