
ORIGINAL ARTICLE

A Study to Compare Use of Different Walking-Aids in Acute Stroke Subjects: A Patient's Prespective

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ABSTRACT

Stroke is a major contributor to disability worldwide, and a major focus of rehabilitation is to improve mobility and functional independence. Commonly used walking aids, such as canes, crutches, and walkers, are utilized to help stroke patients with their mobility. The purpose of this pilot study was to compare the use of different walking aids in acute stroke subjects. A total of 6 acute stroke subjects were recruited from a hospital and were randomized to receive either a cane, crutches, or a walker. The subject's preference was taken in form of interview for mobility and Barthel Index was also taken. The results of the study showed that all three walking aids were effective in improving mobility and functional independence in acute stroke subjects. But canes showed greater preference. These findings suggest that the choice of walking aid may be a critical factor in the rehabilitation of acute stroke subjects.

KEYWORDS: Acute Stroke, Walking Aids, Walker, Cane, Crutches, Functional Independence, Gait.

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INTRODUCTION

Stroke is a major contributor to disability worldwide, and a major focus of rehabilitation is to improve mobility and functional independence.[1] Commonly used walking aids, such as canes, crutches, and walkers, are utilized to help stroke patients with their mobility[2]The overall incidence of stroke can range from 105 to 152 cases per 100,000 individuals annually, and the overall prevalence of stroke has varied from 44.29 to 559 cases per 100,000 individuals in different regions of the country in the past decade.[3]The utilization of walking aids, such as canes, walkers, and crutches, is commonly advised as a method to assist in gait training and improving mobility for stroke patients.[4] However, the most appropriate walking-aid for a particular subject may vary depending on the severity of their impairments and their individual characteristics including their preference.

Walking aids such as canes, walkers, and crutches, are commonly used to help reduce walking difficulties by addressing some of the underlying impairments that contribute to the disability.[5] In stroke patients, these devices are prescribed to decrease gait instability and reduce weight-bearing on the affected weak lower limb, as well as enhance muscle movement during the propulsion and braking aspects of walking.[6] It's important to also consider other relevant health conditions and the patient's daily mobility needs, such as navigating steps, community ambulation, and using public transportation.[7]However, there is no scale/model to predict prescription of such walking-aids which can be utilized. There are very few studies those have researched the clinical assessment and prescription of walking aids in acute stroke subjects.

The aim of this study was to investigate and compare the effectiveness of various walking aids in individuals who have recently had a stroke.

MATERIAL AND METHODS

- Study Type: Pilot study
- Study Sample: Subjects having Acute Stroke

- Sampling method: Purposive sampling
- Sample size: Total 6 subjects have been examined

Inclusion criteria:

- Acute Stroke subjects who are willing to participate
- Both male & female Neurological subjects with less than 1-month post-stroke duration.[8]
- Mini mental scale examination (MMSE) score >24[9]
- Barthel Index score- minimum 10 in Mobility[10]

Exclusion criteria:

- Neurological subjects who are not cooperative.
- Neurological subjects who have auditory &/or visual deficits.
- Neurological conditions other than stroke.

This study is a part of Ph.D. thesis for prescribing walking aids in stroke subjects having Ethical clearance from Shree Giriraj Hospital Research Ethics Committee and Clinical Trial Registration number as CTRI/2022/09/045189.

Consensus was formed to collect questions from experts regarding use of various walking aids and to understand preference of subjects. Consensus comprised of 4 Physiotherapist, 1 stroke subject, and 1 Neurophysician. The resulting questionnaire was utilized to assess preference of subject towards types of walking aids.

The study enrolled a total of 6 acute stroke subjects as per inclusion and exclusion criteria.

Consent was taken from all participants and procedure was explained to them.

All participants demographic data was taken along with basic assessment at the start of the study.

All participants were given all different types of walking aids including Tripod Cane, Quadruped Cane, Elbow Crutch, Standard Walker and Rollator. On first day, subjects were given tripod cane, quadruped cane and elbow crutch. On second they, subjects were given rollator and standard walker. Walker and rollator were used as much as grasp from the subject’s active effort only.

All subjects were asked to use all walking-aids and perform transfer activities, maintain standing balance, and ambulate.

Walking patterns were taught for all walking aids by demonstration from therapist.

The subjects were then asked questions regarding their preference for use of specific walking aid and the reason for the same.

Interview was conducted of all subjects with predefined questions.

The questions included:

- “Have you used any of the walking-aids before?”,
- “How long have you been using the walking aid?”,
- “How does the walking aid make you feel when you use it?”,
- “How has the walking aid impacted your mobility and independence?”,
- “Have you experienced any challenges while using the walking aid?”, and
- “Would you consider using this walking aid in the future? Why or why not?”

Also, the participants were asked to rate all walking scale from scale of 1 to 3. 1- Satisfactory, 2- Good and 3- Very Good.

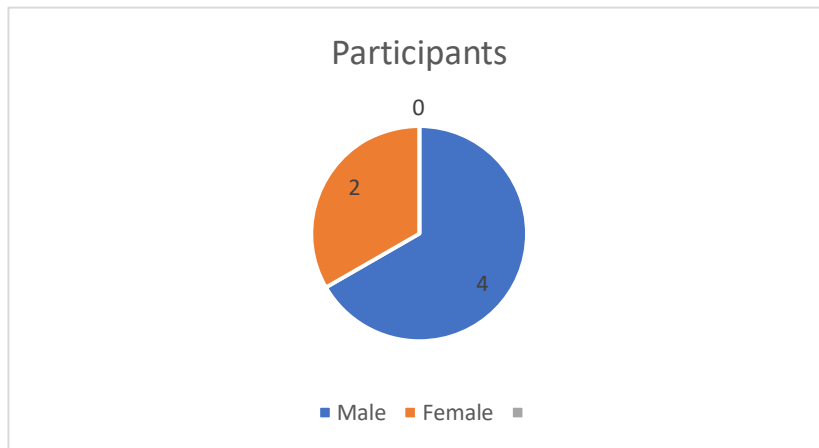
RESULT

Table 1 and Graph 1 provide the average age and the distribution of gender, respectively.

