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Measurement of walking capacity after stroke in the Soweto community

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CHAPTER 1

1.1 INTRODUCTION

This chapter introduces the subject and describes the background and need for the study. Also included are the specific objectives and the significance of the study

1.2 BACKGROUND AND NEED

In South Africa stroke is the third most frequent cause of all deaths reported (Stroke Therapy Clinical Guideline 2000). In 1990, of all deaths reported in the age group 25-64 years (the workforce) 7.45 % was due to stroke (Steyn et al 1992). Very few figures are available for black communities but a small study in Atteridgeville suggests that the stroke rate may be as high as 300/100 000 per annum (Stroke Therapy Clinical Guideline 2000). A survey in the greater Soweto area of attendances at primary health care clinics with a physiotherapy service revealed that the most commonly presented condition was hemiplegia following stroke (Wallner and Stewart 1994).

The WHO International Classification of Functioning Disability and Health (WHO 2001) provides a useful framework for assessing the impact of stroke on the individual. A stroke results in changes to body structure and function (impairment), activity level (ADL) and the level of the individuals' participation in their community and environment (participation). Measures at the level of activities (previously disability) are the most important primary outcome measure (Duncan et al 2000). Various studies estimate that between 5-12% of South Africans are moderately to severely disabled (Mbeki 1997). A recent study of stroke survivors in rural South Africa showed a stroke prevalence of 300/100 000. Sixty-six percent of these stroke survivors needed help with at least one activity of daily living (Connor et al 2004).To most patients loss of mobility is perhaps the single activity of daily living on which they place the most value (Chiou and Burnett 1985). Recovery of walking is thus a priority goal for most

patients with stroke (Goldie et al 1996) as walking increases their functional independence (Jorgensen et al 1995b).

In 1998 a descriptive survey by Hale and Eales, using a structured questionnaire, was conducted on individuals with stroke residing in Soweto, 12-14 weeks post discharge from Chris Hani Baragwanath Hospital. In this study the early discharge of patients with stroke prevented intensive rehabilitation. The results indicated that recovery of gait in these subjects appears to have been good with minimal rehabilitation. However the stringent selection criteria in the above study prevent extrapolation of the results to the stroke population in general. The questionnaire required subjects to rate functional walking ability (distance) from "walking around the house" to "walk as far as need to". Twenty two of the subjects were able to "walk as far as need to".

Results from studies in which the subjects received intensive therapy prior to discharge have shown that independent walking is usually regained within the first three to six months following stroke (Wade et al 1987; Olsen 1990; Jorgensen et al 1995a). Although the majority of people after stroke are able to achieve a level of independent walking, few achieve the level of skill that is required to function independently in the community. This requires a combination of walking speed, endurance and the ability to adapt to varying environmental conditions. In a study carried out in Australia, Hill and colleagues (1997) reported that only seven percent of patients discharged from rehabilitation met the criteria for community ambulation which included the ability to walk 500m continuously and at speeds that would allow them to cross the road safely. A walking velocity of 1.1-1.5 m/s is considered to be fast enough to function as a pedestrian in different social and environmental conditions (Sciurba and Slivka 1998). Walking speed and endurance are therefore two important determinants of functional and community walking. According to Wade et al (1987) and Perry et al (1995) the simplest and most objective measure of gait is in fact velocity. Gait speed is commonly used to monitor performance and evaluate the effects of treatment (Olney et al 1994).

A study by Lerner-Frankiel et al (1986) found that clinicians generally underestimated the distance and speed needed to function independently within a community environment. Studies by Dean et al (2001) and Eng et al (2002) found that walking speed over a short distance overestimated the distance walked in six minutes. Both of these studies reinforced the need to differentiate between the standard self-paced walking speed evaluation (e.g. over ten metres) and the functional walk tests that require sustained walking ability over extended periods of time.

Internationally there has been a trend toward more intensive exercise programmes (e.g. treadmill walking or circuit training) for individuals following stroke in both the acute and chronic stages (Eng et al 2002). It is therefore relevant to determine baseline levels of these current outcome measures (the ten-metre timed walk, the 6MWT and the 2MWT) in a South African community context.

1.3 AIM OF THE STUDY

The aim of this study was to quantify the level of ability and in particular walking ability of a group of stroke survivors between 3-6 months post incident.

1.4 OBJECTIVES OF THE STUDY

To establish:

- The relationship between self paced gait speed, 6 MWT and 2MWT in subjects after stroke.
- What additional information functional walk tests provide compared with the standard self paced gait speed.
- If the distance covered by patients with stroke in six minutes compares with standard norms.
- If the increased heart rate of subjects (reflecting exercise intensity) is within normal limits during the functional walk test.

- If the walking speed and distance walked relate to a simple measure of impairment (pain).
- The amount of rehabilitation experienced by the subjects.
- If a general ability measure taken within ten days of stroke predicts mortality and/or ability at three to six months post stroke.

1.5 SIGNIFICANCE OF THE STUDY

The information from this study will be valuable for:

- Determining the burden of diminished mobility capacity for stroke survivors in the Soweto community.
- Confirming the results of a previous study (Hale and Eales 1998) that was based on a questionnaire, in the same community.
- Identifying characteristics of people with diminished mobility capacity who will require appropriate support.
- Reinforcing the use of safe, appropriate measures of walking capacity.