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Usefulness of Ambulatory Aids in the Spinal Cord Injury Cases at Community Level - a retrospective study of 50 cases

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Abstract

Spinal cord inury is a devastating injury that often leads to permanent paralysis and the patient loses his function of ambulation. To restore it, he is prescribed various kinds of ambulatory aids. It has been observed that in the hospital set up, the patients find these appliances quite useful for his ambulation but in home enviornment he is not able to utilise these aids fully due to various environmental and other factors. In this study the usefulness of the ambulatory appliances at the community level has been analysed.

(Key Words:- Spinal injury, Ambulation ADL, Rejection)

Introduction

Spinal cord injury is a devastating injury that often leads to permanent paralysis and the individual loses his function of ambulation.

To restore it, he is prescribed various kinds of ambulatory aids.

There were several studies conducted previously: Abramson, 1949; Edberg, 1967; Hussey & Stanffer, 1973; Kent 1958; Long & Lawton, 1955, Munro, 1951, 1954; Hating & Mc Adam in 1978 which showed advantage of ambulatory aids in making these patients functional again.

Whereas there were other studies Coghlan etal, 1980, Hanu 1970; Kaplan etal, 1973; Mikelberg & leid, 1981; Rosman & Apira, 1974; Sposito etal, 1984, which showed that rejection rate of these ambulatory aids was high once, these patients were discharged from showed these patients were discharged from rehabilitation set up and sent into the community.

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Objective

The present study envisages usefulness of ambulatory aids by follow up survey of 50 patients of spinal cord injury who were prescribed ambulatory aids. While prescribing the ambulatory aids due consideration was given to physical, psychological and socio-enviromental factors and they were trained to use these aids fully in the community after discharge from the rehabilitation institute.

The present study shows encouraging results in the continuous use of these aids in the home set up. These aids add much to the patient's sense of body image and improve their moral as these patients are again able to work on their own.

Material & Method

A reply paid letter questionnaire consisting of demographic data, home situations, work status, social activities, status in activities of daily living (ADL), medical status and mode of ambulation was sent to 250 patients who had been prescribed the ambulatory aids in the rehabilitation department of Safdarjang Hospital, New Delhi from Jan, 1986 to May 1989.

50 patients whose reply were found adequate and complete were included in the present study. Medical treatment, follow up records were also reviewed to obtain the medical information as necessary.

All the 50 patients who were included in this present study were prescribed ambulatory aids in the course of their treatment and sent to their community after full achievement of physical rehabilitation.

Results & Discussion

In the present study 75% of cases were in the age group of 20-40 years. This is because the persons of this age group are mostly engaged in out door activities.

The 37 of 50 patients were male, giving a male female ratio of 4:1. The high incidence of male patients in this series is because, in our society female are mostly busy in the home and they do not go for out door working (Table No. 1)

Table No. 1

Sex Incidence

Sex No. of Cases	%	
Male	37	74
Female	13	26
Total	50	100

31 (62%) out of 50 cases were from rural areas as 70% of our population resides in the villages (Table No. 2)

Table No. 2

Rural & Urban Distribution

Residence	Male	Female	Total
Rural	23	8	31
Urban	14	5	19
Total	37	13	50

41(92%) cases had complete injury while 9 (18%) cases had incomplete spinal cord lesion 2 at cervical level, 2 at lower thoracic, 1 at throaco lumber and 4 at lumber level) (Table No. 3 & 4).

