

Level of Community Walking in Post Stroke Patients, Correlation with Clinical Walking Performance - A Cross Sectional Study

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ABSTRACT

Aim: The aim of the study was to find out the relationship between the type of gait training, walking performance, community ambulation in post stroke patients.

Objectives: To estimate the relationship between clinical walking performance and level of community ambulation in post stroke patients.

Method: Cross sectional co-relational study. The 60 samples were selected by convenient sampling method. The outcome measures were 10MWT, 6MWT, and Self-reported community ambulation assessment questioner for stroke patients. Pearson's co relation, spearman rho and one way ANOVA were used to find the co relation between variables.

Results: There was very poor co relation existed between the gait velocity and endurance.

Conclusion: level of community ambulation was not influenced by gait velocity and endurance of walking among the stroke survivors

Keywords: Community ambulation, 10mwt, 6mwt, walking endurance.

INTRODUCTION

Disturbance of cerebral function is common in stroke and symptoms lasting 24 hours or longer or leading to death of vascular origin.^[8]

In the recent years application of dynamic systems model of motor control has given the path of goal oriented functional training, as effective therapeutic strategy for stroke patients. Using motor learning principles like intensity of practice, feedback and selection of patient preferred goal oriented exercise added in the management of stroke patients.^[5]

Walking is the fundamental part of instrumental activities of daily living and basic activities of daily living. Reduced walking ability can promote negative effects on the overall health of the patients. Low ambulatory activity level and cardiovascular

fitness can affect the ability of walking in the stroke survivors.^[7]

Community ambulation is defined as self-ambulation outdoors to achieve activities such as visits to the temple or religious places, market, shopping mall, bank, health clinics, social outings, vacations, and to involve in leisure activities. Several researches identified that balance, endurance and gait speed in stroke survivors are important factors for the community ambulation.^[4]

There are many other factors like living alone, history of falls, the use of assistive walking devices, executive function, depression, fatigue and motor function can potentially influence community ambulation.^[2] Stroke patients are moving around in the community has not been studied in India. Hence, it is

important to know the extent of community ambulation restriction and the relationship between various gait training and community ambulation ability.

Aim

The aim of the study was to find out the relationship between the clinical walking performance and community ambulation, and to estimate the level of community walking in post stroke patients.

Objectives

- To establish the extent of community ambulation in stroke patients.
- To estimate the relationship between clinical walking performance and level of community ambulation in post stroke patients.

HYPOTHESIS

The gait parameters influence the community walking

Study Design

Cross sectional co-relational study.

Study Setting

Conducted on study on JKKMMRF inpatient rehabilitation unit and Head Quarters Hospital Erode, private rehab centers in and on Salem City Tamilnadu.

Inclusion criteria

The participants in the age group of 30 to 75, (ischemic and hemorrhagic), Both first stroke and recurrent strokes, Involvement of

any territory of cerebral circulation, stroke patients able to walk with or without assistive devices, both Genders, Post stroke duration above 2 months. Discharged from hospital and living in the community.

Exclusion criteria

Aphasic patients. Participants with severe problems.

Sampling

This study was approved by the institute ethical committee. About 78 patients diagnosed as stroke patients were screened for eligibility and a total 60 samples were selected by convenient sampling method. The purpose of the study was explained to all the patients and informed consent was taken from each participant of the study.

Outcome measures

- 1.10MWT (10 meter walk test)
- 2.6MWT (6 minutes walk test)
3. Self reported community ambulation assessment questioner for stroke patients (Lord SE 2004)

Statistical methods

SPSS software version 13 was used to analyze the data.

Descriptive statistics was done to create the demographic details.

Pearson's co relation, spearman rho, and one way ANOVA were used to find the co relation between variables.

RESULTS

Table: 1 Patient demographic detail

	frequency	percent	Mean ± SD (if applicable), SEM*
Male	51	85%	
Female	9	15%	
Age			48.43 ± 10.309
Married	52	86%	
Single	8	13%	
Right hemisphere	27	45%	
Left hemisphere	33	55%	
Ischemic	57	95%	
Hemorrhagic	3	5%	
Duration of stroke(months)			21.18, 4.108*
Duration to start walk(in days)			45.55,10.05*
Assistive device use	8	13%	
Assistive device not required	52	86%	
Velocity of walking			0.624 ± 0.249
Walking Endurance			211.42 ± 81.382

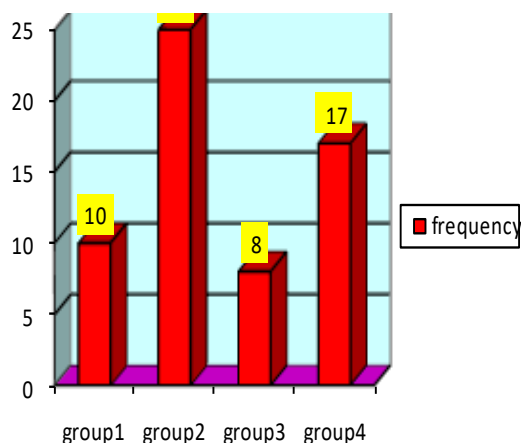
Table: 2 community ambulation groups

Group		Frequency	Percent
1	Non Ambulant	10	16%
2	Ambulant just outside the door	25	41%
3	Ambulant in the immediate environment	8	13%
4	Ambulant in the shopping center, visit friends and relatives, can do interested work	17	28%