TABLE 1: Average Age and its corresponding Standard Deviation

Sr. No.	Mean Age	Standard Deviation (SD)
1	58.2	6.93

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GRAPH 1: Gender Distribution of participants

TABLE 2 represents preference of subjects for different walking Aids. (1- Satisfactory, 2- Good and 3- Very Good)

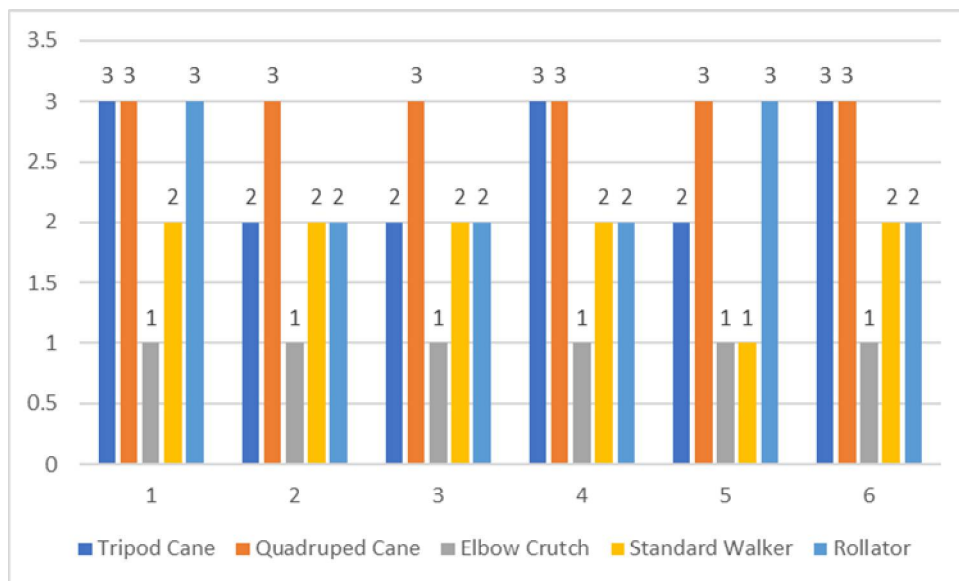
TABLE 2: Preference of subject for use of different walking aids

Sr. No.	Tripod Cane	Quadruped Cane	Elbow Crutch	Standard Walker	Rollator
1	3	3	1	2	3
2	3	2	1	2	2
3	3	2	1	2	2
4	3	3	1	2	2
5	3	2	1	1	3
6	3	3	1	2	2
Total	18	15	6	11	14
Mean	3	2.5	1	1.83	2.33

As it can be seen through Mean- Tripod cane is most preferred walking aid followed by Quadruped cane. The Elbow crutch is least preferred walking aid followed by standard walker.

The preference of stroke subjects in descending order is: Tripod cane, Quadruped cane, Rollator, Standard Walker and Elbow Crutch.

GRAPH 2 represents preference of subjects towards different walking aids. As per the data, it is clear that majority of subjects rated Tripod cane 3 showing it is most preferred walking aid.



GRAPH 2: Preference of subject for use of different walking aids

DISCUSSION

The study overall shows that all the walking aids that were tested demonstrated effectiveness in enhancing functional abilities and independence of acute stroke subjects, but the canes may be the most effective option. No subject experienced fall during ambulation with all walking aids.

These results are consistent with a study by Lara Allet et al in 2009 titled "Effect of Different walking aids on walking capacity of subjects with poststroke" where they discovered that the simple cane was preferred by the patients, and was also most efficient among different walking aids. This highlights the importance of considering the patients' personal preferences when deciding which walking aid to prescribe.[11]

Some studies have yielded opposite results. For example, Stefan Hesse et al conducted a study in 1998 entitled "Immediate effects of therapeutic facilitation on the gait of hemiparetic subjects as compared with walking with and without a cane" and found that using a cane was not any different as compared to not using a cane. This calls into question the typical practice of prescribing canes hesitantly to hemiparetic patients.[12]

The probable choice of Tripod cane over Quadruped cane maybe due to the three legs of the tripod cane are typically positioned in a triangular shape, which provides a wide, stable base of support. This design distributes the weight evenly across all three legs, thus minimizing the pressure on the affected side of the body and enhancing weight-bearing and balance.

It is important to exercise caution when interpreting the findings of this study due to its limited sample size and the brief duration of the trial. Further investigation is necessary to validate these results using a bigger sample size and to explore the long-term impact of the various walking aids on mobility and functional independence in stroke patients. It's also important to take into account that the ideal walking aid for a patient might depend on multiple factors, such as the degree of their impairments, their functional objectives, and their personal preferences. Therefore, it is important for clinicians to consider the individual needs and preferences of each subject when selecting a walking-aid.

CONCLUSION:

From the current study, it can be concluded that Canes are the most effective walking aids for ambulation in stroke subjects followed by rollators.

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Conflict of Interest: Nil

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