Period of institutional rehabilitation ranged from 1-7 months with an average period of 3 months (Table No. 5)

Table No. 5

Duration of Institutional Rehabilitation

Duration (Month)	Male	Female	Total
1-2	1	1	2
2-3	8	4	12
3-4	6	5	11
4-5	8	2	10
5-6	8	1	9
More than 6	6	-	6
Total	37	13	50

37 patients were provided with A/K caliper, axillary crutches, wheel chair and tri cycle, 10 patients were proved with B.K. Caliper and elow crutches along with wheel chair to 5 patients and tri cycle to 5 patients . Remaining 3 patients were provided with walker to 1, wheel chair to 1, wheel chair & tri cycle to 1 patient (Table No. 6)

Table No. 6

Rehabilitation Aids & Appliances

Name of Rehabilitation Aid	Male	Female	Total
Crutches	-	-	-
Calipers & Crutches	-	-	-
B/K Calipers & Elbow	1	4	5
Wheel Chair Crutches & B/K Caliper & elbow	5	-	5
Tricycle Crutches & A/K Calipers & Axillary	28	9	37
Wheel Chair & Tricycle crutches & Wheel Chair	1	-	1
Walker	1	-	1
Wheel Chair & Tricycle	1	-	1
Total	37	13	50

Subjective opinion

22 (44%) & 12 (24%) patients described the aids fully useful and satisfactorily useful respectively 4 patients found them useful at times while 12(24%) patients found them not useful at all. (Table No. 7)

Among the 34 (68%) functional walker 28(56%) were community ambulator, 6(12%) were household ambulator while in the 16(32%) cases of non functional ambulation four were occasional Indoor ambulator and 12 were therapeutic ambulators. (Table No. 8)

Activities of Dailly living A.D.L.

34 patients retained full independence in A.D.L. in their community, while 4 patients could retain partial independence in A.D.L. in community, and 12 patients became completely dependent in A.D.L.. when they went back to community (Table No. 9)

The main reason for becoming dependent in A.D.L. for these 12 patients were deterioration in the Physical status of the patients, lack of toilet facilities in the home etc.

34(68%) patients were using their ambulatory aids independently for ambulation to perform their indoor activities, while 4 patients were using them with the assistance of another person.

12 patients were totally dependent on others to do their indoor activities mainly because of the deteriorated physical status and unsuitable home environment. (Table No. 10)

28 (56%) patients were going for the outdoor activities independently with the help of ambulatory aids, while 22(44%) cases were not using their ambulatory aids for outdoor activities. (Table No. 11) It became evident on further evaluation that majority of the patients who discarded their ambulatory aids having wheel chair or tricycle in addition to calipers & crutches. They found caliper & crutch walking more laborious and tire some & energy consuming, also conditions in the Community tend to encourage wheel chair or tricycle mobility as faster and more in tune with the pace of modern living (Table No. 12)

Repair

On analysing the repair of these ambulatory aids, it was observed that out of 146 appliances provided to these patients 82 were repaired by local artisan of the community, 15 were reapired by patients themselves and 11 were repaired in the rehabiliation unit, while 38 did not require repair. It become clear with these observation that enough skill is available in the community for dealing with the problems of minor wear & tear of appliances. (Table no. 13).

Rejection Table No. 14

Vocational Achievements

Two patients of this study were students & they resumed their studies after being discharged from rehabilitation institute. 13 house wives resumed their house hold activities with the help of ambulatory aids.

13 were self employed successfully using ambulatory aids. 22 patients who could not perform functional community ambulation were still unemployed as the main reason was not being able to ambulate independently using ambulatory aids and appliances.

Conclusion

This follow up study of 50 spinal cord injury cases has shown that 34 patients were functional walker and 16 cases were non functional ambulators. Out of total 50 patients 28 were vocationally useful and 22 patients could not engage themslves in any useful vocation.

The main reason for them to be not employed in the vocation was being able to ambulate independently using ambulatory aids. It was also felt that an important reason of rejection of an appliance was the belief of the patients that the use of the brace would help in neurological recovery and that it was for short term use only.

It can therefore be concluded that all efforts should be made to make the patient ambulatory and maintain the erect posture as far as possible with the help of the ambulatory appliances from the vocational as well as from the Medical point of view as one would expect less discuse osteoporosis, Decubitus ulcer and urinary tract infection (Table No. 15).