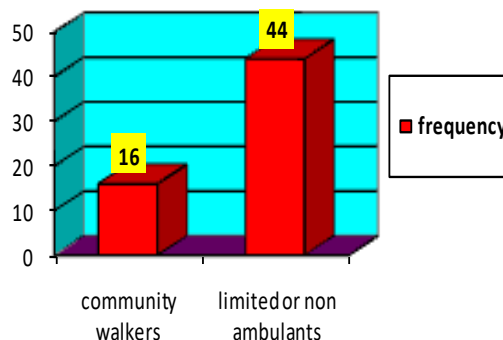
Table: 3 community walkers

(Those who fall in group 4 are called community walkers and the others are non community walkers (Lord SE et al -2004))

	Frequency	Percent
Community walkers	17	26%
Limited or Non community walkers	43	73%



Graph .1 Frequency of different group of community ambulation.



Graph .2. Frequency of community ambulators

Table : 4 co relation-Gait training type, velocity and endurance of gait.

	Velocity	Endurance
Gait training type	0.089	-0.071
Velocity		0.876**

** Significant co relation with p<0.05

Table : 5. ANOVA (Gait training type,Community ambulation Group, community walker)

		Sum of Squares	df	Mean Square	F	Sig.
Velocity	Between Groups	.353	3	.118	1.983	.127
	Within Groups	3.325	56	.059		
Endurance	Between Groups	80219.008	3	26739.669	4.822	.005*
	Within Groups	310537.576	56	5545.314		

*significant difference among groups with p<0.05.

Table :6. Spearman's rho (r)

	Community ambulation group	Community walker
Gait training regularity	0.179	-0.056
Duration to start walk	0.135	-0.080
Gait training type	-0.011	0.149

DISCUSSION

The aim of the study was to find out the relationship between the gait training methods and clinical walking performance, clinical walking performance and community ambulation, and to estimate the level of community walking in post stroke patients.

Whereas there was significant co relation existed between gait velocity and endurance with $r=0.0876$ ($p<0.05$).

Ada L et al studied the effect of treadmill gait training in combination with over ground walking in a group of 29 community dwelling stroke patients. They compared the training effect with control

group who underwent home exercise program.. The training resulted in the achievement of greater step length (about 90% of normal step length) in the affected leg. This has increased the speed of the gait. [1] In our study, the survey found that there were no structured gait training program to concentrate step length and endurance among the participants. None of the patients received treadmill gait training.

Examined the effect of brisk walking on the functional recovery among the chronic stroke patients.. They found that overall improvement in all variables after the training. This simple walking training with a concentration on increasing the

walking speed has resulted in this improvement. [3] In this present study, it was found through informal assessment as part of the study Performa, self-training was the major type of gait training about 55% of the patients adapted. If the patients adapt these types of simple techniques they can benefit in the recovery of the gait. This survey showed that lack of such knowledge among the participants.

The results clearly show that if the velocity improved endurance that is the distance covered in particular time increases. Hence it is obvious that the speed has to be increased to achieve better walking performance.

A one-way between subjects ANOVA was conducted to compare the effect of gait velocity and Endurance on gait training type, community ambulation groups and community walkers' conditions. There was not a significant effect of gait velocity on any of the variables compared at the $p > 0.05$ level for the three conditions [$F(56, 4) = p = 0.127$]. There was significant effect of gait endurance on all of the variables compared at the $p < 0.05$ level for the three conditions [$F(56, 4) = p = 0.005$].

This result shows that though there was poor influence of gait velocity on community walkers, the influence of endurance on community walker has been established. Further comparing the means of this clearly shows that gait endurance is an important factor in the community walking. This present study line with other study stated that brisk walking training with a concentration on increased speed had resulted in the increased endurance on 6MWT and this in turn increased their community participation. [3]

In a study the effect of task specific locomotor training and strength training on the walking performance. They found increased speed and endurance of the walking among the chronic stroke patients. [11]

The community ambulation depends on several factors like gait speed, endurance, balance and the mood. Whatever

the type of gait training strategies used it is important to fulfill these criteria to achieve effective community ambulation. Achievement of gait speed alone will not be sufficient to achieve community ambulation. [12] In a study, even though favorable outcomes in terms of speed and endurance were achieved, it was not linked with good community mobility. They have also emphasized the need of effective therapeutic programs to address this issue. [8] The present study focused on above issue.

In this present survey also it has been shown that though the mean gait velocity was 0.624 ± 0.249 , percent of community walkers were very poor (only 26%). In India, personal belief, mood, and the poor surface conditions may play a major role for the stroke people to come out of the home. [10]

In a study which is clear that environmental factors have to be kept in the management strategies for effective walking training to enhance community walking. [9]

In a study the significant improvements in the clinical walking performance in 10MWT and 6MWT as well as reduced time taken to cross the prefixed distance in the community after the training. [6]

Limitations

We consider more sample size is required in future to estimate the community walking in India.

CONCLUSION

From this study it has been observed that the level of community ambulation in this sample was very low. Even though the gait velocity and endurance were closely sufficient for the community ambulation it has not influenced the level of community ambulation. Hence in India, we need to analyze various factors in accordance with ICF framework to enumerate factors affecting the community ambulation. This will enhance to design effective rehabilitation strategies to improve community walking in stroke patients. The information found in this study can guide

the physiotherapy clinicians and researchers for the better clinical practice and further study research.

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