Table No. 3
Type of Neurological lesion

Vertebral level	Complete	%	Incomplete	%
Cervical CI-C7	-	2	2	4
Thoracic T1-T6	3	6	-	-
Thoracic T7-T12	19	38	2	4
Thoraco Lumbar T12-L1	5	10	1	2
Lumbar L1-L5	14	28	4	8
Total	41	82	9	18

Table No. 4
Level of injury (Vertebral)

Vertebral level	Male	Female	Total	%
Cervical CI-C7	2	-	2	4
Thoracic T1-T6	3	-	3	6
Thoracic T7-T12	18	3	21	42
Thoraco Lumbar T12-L1	4	2	6	12
Lumbar L1-L5	10	8	18	36

Table No. 7

Subjective Opinion on utility of Ambulatory Aids in Community

Utility	Male	%	Female	%	Total	%
Fully useful	22	44	6	12	28	56
Satisfactorily Useful	3	6	3	6	6	12
Useful at Times	2	4	2	4	4	8
Not useful	10	20	2	4	12	24

Table No. 8

Ralationship between Age & group & status of ambulators

Age Group	10-19	20-29	30-39	40-49	50 & above
Community ambulators	3	16	3	1	1
House hold ambulators	-	6	3	1	-
Exercise ambulators	1	1	2	-	-
Non ambulators	-	2	4	4	2
	4	25	12	6	3 = 50

Table No. 9

Activities of Daily Living

ADL	Walker	Calipers + Crutches	Wheel Chair	Calipers Crutches + Wheel Chair	Calipers Crutches + Tricycle	Calipers Crutches + Wheel Chair + Tricycle	Wheel Chair	Total
Fully Independent	1	-	-	5	5	23	-	34
Partially Independent	-	-	-	-	-	3	1	4
Dependent	-	-	1	-	-	11	-	12

Table No. 10

Use of Rehabilitation aid for Indoor Activites

	Calipers + Crutches	B/K Calipers + Elbow Crutches + Wheel Chair	B/K Calipers + Elbow Crutches + Tricycle	A/K Calipers + Axillary Crutches + Wheel Chair + Tricycle	Wheel Chair	Wheel Chair + Tricycle	Walker	Total
Using Independently	-	5	5	23	-	-	-	34
Using with Partial help	-	-	-	4	-	-	-	4
Not using	-	-	-	10	1	1	-	12

Table No. 11

Use of Rehabilitation Aid for Out Door Activities

	Walker	Caliper	Calipers Crutches	Wheel Chair	Calipers Crutches + Tricycle	Calipers Crutches + Wheel Chair + Tricycle	Wheel Chair + Tricycle	Total
Yes	-	-	2	1	2	23	-	28
No	1	-	3	-	3	14	1	22

Table No. 12

Status of Ambulation in the community

	Calipers + Crutches	B/K Calipers + Elbow Crutches + Wheel Chair	B/K Calipers + Elbow Crutches + Tricycle	A/K Calipers + Wheelchair + Tricycle	Wheel Chair	Wheel Chair + Tricycle	Walker	Total
Community Ambulators	-	5	5	18	-	-	-	28
House Hold Ambulators	-	-	-	5	-	-	1	6
Exercise Ambulators	-	-	-	4	-	-	-	4
Non Ambulator	-	-	-	10	1	1	-	12
Total	-	5	5	37	1	1	1	50

Table No. 13

Repair of Rehabilitation Aids

Place	Crutches	Calipers	Wheel Chair	Tricycle	Total
No Repair	15	8	10	5	38
Self Repair	5	2	5	3	15
Local Artisan	14	19	27	22	82
Rehab. Unit.	3	3	2	3	11
Total	37	32	44	33	146

Table No. 14

Reason for Rejection of Rehbilitation Aids

Rehabilitation	Appliance defect	Patient's Factor	Architectural barrier	Total
Calipers & Crutches	-	4	-	4
Wheel Chair	-	-	9	9
Tricyle	-	2	1	3
Total	-	6	10	16

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